

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549
FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Zymergen Inc.

(Exact Name of Registrant as Specified in its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

46-2942439
(I.R.S. Employer
Identification Number)

5980 Horton Street, Suite 105
Emeryville CA 94608
(415) 801-8073

(Address, Including Zip Code, and Telephone Number, Including Area Code, of Registrant's Principal Executive Offices)

Mina Kim
Chief Legal Officer
5980 Horton Street, Suite 105
Emeryville, California 94608
(415) 801-8073

(Name, Address, Including Zip Code, and Telephone Number, Including Area Code, of Agent For Service)

Copies to:

Sarah K. Solum
Pamela L. Marcogliese
Freshfields Bruckhaus Deringer US LLP
2710 Sand Hill Road
Menlo Park, California 94025
Telephone: (650) 618-9250

Approximate date of commencement of proposed sale to the public: From time to time after this Registration Statement becomes effective.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

If an emerging growth company, indicate by check mark if the Registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Commission acting pursuant to said section 8(a), may determine.

The information in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED MAY 12, 2022

PROSPECTUS

\$200,000,000



ZYMERGEN INC.

**COMMON STOCK
PREFERRED STOCK
DEPOSITARY SHARES
DEBT SECURITIES
WARRANTS
PURCHASE CONTRACTS
UNITS**

We may issue securities from time to time in one or more offerings, in amounts, at prices and on terms determined at the time of offering. This prospectus describes the general terms of these securities and the general manner in which these securities will be offered. We will provide the specific terms of these securities in supplements to this prospectus, which will also describe the specific manner in which these securities will be offered and may also supplement, update or amend information contained in this prospectus. You should read this prospectus and any applicable prospectus supplement carefully before you invest. The aggregate offering price of the securities we sell pursuant to this prospectus will not exceed \$200,000,000.

The foregoing securities may be offered directly by us, through agents designated from time to time by us or to or through underwriters or dealers. We reserve the sole right to accept, and together with any agents, dealers and underwriters, reserve the right to reject, in whole or in part, any proposed purchase of securities. If any agents, dealers or underwriters are involved in the sale of any of the foregoing securities, their names and any applicable purchase price, fee, commission or discount arrangement between or among them will be set forth, or will be calculable from the information set forth, in the applicable prospectus supplement.

None of the foregoing securities may be sold without delivery of this prospectus and the applicable prospectus supplement describing the method and terms of the offering of such securities.

Our common stock is listed on the Nasdaq Global Select Market (“Nasdaq”) under the symbol “ZY”. As of May 12, 2022, the last reported sale price of our common stock was \$1.42 per share. Each prospectus supplement will indicate whether the securities offered thereby will be listed on any securities exchange.

We are an “emerging growth company” as that term is defined under the federal securities laws and, as such, have elected to comply with certain reduced public company reporting requirements.

Investing in these securities involves certain risks. See “Risk Factors” beginning on page 4 of this prospectus, in any applicable prospectus supplement and in “Item 1A - Risk Factors” of our most recent report on Form 10-K or 10-Q that is incorporated by reference in this prospectus before you invest in our securities.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved these securities, or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is _____, 2022.

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We have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We do not take responsibility for, nor can we provide any assurance as to the reliability of, any other information that others may give you. We are not making an offer of these securities in any jurisdiction where the offer is not permitted. You should not assume that the information contained in or incorporated by reference in this prospectus or any applicable prospectus supplement or in any such free writing prospectus is accurate as of any date other than their respective dates.

The terms “Zymergen Inc.,” “Zymergen,” “the Company,” “our company,” “the registrant,” “we,” “our,” “ours” and “us” refer to Zymergen Inc. and not to any of its existing or future subsidiaries, unless specifically indicated or the context otherwise requires.

THE COMPANY

Zymergen partners with Nature to design, develop and commercialize microbes, molecules, and materials for diverse end markets. Our goal is to create new products with our proprietary platform that unlocks the design and manufacturing efficiency of biological processes with technology's ability to rapidly iterate and control diverse functions. We believe our process will create better products, a better way, for a better world.

Our platform revolves around three key capabilities: our collection of accessible biomolecules, our software and data science technology and our data driven microbe optimization processes. We have one of the world's largest collections of accessible biomolecules. This physical and DNA sequence database has within it the potential to create hundreds of thousands of small molecules, millions of natural products and hundreds of millions of proteins. This provides novel starting points for the creation of interesting molecules, materials, enzymes, and potential therapeutics. Our software and data science platform informs, guides, and records our experiments forming the infrastructure for the virtuous learning cycle that continually enriches our processes. Once a promising biomolecule is selected, using our strain engineering capabilities we can work across organisms and employ numerous strategies to optimize performance, cost, and scalability to meet an unmet market need. Throughout our work, we power and scale the science with high-throughput automation.

We were incorporated in Delaware in 2013. Our principal executive offices are located at 5980 Horton Street, Suite 105, Emeryville, CA 94608, and our telephone number is (415) 801-8073. Our corporate website address is www.zymergen.com. We do not incorporate the information contained on, or accessible through, our corporate website into this prospectus or any prospectus supplement that we file, and you should not consider it part of this prospectus or any prospectus supplement that we file. We have included our website address only as an inactive textual reference and do not intend it to be an active link to our website.

"Zymergen," our logo and our other registered or common law trademarks, service marks, or trade names appearing in this prospectus are the property of Zymergen Inc. Other trademarks and trade names referred to in this prospectus are the property of their respective owners.

About this Prospectus

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission ("SEC"), utilizing a "shelf" registration process. Under this shelf process, we may sell, at any time and from time to time, any combination of the securities described in this prospectus in one or more offerings up to a maximum aggregate offering price of \$200,000,000. This prospectus provides you with a general description of the securities that may be offered. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the securities being offered and the terms of that offering. Any prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any applicable prospectus supplement together with additional information described under the heading "Where You Can Find More Information."

We have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus or in any applicable prospectus supplement or free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are not making an offer of these securities in any jurisdiction where the offer is not permitted. You should not assume that the information contained in or incorporated by reference in this prospectus or a prospectus supplement is accurate as of any date other than their respective dates.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. These filings, including the registration statement of which this prospectus forms a part and the exhibits and schedules thereto, are available to the public in electronic form at the website maintained by the SEC at www.sec.gov.

The SEC allows us to “incorporate by reference” the information we file with them, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is an important part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and all documents we file pursuant to Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), on or after the date of this prospectus and prior to the termination of the offering under this prospectus and any prospectus supplement (other than, in each case, documents or information deemed to have been furnished and not filed in accordance with SEC rules):

- (i) our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on [March 30, 2022](#), including portions incorporated by reference therein from our Definitive Proxy Statement for our 2022 annual meeting of stockholders, filed with the SEC on [April 20, 2022](#);
- (ii) our Quarterly Report on Form 10-Q for the quarterly period ended March 31, 2022, filed with the SEC on [May 12, 2022](#);
- (iii) our Current Reports on Form 8-K filed with the SEC on [January 10, 2022](#), [March 3, 2022](#), and [March 8, 2022](#); and
- (iv) the description of our common stock contained in our registration statement on Form 8-A filed with the SEC on [April 19, 2021](#) under Section 12 of the Exchange Act, as updated by [Exhibit 4.3](#) of our Annual Report on Form 10-K for the fiscal year ended December 31, 2021.

You may request a copy of these filings at no cost, by emailing or telephoning investor relations at investors@zymergen.com or (415) 801-8073. Information about us, including copies of our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K filed with the SEC, is also available at our website at www.zymergen.com. However, the information on our website is not a part of, or incorporated by reference in, this prospectus or any prospectus supplement that we file and should not be relied upon in determining whether to make an investment in our securities.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains or incorporates statements that are not historical in nature, are predictive in nature, or that depend upon or refer to future events or conditions or otherwise contain forward-looking statements within the meaning of Section 21 of the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995. Forward-looking statements are often identified by the use of words such as, but not limited to, “anticipate,” “believe,” “can,” “continue,” “could,” “estimate,” “expect,” “intend,” “may,” “plan,” “project,” “seek,” “should,” “strategy,” “target,” “will,” “would” and similar expressions or variations intended to identify forward-looking statements.

Forward-looking statements are not guarantees of future performance, but are based on management’s expectations as of the date such statements are made and assumptions that are inherently subject to uncertainties, risks and changes in circumstances that are difficult to predict. Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause actual results, performance or achievements to be materially different from our current expectations and any past results, performance or achievements. Important factors that could cause actual results to differ materially from those expressed or implied by these forward-looking statements, include, but are not limited to, those discussed in our annual report on Form 10-K for the year ended December 31, 2021 and our quarterly report on Form 10-Q for the quarter ended March 31, 2022 and any other documents we file with the SEC from time to time. The information contained or incorporated by reference in this prospectus is based upon the facts and circumstances known at this time, and any forward-looking statements speak only as of the date on which they are made. We undertake no duty to update this information except as required by law.

RISK FACTORS

Investment in any securities offered pursuant to this prospectus and any applicable prospectus supplement involves risks. Before deciding whether to acquire any such securities, you should consider carefully the risks and uncertainties described under the heading “Risk Factors” discussed under the section entitled “Risk Factors” contained in our most recent annual report on Form 10-K and in our most recent quarterly report on Form 10-Q, as well as any amendments thereto reflected in subsequent filings with the SEC, together with other information contained or incorporated by reference in this prospectus and any applicable prospectus supplement. The risks described in these documents are not the only ones we face. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors, or factors that we currently deem immaterial, that could have material adverse effects on our future results. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of the risks we face actually occur, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our securities to decline, resulting in a loss of all or part of your investment. Please also read carefully the section above titled “Special Note Regarding Forward-Looking Statements.”

DILUTION

We will set forth in a prospectus supplement the following information, as required, regarding any dilution of the equity interests of investors purchasing securities in an offering under this prospectus:

- the net tangible book value per share of our equity securities before and after such offering;
- the amount of the change in such net tangible book value per share attributable to the cash payments made by purchasers in such offering; and
- the amount of the immediate dilution from the public offering price that will be absorbed by such purchasers.

USE OF PROCEEDS

Unless otherwise indicated in a prospectus supplement, the net proceeds from the sale of the securities by us will be used for general corporate purposes and will be invested prior to use. General corporate purposes may include repayment of debt, acquisitions, additions to working capital, capital expenditures and investments in our subsidiaries.

DESCRIPTION OF CAPITAL STOCK

General

This section describes our capital stock, which we may offer under this prospectus. The following summary description of our capital stock is based on the provisions of our amended and restated certificate of incorporation, our amended and restated bylaws, the applicable provisions of the Delaware General Corporation Law and the agreements described below. This information may not be complete in all respects and is qualified entirely by reference to the provisions of our amended and restated certificate of incorporation, our amended and restated bylaws, the Delaware General Corporation Law and such agreements. For information on how to obtain copies of our amended and restated certificate of incorporation, our amended and restated bylaws and such agreements, which are exhibits to the registration statement of which this prospectus forms a part, see the section titled “Where You Can Find More Information.”

Our authorized capital stock consists of 1,670,000,000 shares of capital stock, \$0.001 par value, of which 1,500,000,000 shares are designated as common stock and 170,000,000 shares are designated as preferred stock.

Our common stock is listed on the Nasdaq Global Select Market under the trading symbol “ZY” and began trading on April 22, 2021. Prior to that date, there was no public trading market for our common stock.

There is no preferred stock outstanding.

Common Stock

The rights of the holders of the common stock are as described below:

Voting Rights. Each share of common stock is entitled to one vote upon any matter submitted to a vote of our stockholders, including the election of directors. Holders of the common stock will vote as a single class on all matters submitted to a stockholder vote, subject to any voting rights granted to holders of any preferred stock. Holders of the common stock are not entitled to any cumulative voting rights.

Dividend Rights. Subject to preferences that may be applicable to any outstanding preferred stock, the holders of common stock are entitled to receive ratably such dividends, if any, as may be declared from time to time by the board of directors out of funds legally available therefor.

Rights upon Liquidation. In the event of our liquidation, dissolution or winding up, the holders of common stock and any participating preferred stock outstanding at that time are entitled to share ratably in all assets remaining after payment of outstanding debt and liabilities, subject to prior distribution rights of preferred stock, if any, then outstanding.

Other Rights. The holders of our common stock have no preemptive rights or other subscription rights. There are no conversion, redemption or sinking fund provisions applicable to the common stock.

Preferred Stock

Our board of directors has the authority to issue the preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof, including dividend rights, dividend rates, conversion rights, voting rights, terms of redemption or repurchase, redemption or repurchase prices, liquidation preferences, restrictions and the number of shares constituting any series or the designation of such series, without further vote or action by the stockholders.

The issuance of preferred stock may have the effect of delaying, deterring or preventing a change in control of our company without further action by the stockholders and may adversely affect the voting and other rights of the holders of common stock.

Election and Removal of Directors; Vacancies

Our amended and restated certificate of incorporation provides that our board of directors will consist of between five and 16 directors. The exact number of directors will be fixed from time to time by resolution of the board. Directors will be elected by a plurality of the votes of the shares of our capital stock present in person or represented by proxy at the meeting and entitled to vote on the election of directors, subject to rights of holders of any class or series of outstanding preferred stock to elect additional directors.

No director may be removed except for cause, and directors may be removed for cause only by an affirmative vote of shares representing not less than a majority of the shares then entitled to vote at an election of directors, subject to the rights that may be applicable to any outstanding preferred stock.

Any vacancy occurring on the board of directors and any newly created directorship may be filled only by a majority of the remaining directors then in office, subject to the rights that may be applicable to any outstanding preferred stock. These provisions would prevent a stockholder from increasing the size of our board of directors and then gaining control of our board of directors by filling the resulting vacancies with its own nominees. This could make it more difficult to change the composition of our board of directors and will promote continuity of management.

Staggered Board

Our directors is divided into three classes serving staggered three-year terms. Class I, Class II and Class III directors will serve until our annual meetings of stockholders in 2022, 2023 and 2024, respectively. At each annual meeting of stockholders, directors will be elected to succeed the class of directors whose terms have expired. This classification of our board of directors could have the effect of increasing the length of time necessary to change the composition of a majority of the board of directors.

Limitation on Action by Written Consent

Our amended and restated certificate of incorporation provides that holders of our common stock will not be able to act by written consent without a meeting. This provision might delay the ability of our stockholders to force consideration of a proposal or for stockholders controlling a majority of our capital stock to take any action, including the removal of directors.

Stockholder Meetings

Our amended and restated certificate of incorporation and our amended and restated bylaws provide that special meetings of our stockholders may be called only by a majority of the directors. Our amended and restated certificate of incorporation and our amended and restated bylaws specifically deny any power of any other person to call a special meeting. This provision might delay the ability of our stockholders to force consideration of a proposal or for stockholders controlling a majority of our capital stock to take any action, including the removal of directors.

Amendment of Charter and Bylaws Provisions

Any amendment of certain articles of our amended and restated certificate of incorporation and our amended and restated bylaws, including the above provisions, would require approval by holders of at least 66⅔% of the voting power of our then outstanding capital stock entitled to vote generally in the election of directors, voting as a single class.

These provisions could discourage potential acquisition proposals and could delay or prevent a change in control. These provisions are intended to enhance the likelihood of continuity and stability in the composition of the board of directors and in the policies formulated by the board of directors and to discourage certain types of transactions that may involve an actual or threatened change of control. These provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal. The provisions also are intended to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and, as a consequence, they also may inhibit fluctuations in the market price of our shares of common stock that could result from actual or rumored takeover attempts. Such provisions also may have the effect of preventing changes in our management or delaying or preventing a transaction that might benefit minority stockholders.

Advance Notice Requirements for Stockholder Proposals and Director Nominations

Our amended and restated bylaws provide for advance notice procedures for stockholders seeking to bring business before our annual meeting of stockholders or to nominate candidates for election as directors at our annual meeting of stockholders. Our amended and restated bylaws also specify certain requirements regarding the form and content of a stockholder's notice. These provisions might preclude our stockholders from bringing matters before our annual meeting of stockholders or from making nominations for directors at our annual meeting of stockholders if the proper procedures are not followed. We expect that these provisions may also discourage or deter a potential acquirer from conducting a solicitation of proxies to elect the acquirer's own slate of directors or otherwise attempting to obtain control of our company.

Limitation of Liability of Directors and Officers

Our amended and restated certificate of incorporation provides that no director will be personally liable to us or our stockholders for monetary damages for breach of fiduciary duty as a director, except as required by applicable law, as in effect from time to time. Section 102(b)(7) of the DGCL permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to our company or our stockholders;
- any act or omission not in good faith or which involved intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the DGCL; and
- any transaction from which the director derived an improper personal benefit.

As a result, neither we nor our stockholders have the right, through stockholders' derivative suits on our behalf, to recover monetary damages against a director for breach of fiduciary duty as a director, including breaches resulting from grossly negligent behavior, except in the situations described above.

Our amended and restated certificate of incorporation also provides that, to the fullest extent permitted by law, we will indemnify any officer or director of our company against all damages, claims and liabilities arising out of the fact that the person is or was our director or officer, or served any other enterprise at our request as a director or officer. Amending this provision will not reduce our indemnification obligations relating to actions taken before an amendment.

Forum Selection

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for the following types of actions or proceedings under Delaware statutory or common law unless we otherwise consent in writing to an alternative forum: (i) any derivative action or proceeding brought on behalf of us; (ii) any action asserting a claim of breach of fiduciary duty owed by, or otherwise wrongdoing by, any director, stockholder, officer or other employee of our company to us or our stockholders; (iii) any action asserting a claim arising pursuant to any provision of the DGCL or our amended and restated certificate of incorporation or bylaws (as each may be amended from time to time); (iv) any action to interpret, apply, enforce or determine the validity of the amended and restated certificate of incorporation or the bylaws (as each may be amended from time to time); or (v) any action asserting an internal corporate claim (as defined in Section 115 of the DGCL) or a claim otherwise implicating our internal affairs, except as to each of (i) through (v) above, any claim as to which the Court of Chancery determines that it does not have subject matter jurisdiction or there is an indispensable party not subject to the personal jurisdiction of the Court of Chancery (and the indispensable party does not consent to the personal jurisdiction of the Court of Chancery within ten (10) days following such determination), or which is statutorily vested in the exclusive jurisdiction of a court other than the Court of Chancery. For the avoidance of doubt, this provision would not apply to any direct action brought to enforce a duty or liability created by the Securities Act of 1933, as amended (the “Securities Act”) or any successor thereto or the Exchange Act. Furthermore, our amended and restated certificate of incorporation also provides that unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall be the exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. Any person or entity purchasing or otherwise acquiring any interest in our shares of capital stock shall be deemed to have notice of and consented to the foregoing forum selection provisions.

Our exclusive forum provision does not relieve us of our duties to comply with the federal securities laws and the rules and regulations thereunder, and our stockholders will not be deemed to have waived our compliance with these laws, rules and regulations.

This choice of forum provision may limit a Company stockholder’s ability to bring a claim in a judicial forum that stockholder finds favorable for disputes with the Company or any of our directors, officers, other employees or stockholders, which may discourage lawsuits with respect to such claims, although Company stockholders will not be deemed to have waived our compliance with federal securities laws and the rules and regulations thereunder. Alternatively, the enforceability of similar federal court choice of forum provisions in other companies’ certificates of incorporation has been challenged in legal proceedings, and it is possible that a court could find this type of provision to be inapplicable or unenforceable.

Delaware Takeover Statute

We are subject to Section 203 of the DGCL, an anti-takeover statute. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years following the time the person became an interested stockholder, unless (with certain exceptions) the business combination or the transaction in which the person became an interested stockholder is approved in a prescribed manner. Generally, a “business combination” includes a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested stockholder. Generally, an “interested stockholder” is a person who, together with affiliates and associates, owns (or within three years prior to the determination of interested stockholder status, did own) 15% or more of a corporation’s voting stock. The existence of this provision would be expected to have an anti-takeover effect with respect to transactions not approved in advance by the board of directors, including discouraging attempts that might result in a premium over the market price for the shares of common stock held by stockholders.

Stockholders owning individually or collectively, as of the date of instituting a derivative suit, at least 2% of the outstanding shares may maintain a derivative lawsuit to enforce the requirements that the board of directors will manage or direct our business and affairs in a manner that balances the pecuniary interests of the stockholders, the best interests of those materially affected by our conduct and the specific public benefits identified in our amended and restated certificate of incorporation.

Provisions of Our Certificate of Incorporation and Bylaws to be Adopted and Delaware Law That May Have an Anti-Takeover Effect

Provisions of the DGCL and our amended and restated certificate of incorporation and amended and restated bylaws could make it more difficult to acquire our company by means of a tender offer, a proxy contest or otherwise or to remove incumbent officers and directors. These provisions, summarized above, are intended to discourage coercive takeover practices and inadequate takeover bids and to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of these provisions outweigh the disadvantages of discouraging certain takeover or acquisition proposals because, among other things, negotiation of these proposals could result in an improvement of their terms and enhance the ability of our board of directors to maximize stockholder value. However, these provisions may delay, deter or prevent a merger or acquisition of us that a stockholder might consider is in its best interest, including those attempts that might result in a premium over the prevailing market price of our common stock.

Public Benefit Corporation Status

In connection with our initial public offering, we converted to a public benefit corporation incorporated in Delaware as a demonstration of our long-term commitment to our mission to displace the petrochemicals that pollute the Planet by designing, developing, and commercializing bio-based materials that deliver better performance than existing products, at attractive costs. We make products with broad applications and global reach that are safer for the people who manufacture them, healthier for the people who use them and better for the environment.

Public benefit corporations are intended to produce a public benefit and to operate in a responsible and sustainable manner. Under the DGCL, public benefit corporations are required to identify in their certificate of incorporation the public benefit or benefits they will promote. As provided in our amended and restated certificate of incorporation, our public benefit is: *to displace the petrochemicals that pollute the Planet by designing, developing, and commercializing bio-based materials that deliver better performance than existing products, at attractive costs. We make products with broad applications and global reach that are safer for the people who manufacture them, healthier for the people who use them and better for the environment.* Public benefit corporation directors have a duty to manage the affairs of the corporation in a manner that balances the pecuniary interests of the stockholders, the best interests of those materially affected by the corporation's conduct and the specific public benefit or public benefits identified in the public benefit corporation's certificate of incorporation. Public benefit corporations organized in Delaware are also required to publicly disclose at least biennially a report that assesses their benefit performance. In connection with this report, our board of directors is required to set objectives and standards to assess our benefit performance and to assess our performance based on those standards. While a Delaware public benefit corporation may provide in its certificate of incorporation that it will measure the corporation's benefit performance against an objective third-party standard, our certificate of incorporation does not contain that requirement.

Holders of our common stock have voting, dividend and other economic rights that are the same as the rights of stockholders of a corporation that is not designated as a public benefit corporation.

Subject to the amendment provisions in our amended and restated certificate of incorporation, stockholders representing a majority of the voting power of our then outstanding capital stock entitled to vote generally in the election of directors, voting as a single class, must vote to amend our amended and restated certificate of incorporation to delete or amend the requirements of our public benefit purpose.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC. Its address is 6201 15th Avenue, Brooklyn, New York 11219.

Listing on The Nasdaq Global Select Market

Our common stock is listed on The Nasdaq Global Select Market under the symbol "ZY".

DESCRIPTION OF DEPOSITARY SHARES REPRESENTING PREFERRED STOCK

The applicable prospectus supplement will include further description of the material terms of any depositary shares representing preferred stock offered hereby.

General

We may, at our option, elect to offer fractional shares of preferred stock, or depositary shares, rather than full shares of preferred stock. If we do, we will issue to the public receipts, called depositary receipts, for depositary shares, each of which will represent a fraction, to be described in the applicable prospectus supplement, of a share of a particular series of preferred stock. Unless otherwise provided in the prospectus supplement, each owner of a depositary share will be entitled, in proportion to the applicable fractional interest in a share of preferred stock represented by the depositary share, to all the rights and preferences of the preferred stock represented by the depositary share. Those rights include dividend, voting, redemption, conversion and liquidation rights.

The shares of preferred stock underlying the depositary shares will be deposited with a bank or trust company selected by us to act as depositary under a deposit agreement between us, the depositary and the holders of the depositary receipts. The depositary will be the transfer agent, registrar and dividend disbursing agent for the depositary shares.

The depositary shares will be evidenced by depositary receipts issued pursuant to the depositary agreement. Holders of depositary receipts agree to be bound by the deposit agreement, which requires holders to take certain actions such as filing proof of residence and paying certain charges.

The summary of terms of the depositary shares contained in this prospectus is not complete. You should refer to the form of the deposit agreement, our amended and restated certificate of incorporation and the certificate of designation for the applicable series of preferred stock that are, or will be, filed with the SEC.

Dividends and Other Distributions

The depositary will distribute all cash dividends or other cash distributions, if any, received in respect of the preferred stock underlying the depositary shares to the record holders of depositary shares in proportion to the numbers of depositary shares owned by those holders on the relevant record date. The relevant record date for depositary shares will be the same date as the record date for the underlying preferred stock.

If there is a distribution other than in cash, the depositary will distribute property (including securities) received by it to the record holders of depositary shares, unless the depositary determines that it is not feasible to make the distribution. If this occurs, the depositary may, with our approval, adopt another method for the distribution, including selling the property and distributing the net proceeds from the sale to the holders.

Liquidation Preference

If a series of preferred stock underlying the depositary shares has a liquidation preference, in the event of the voluntary or involuntary liquidation, dissolution or winding up of us, holders of depositary shares will be entitled to receive the fraction of the liquidation preference accorded each share of the applicable series of preferred stock, as set forth in the applicable prospectus supplement.

Withdrawal of Stock

Unless the related depositary shares have been previously called for redemption, upon surrender of the depositary receipts at the office of the depositary, the holder of the depositary shares will be entitled to delivery, at the office of the depositary to or upon his or her order, of the number of whole shares of the preferred stock and any money or other property represented by the depositary shares. If the depositary receipts delivered by the holder evidence a number of depositary shares in excess of the number of depositary shares representing the number of whole shares of preferred stock to be withdrawn, the depositary will deliver to the holder at the same time a new depositary receipt evidencing the excess number of depositary shares. In no event will the depositary deliver fractional shares of preferred stock upon surrender of depositary receipts. Holders of preferred stock thus withdrawn may not thereafter deposit those shares under the deposit agreement or receive depositary receipts evidencing depositary shares therefor.

Redemption of Depositary Shares

Whenever we redeem shares of preferred stock held by the depositary, the depositary will redeem as of the same redemption date the number of depositary shares representing shares of the preferred stock so redeemed, so long as we have paid in full to the depositary the redemption price of the preferred stock to be redeemed plus an amount equal to any accumulated and unpaid dividends on the preferred stock to the date fixed for redemption. The redemption price per depositary share will be equal to the redemption price and any other amounts per share payable on the preferred stock multiplied by the fraction of a share of preferred stock represented by one depositary share. If less than all the depositary shares are to be redeemed, the depositary shares to be redeemed will be selected by lot or pro rata or by any other equitable method as may be determined by the depositary.

After the date fixed for redemption, depositary shares called for redemption will no longer be deemed to be outstanding and all rights of the holders of depositary shares will cease, except the right to receive the monies payable upon redemption and any money or other property to which the holders of the depositary shares were entitled upon redemption upon surrender to the depositary of the depositary receipts evidencing the depositary shares.

Voting the Preferred Stock

Upon receipt of notice of any meeting at which the holders of the preferred stock are entitled to vote, the depositary will mail the information contained in the notice of meeting to the record holders of the depositary receipts relating to that preferred stock. The record date for the depositary receipts relating to the preferred stock will be the same date as the record date for the preferred stock. Each record holder of the depositary shares on the record date will be entitled to instruct the depositary as to the exercise of the voting rights pertaining to the number of shares of preferred stock represented by that holder's depositary shares. The depositary will endeavor, insofar as practicable, to vote the number of shares of preferred stock represented by the depositary shares in accordance with those instructions, and we will agree to take all action that may be deemed necessary by the depositary in order to enable the depositary to do so. The depositary will not vote any shares of preferred stock except to the extent that it receives specific instructions from the holders of depositary shares representing that number of shares of preferred stock.

Charges of the Depositary

We will pay all transfer and other taxes and governmental charges arising solely from the existence of the depositary arrangements. We will pay charges of the depositary in connection with the initial deposit of the preferred stock and any redemption of the preferred stock. Holders of depositary receipts will pay transfer, income and other taxes and governmental charges and such other charges (including those in connection with the receipt and distribution of dividends, the sale or exercise of rights, the withdrawal of the preferred stock and the transferring, splitting or grouping of depositary receipts) as are expressly provided in the deposit agreement to be for their accounts. If these charges have not been paid by the holders of depositary receipts, the depositary may refuse to transfer depositary shares, withhold dividends and distributions and sell the depositary shares evidenced by the depositary receipt.

Amendment and Termination of the Deposit Agreement

The form of depositary receipt evidencing the depositary shares and any provision of the deposit agreement may be amended by agreement between us and the depositary. However, any amendment that materially and adversely alters the rights of the holders of depositary shares, other than fee changes, will not be effective unless the amendment has been approved by the holders of a majority of the outstanding depositary shares. The deposit agreement may be terminated by the depositary or us only if:

- all outstanding depositary shares have been redeemed; or
- there has been a final distribution of the preferred stock in connection with our dissolution and such distribution has been made to all the holders of depositary shares.

Resignation and Removal of Depositary

The depositary may resign at any time by delivering to us notice of its election to do so, and we may remove the depositary at any time. Any resignation or removal of the depositary will take effect upon our appointment of a successor depositary and its acceptance of such appointment. The successor depositary must be appointed within 60 days after delivery of the notice of resignation or removal and must be a bank or trust company having its principal office in the United States and having the requisite combined capital and surplus as set forth in the applicable agreement.

Notices

The depositary will forward to holders of depositary receipts all notices, reports and other communications, including proxy solicitation materials received from us, that are delivered to the depositary and that we are required to furnish to the holders of the preferred stock. In addition, the depositary will make available for inspection by holders of depositary receipts at the principal office of the depositary, and at such other places as it may from time to time deem advisable, any reports and communications we deliver to the depositary as the holder of preferred stock.

Limitation of Liability

Neither we nor the depositary will be liable if either is prevented or delayed by law or any circumstance beyond its control in performing its obligations. Our obligations and those of the depositary will be limited to performance in good faith of our and its duties thereunder. We and the depositary will not be obligated to prosecute or defend any legal proceeding in respect of any depositary shares or preferred stock unless satisfactory indemnity is furnished. We and the depositary may rely upon written advice of counsel or accountants, on information provided by persons presenting preferred stock for deposit, holders of depositary receipts or other persons believed to be competent to give such information and on documents believed to be genuine and to have been signed or presented by the proper party or parties.

DESCRIPTION OF DEBT SECURITIES

This section describes certain general terms and provisions of the debt securities that we may offer under this prospectus. The debt securities may either be senior debt securities or subordinated debt securities. The debt securities will be issued under an indenture between Zymergen Inc. and a trustee to be identified in an accompanying prospectus supplement (the “trustee”). The debt securities may be issued in one or more series established in or pursuant to a board resolution and set forth in an officers’ certificate or supplemental indenture.

When we offer to sell a particular series of debt securities we will describe the specific terms for the securities in a supplement to this prospectus. The prospectus supplement will also indicate whether the general terms and provisions described in this prospectus apply to a particular series of debt securities.

We have summarized certain terms and provisions of the indenture. The summary is not complete. The form of indenture has been filed as an exhibit to the registration statement for these debt securities that we have filed with the SEC. You should read the indenture and applicable board resolution and officers’ certificate or supplemental indenture (including the form of debt security) relating to the applicable series of debt securities for the provisions which may be important to you. The indenture is subject to and governed by the Trust Indenture Act of 1939, as amended (the “Trust Indenture Act”).

General

The indenture will not limit the amount of debt securities that we may issue. We have the right to “reopen” a previous issue of a series of debt securities by issuing additional debt securities of such series. We may issue debt securities up to such aggregate principal amount as we may authorize from time to time. The senior debt securities will rank equally with all of our other senior unsecured and unsubordinated debt from time to time outstanding. The subordinated debt securities will be subordinate and junior in right of payment to all our senior indebtedness to the extent and in the manner described in the prospectus supplement and as set forth in the supplemental indenture, board resolution or officer’s certificate relating to such offering. Our secured debt, if any, will be effectively senior to the debt securities to the extent of the value of the assets securing such debt. The debt securities will be exclusively our obligations and not of our subsidiaries and therefore the debt securities will be structurally subordinate to the debt and liabilities of any of our subsidiaries. The prospectus supplement will describe the material terms and conditions of any debt securities we may offer, including, as applicable, the following:

- the title;
- any limit upon the aggregate principal amount;
- the date or dates on which the principal is payable;
- the rate or rates at which the debt securities shall bear interest, if any, or the method by which such rate shall be determined;
- the date or dates from which interest shall accrue;
- the date or dates on which interest shall be payable;
- the record dates for the determination of holders to whom interest is payable;
- the right, if any, to extend the interest payment periods and the duration of such extension;
- the place or places where the principal of and any interest shall be payable;
- the terms, if any, pursuant to which any debt securities will be subordinate to any of our other debt;
- the price or prices at which, the period or periods within which and the terms and conditions upon which debt securities may be redeemed;

- our obligation, if any, to redeem, purchase or repay the debt securities pursuant to any sinking fund or otherwise or at the option of a holder thereof;
- if applicable, the price or prices at which and the period or periods within which and the terms and conditions upon which the debt securities shall be redeemed, purchased or repaid, in whole or in part;
- if other than denominations of \$1,000 and any multiple thereof, the denominations in which the debt securities of the series shall be issuable;
- the percentage of the principal amount at which the debt securities will be issued and, if other than the principal amount thereof, the portion of such principal amount that shall be payable upon declaration of acceleration of the maturity thereof or provable in bankruptcy;
- any and all other terms of the series, including any terms that may be required by or advisable under U.S. law or regulations or advisable in connection with the marketing of the debt securities;
- whether the debt securities are issuable as global securities or definitive certificates and, in the case of global securities, the identity of the depository;
- any deletion from, modification of or addition to the events of default or covenants;
- any provisions granting special rights to holders when a specified event occurs;
- whether and under what circumstances we will pay additional amounts on the debt securities held by a person who is not a U.S. person in respect of any tax, assessment or governmental charge withheld or deducted;
- any special tax implications of the notes;
- any trustees, authenticating or paying agents, transfer agents or registrars or any other agents with respect to the debt securities;
- any guarantors or co-issuers, including whether any of our direct or indirect subsidiaries will guarantee the debt securities;
- any special interest premium or other premium;
- whether the debt securities are convertible or exchangeable into common stock or other of our equity securities and the terms and conditions upon which such conversion or exchange shall be effected; and
- the currency in which payments shall be made, if other than U.S. dollars.

Subordination

The prospectus supplement, if any, relating to any offering of subordinated debt securities will describe the specific subordination provisions, including the extent of subordination of payments by us of the principal of, premium, if any, and interest on such subordinated debt securities.

Events of Default

When we use the term “Event of Default” in the indenture with respect to the debt securities of any series here are some examples of what we mean:

- (1) default in paying interest on the debt securities when it becomes due and the default continues for a period of 30 days or more;
- (2) default in paying principal, or premium, if any, on the debt securities when due;
- (3) failure to make sinking fund payments when due;
- (4) default in the performance, or breach, of any covenant in the indenture (other than defaults specified in clause (1) or (2) above) and the default or breach continues for a period of 90 days or more after there has been given to us a written notice from the trustee or there has been given to us and the trustee a written

notice from the holders of at least 25% in aggregate principal amount of the outstanding debt securities of the series;

- (5) certain events of bankruptcy, insolvency, reorganization, administration or similar proceedings with respect to us or any material subsidiary has occurred; or
- (6) any other Events of Default set forth in a prospectus supplement relating to such series of debt securities.

If an Event of Default under the indenture specified in clause (1) or (2) occurs and is continuing with respect to any series of debt securities, then the trustee may and, at the direction of the holders of at least 25% in principal amount of each affected series of debt securities, will by written notice, require us to repay immediately the entire principal amount of all outstanding securities of each affected series, together with all accrued and unpaid interest and premium, if any.

If an Event of Default under the indenture specified in clause (3) or (4) occurs and is continuing with respect to all series of senior debt securities or all series of subordinated debt securities, as the case may be, then the trustee may and, at the direction of the holders of at least 25% in principal amount of all of the series of senior debt securities or all series of subordinated debt securities, as the case may be, then outstanding, will by written notice, require us to repay immediately the entire principal amount of the outstanding debt securities of all of the series of senior debt securities or all of the series of subordinated debt securities, as the case may be, together with all accrued and unpaid interest and premium, if any.

However, if an Event of Default under the indenture specified in clause (3) or (4) occurs and is continuing with respect to less than all series of senior debt securities or less than all series of subordinated debt securities, as the case may be, then the trustee may and, at the direction of the holders of at least 25% in principal amount of each affected series of senior debt securities or subordinated debt securities, as the case may be, then outstanding (each such series voting as a separate class), will by written notice, require us to repay immediately the entire principal amount of all debt securities of such affected series, together with all accrued and unpaid interest and premium, if any.

If an Event of Default under the indenture specified in clause (5) with respect to us occurs and is continuing, then the entire principal amount of the outstanding debt securities will automatically become due immediately and payable without any declaration or other act on the part of the trustee or any holder.

After a declaration of acceleration or any automatic acceleration under clause (5) described above, the holders of a majority in principal amount of outstanding debt securities of any series may rescind this accelerated payment requirement if all existing Events of Default, except for nonpayment of the principal and interest on the debt securities of that series that has become due solely as a result of the accelerated payment requirement, have been cured or waived and if the rescission of acceleration would not conflict with any judgment or decree. The holders of a majority in principal amount of the outstanding debt securities of any series also have the right to waive past defaults, except a default in paying principal or interest on any outstanding debt security, or in respect of a covenant or a provision that cannot be modified or amended without the consent of all holders of the debt securities of that series.

Holders of at least 25% in principal amount of the outstanding debt securities of a series may seek to institute a proceeding only after they have made written request, and offered such indemnity as the trustee may reasonably require, to the trustee to institute a proceeding and the trustee has failed to do so within 60 days after it received this notice. In addition, within this 60-day period, the trustee must not have received directions inconsistent with this written request by holders of a majority in principal amount of the outstanding debt securities of that series. These limitations do not apply, however, to a suit instituted by a holder of a debt security for the enforcement of the payment of principal, interest or any premium on or after the due dates for such payment.

During the existence of an Event of Default of which a responsible officer of the trustee has actual knowledge or has received at the corporate trust office written notice from us or any holder of the debt securities, the trustee is required to exercise the rights and powers vested in it under the indenture and use the same degree of care and skill in its exercise as a prudent person would under the circumstances in the conduct of that person's own affairs. If an Event of Default has occurred and is continuing, the trustee is not under any obligation to exercise any of its rights or powers at the request or direction of any of the holders unless the holders have offered to the trustee such security or indemnity as the trustee may reasonably require. Subject to certain provisions, the holders of a majority in principal amount of the outstanding debt securities of any series have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, or exercising any trust, or power conferred on the trustee.

The trustee will, within 45 days after any default occurs, give notice of the default to the holders of the debt securities of that series, unless the default was already cured or waived. Unless there is a default in paying principal, interest or any premium when due, the trustee can withhold giving notice to the holders if it determines in good faith that the withholding of notice is in the interest of the holders.

We are required to furnish to the trustee an annual statement as to compliance with all conditions and covenants under the indenture.

Modification and Waiver

We and the trustee may amend or modify the indenture or the debt securities without the consent of any holder of debt securities in order to:

- cure ambiguities, mistake defects or inconsistencies;
- provide for the assumption of our obligations in the case of a merger or consolidation and our discharge upon such assumption;
- make any change that would provide any additional rights or benefits to the holders of the debt securities of a series;
- provide for or add guarantors with respect to the debt securities of any series;
- secure the debt securities of a series;
- establish the form or forms of debt securities of any series;
- maintain the qualification of the indenture under the Trust Indenture Act;
- conform any provision in the indenture to this "Description of Debt Securities"; or
- make any change that does not adversely affect the rights of any holder in any material respect.

Other amendments and modifications of the indenture or the debt securities may be made with the consent of the holders of not less than a majority of the aggregate principal amount of the outstanding debt securities of each series affected by the amendment or modification (voting as one class), and our compliance with any provision of the indenture with respect to any series of debt securities may be waived by written notice to the trustee by the holders of a majority of the aggregate principal amount of the outstanding debt securities of each series affected by the waiver (voting as one class). However, no modification or amendment may, without the consent of the holder of each outstanding debt security affected:

- reduce the principal amount, or extend the fixed maturity, of the debt securities, or alter or waive the redemption provisions of the debt securities;
- change the currency in which principal, any premium or interest is paid;
- reduce the percentage in principal amount outstanding of debt securities of any series that must consent to an amendment, supplement or waiver or consent to take any action;
- impair the right to institute suit for the enforcement of any payment on the debt securities;

- modify any of the subordination provisions or the definition of senior indebtedness applicable to any subordinated debt securities in a manner adverse to the holders of those securities;
- waive a payment default with respect to the debt securities or any guarantor;
- reduce the interest rate or extend the time for payment of interest on the debt securities; or
- adversely affect the ranking of the debt securities of any series.

Certain Covenants

Principal and Interest

We covenant to pay the principal of and interest on the debt securities when due and in the manner provided in the indenture.

Consolidation, Merger or Sale of Assets

We will not consolidate or combine with or merge with or into or, directly or indirectly, sell, assign, convey, lease, transfer or otherwise dispose of all or substantially all of our assets to any person or persons in a single transaction or through a series of transactions, unless:

- we shall be the continuing person or, if we are not the continuing person, the resulting, surviving or transferee person (the “surviving entity”) is a company organized and existing under the laws of the United States or any State or territory;
- the surviving entity will expressly assume all of our obligations under the debt securities and the indenture, and will execute a supplemental indenture in form reasonably satisfactory to the trustee;
- immediately after giving effect to such transaction or series of transactions on a pro forma basis, no default has occurred and is continuing; and
- we or the surviving entity will have delivered to the trustee an officers’ certificate and opinion of counsel stating that the transaction or series of transactions and the supplemental indenture, if any, complies with this covenant and that all conditions precedent in the indenture relating to the transaction or series of transactions have been satisfied.

The restrictions in the third and fourth bullets shall not be applicable to:

- the merger or consolidation of us with an affiliate of ours if our board of directors determines in good faith that the purpose of such transaction is principally to change our state of incorporation or convert our form of organization to another form; or
- the merger of us with or into a single direct or indirect wholly-owned subsidiary of ours pursuant to Section 251(g) (or any successor provision) of the General Corporation Law of the State of Delaware.

If any consolidation or merger or any sale, assignment, conveyance, lease, transfer or other disposition of all or substantially all our assets occurs in accordance with the indenture, the surviving entity will succeed to, and be substituted for, and may exercise every right and power of ours under the indenture with the same effect as if such surviving entity had been named in our place in the indenture. We will (except in the case of a lease) be discharged from all obligations and covenants under the indenture and any debt securities issued thereunder.

Satisfaction, Discharge and Covenant Defeasance

We may terminate our obligations under the indenture when:

- either of the following occur:
 - all the debt securities of any series issued that have been authenticated and delivered have been accepted by the trustee for cancellation; or
 - all the debt securities of any series issued that have not been accepted by the trustee for cancellation have become due and payable or will become due and payable within one year (a “discharge”) or are to be called for redemption within one year and we have made irrevocable arrangements satisfactory to

the trustee for the giving of notice of redemption by such trustee in our name, and at our expense, and in all cases we have irrevocably deposited or caused to be deposited with the trustee sufficient funds to pay and discharge the entire indebtedness on the series of debt securities to pay principal, interest and any premium;

- we have paid or caused to be paid all other sums then due and payable under the indenture; and
- we have delivered to the trustee an officers' certificate and an opinion of counsel each stating that all conditions precedent under the indenture relating to the satisfaction and discharge of the indenture have been complied with.

We may elect to have our obligations under the indenture discharged with respect to the outstanding debt securities of any series (a "legal defeasance"). Legal defeasance means that we will be deemed to have paid and discharged the entire indebtedness represented by the outstanding debt securities of such series under the indenture, except for:

- the rights of holders of the debt securities to receive principal, interest and any premium when due;
- our obligations with respect to the debt securities concerning issuing temporary debt securities, registration of transfer of debt securities, mutilated, destroyed, lost or stolen debt securities and the maintenance of an office or agency for payment for debt securities payments held in trust;
- the rights, powers, trusts, duties and immunities of the trustee; and
- the defeasance provisions of the indenture.

In addition, we may elect to have our obligations released with respect to certain covenants in the indenture (a "covenant defeasance"). Any failure to comply with these obligations will not constitute a default or an event of default with respect to the debt securities of any series. In the event covenant defeasance occurs, certain events, not including non-payment, bankruptcy and insolvency events, described under "Events of Default" will no longer constitute an event of default for that series.

In order to exercise either legal defeasance or covenant defeasance with respect to outstanding debt securities of any series:

- we must irrevocably have deposited or caused to be deposited with the trustee as trust funds for the purpose of making the following payments, specifically pledged as security for, and dedicated solely to the benefits of the holders of the debt securities of a series:
 - cash;
 - U.S. Government obligations; or
 - a combination of cash and U.S. Government obligations,
- in each case sufficient without reinvestment, in the written opinion of an internationally recognized firm of independent public accountants to pay and discharge, and which shall be applied by the trustee to pay and discharge, all of the principal, interest and any premium at due date or maturity or if we have made irrevocable arrangements satisfactory to the trustee for the giving of notice of redemption by the trustee in our name and at our expense, the redemption date;
- in the case of legal defeasance, we must have delivered to the trustee an opinion of counsel stating that, as a result of an Internal Revenue Service ruling or a change in applicable federal income tax law, the holders of the debt securities of that series will not recognize gain or loss for federal income tax purposes as a result of the deposit, defeasance and discharge to be effected and will be subject to the same federal income tax as would be the case if the deposit, defeasance and discharge did not occur;
- in the case of covenant defeasance, we must have delivered to the trustee an opinion of counsel to the effect that the holders of the debt securities of that series will not recognize gain or loss for U.S. federal income tax purposes as a result of the deposit and covenant defeasance to be effected and will be subject to the same federal income tax as would be the case if the deposit and covenant defeasance did not occur;

- no default with respect to the outstanding debt securities of that series has occurred and is continuing at the time of such deposit after giving effect to the deposit or, in the case of legal defeasance, no default relating to bankruptcy or insolvency has occurred and is continuing at any time on or before the 91st day after the date of such deposit, it being understood that this condition is not deemed satisfied until after the 91st day;
- the legal defeasance or covenant defeasance will not cause the trustee to have a conflicting interest within the meaning of the Trust Indenture Act, assuming all debt securities of a series were in default within the meaning of the Trust Indenture Act;
- the legal defeasance or covenant defeasance will not result in a breach or violation of, or constitute a default under, any other agreement or instrument to which we are a party;
- the legal defeasance or covenant defeasance will not result in the trust arising from such deposit constituting an investment company within the meaning of the Investment Company Act of 1940, as amended (the “Investment Company Act”), unless the trust is registered under the Investment Company Act or exempt from registration; and
- we have delivered to the trustee an officers’ certificate and an opinion of counsel stating that all conditions precedent with respect to the defeasance or covenant defeasance have been complied with.

Unclaimed Funds

All funds deposited with the trustee or any paying agent for the payment of principal, interest, premium or additional amounts in respect of the debt securities that remain unclaimed for two years after the maturity date of such debt securities will be repaid to us upon our request. Thereafter, any right of any noteholder to such funds shall be enforceable only against us, and the trustee and paying agents will have no liability therefor.

Governing Law

The indenture and the debt securities for all purposes shall be governed by and construed in accordance with the laws of the State of New York.

DESCRIPTION OF WARRANTS

This section describes certain general terms and provisions of the warrants that we may offer under this prospectus. We may issue warrants to purchase our debt or equity securities or securities of third parties or other rights, including rights to receive payment in cash or securities based on the value, rate or price of one or more specified commodities, currencies, securities or indices, or any combination of the foregoing. Warrants may be issued independently or together with any other securities and may be attached to, or separate from, such securities. Each series of warrants will be issued under a separate warrant agreement to be entered into between us and a warrant agent. The terms of any warrants to be issued and a description of the material provisions of the applicable warrant agreement will be set forth in the applicable prospectus supplement.

The applicable prospectus supplement will describe the material terms and conditions of any warrants that we may offer, including, as applicable, the following:

- the title of such warrants;
- the aggregate number of such warrants;
- the price or prices at which such warrants will be issued;
- the currency or currencies in which the price of such warrants will be payable;
- the securities or other rights, including rights to receive payment in cash or securities based on the value, rate or price of one or more specified commodities, currencies, securities or indices, or any combination of the foregoing, purchasable upon exercise of such warrants;
- whether the warrants are to be sold separately or with other securities as parts of units;
- whether the warrants will be issued in definitive or global form or in any combination of these forms, although, in any case, the form of a warrant included in a unit will correspond to the form of the unit and of any security included in that unit;
- the price at which and the currency or currencies in which the securities or other rights purchasable upon exercise of such warrants may be purchased;
- the date on which the right to exercise such warrants shall commence and the date on which such right shall expire;
- if applicable, the minimum or maximum amount of such warrants which may be exercised at any one time;
- if applicable, the designation and terms of the securities with which such warrants are issued and the number of such warrants issued with each such security;
- if applicable, the date on and after which such warrants and the related securities will be separately transferable;
- information with respect to book-entry procedures, if any;
- the identity of the warrant agent for the warrants and of any other depositaries, execution or paying agents, transfer agents, registrars or other agents;
- the antidilution provisions, and other provisions for changes to or adjustment in the exercise price, of the warrants, if any;
- any redemption or call provisions;
- if applicable, a discussion of any material United States Federal income tax considerations; and

- any other terms of such warrants, including terms, procedures and limitations relating to the exchange and exercise of such warrants.

DESCRIPTION OF PURCHASE CONTRACTS

This section describes certain general terms and provisions of the purchase contracts that we may offer under this prospectus. Although the features we have summarized below will generally apply to any future purchase contracts we may offer under this prospectus, we will describe the particular terms of any purchase contracts that we may offer in more detail in the applicable prospectus supplement. We may issue purchase contracts for the sale of:

- debt or equity securities issued by us or securities of third parties, a basket of such securities, an index or indices of such securities or any combination of the above as specified in the applicable prospectus supplement;
- currencies; or
- commodities.

The specific terms of any purchase contracts may differ from the description provided below as a result of negotiations with third parties in connection with the issuance of those purchase contracts, as well as for other reasons. Because the terms of any purchase contracts we offer under a prospectus supplement may differ from the terms we describe below, you should rely solely on information in the applicable prospectus supplement if that summary is different from the summary in this prospectus.

We will incorporate by reference into the registration statement of which this prospectus is a part the form of any purchase contract that we may offer under this prospectus before the sale of the related purchase contract. We urge you to read any applicable prospectus supplement related to specific purchase contracts being offered, as well as the complete instruments that contain the terms of the securities that are subject to those purchase contracts. Certain of those instruments, or forms of those instruments, have been filed as exhibits to the registration statement of which this prospectus is a part, and supplements to those instruments or forms may be incorporated by reference into the registration statement of which this prospectus is a part from reports we file with the SEC.

We may issue purchase contracts, including contracts obligating holders to purchase from us, and obligating us to sell to holders, a specific or variable number of securities or other property at a future date or dates. Alternatively, the purchase contracts may obligate us to purchase from holders, and obligate holders to sell to us, a specific or varying number of securities or other property at a future date or dates.

If we offer any purchase contracts, certain terms of such purchase contracts will be described in the applicable prospectus supplement, including, without limitation, the following:

- the price of the securities or other property subject to the purchase contracts (which may be determined by reference to a specific formula described in the purchase contracts);
- whether the purchase contracts are issued separately, or as a part of units each consisting of a purchase contract and one or more other securities, including U.S. Treasury securities, securing the holder's obligations under the purchase contract;
- any requirement for us to make periodic payments to holders or vice versa, and whether the payments are unsecured or pre-funded;
- any provisions relating to any security provided for the purchase contracts;
- whether the purchase contracts obligate the holder or us to purchase or sell, or both purchase and sell, the securities or other property subject to purchase under the purchase contract, and the nature and amount of each of those securities, or the method of determining those amounts;
- whether the purchase contracts are to be prepaid or not;
- whether the purchase contracts are to be settled by delivery, or by reference or linkage to the value, performance or level of the securities or other property subject to purchase under the purchase contract;
- any acceleration, cancellation, termination or other provisions relating to the settlement of the purchase contracts;

- a discussion of certain U.S. federal income tax considerations applicable to the purchase contracts;
- whether the purchase contracts will be issued in fully registered or global form; and
- any other terms of the purchase contracts and any securities subject to such purchase contracts.

DESCRIPTION OF UNITS

This section describes certain general terms and provisions of the units that we may offer under this prospectus. As specified in the applicable prospectus supplement, we may issue units consisting of one or more purchase contracts, warrants, debt securities, shares of preferred stock, shares of common stock, depositary shares or any combination of such securities. The applicable supplement will describe the material terms of the units that we may offer, including, as applicable, the following:

- the terms of the units and of the other securities comprising the units, including whether and under what circumstances the securities comprising the units may be traded separately;
- a description of the terms of any unit agreement governing the units; and
- a description of the provisions for the payment, settlement, transfer or exchange of the units.

FORMS OF SECURITIES

Unless we indicate differently in an applicable prospectus supplement, each debt security, warrant and unit we may issue under this prospectus will be represented either by a certificate issued in definitive form to a particular investor or by one or more global securities representing the entire issuance of securities. Certificated securities in definitive form and global securities will be issued in registered form. Definitive securities name you or your nominee as the owner of the security, and in order to transfer or exchange these securities or to receive payments other than interest or other interim payments, you or your nominee must physically deliver the securities to the trustee, registrar, paying agent or other agent, as applicable. Global securities name a depositary or its nominee as the owner of the debt securities, warrants or units represented by these global securities. The depositary maintains a computerized system that will reflect each investor's beneficial ownership of the securities through an account maintained by the investor with its broker/dealer, bank, trust company or other representative, as we explain more fully below.

Global Securities

We may issue the registered debt securities, warrants and units in the form of one or more fully registered global securities that will be deposited with a depositary or its nominee identified in the applicable prospectus supplement and registered in the name of that depositary or nominee. In those cases, one or more registered global securities will be issued in a denomination or aggregate denominations equal to the portion of the aggregate principal or face amount of the securities to be represented by registered global securities. Unless and until it is exchanged in whole for securities in definitive registered form, a registered global security may not be transferred except as a whole by and among the depositary for the registered global security, the nominees of the depositary or any successors of the depositary or those nominees.

If not described below, any specific terms of the depositary arrangement with respect to any securities to be represented by a registered global security will be described in the prospectus supplement relating to those securities. We anticipate that the following provisions will apply to all depositary arrangements.

Ownership of beneficial interests in a registered global security will be limited to persons, called participants, that have accounts with the depositary or persons that may hold interests through participants. Upon the issuance of a registered global security, the depositary will credit, on its book-entry registration and transfer system, the participants' accounts with the respective principal or face amounts of the securities beneficially owned by the participants. Any dealers, underwriters or agents participating in the distribution of the securities will designate the accounts to be credited. Ownership of beneficial interests in a registered global security will be shown on, and the transfer of ownership interests will be effected only through, records maintained by the depositary, with respect to interests of participants, and on the records of participants, with respect to interests of persons holding through participants. The laws of some states may require that some purchasers of securities take physical delivery of these securities in definitive form. These laws may impair your ability to own, transfer or pledge beneficial interests in registered global securities.

So long as the depositary, or its nominee, is the registered owner of a registered global security, that depositary or its nominee, as the case may be, will be considered the sole owner or holder of the securities represented by the registered global security for all purposes under the applicable indenture, warrant agreement or unit agreement. Except as described below, owners of beneficial interests in a registered global security will not be entitled to have the securities represented by the registered global security registered in their names, will not receive or be entitled to receive physical delivery of the securities in definitive form and will not be considered the owners or holders of the securities under the applicable indenture, warrant agreement or unit agreement. Accordingly, each person owning a beneficial interest in a registered global security must rely on the procedures of the depositary for that registered global security and, if that person is not a participant, on the procedures of the participant through which the person owns its interest, to exercise any rights of a holder under the applicable indenture, warrant agreement or unit agreement. We understand that under existing industry practices, if we request any action of holders or if an owner of a beneficial interest in a registered global security desires to give or take any action that a holder is entitled to give or take under the applicable indenture, warrant agreement or unit agreement, the depositary for the registered global

security would authorize the participants holding the relevant beneficial interests to give or take that action, and the participants would authorize beneficial owners owning through them to give or take that action or would otherwise act upon the instructions of beneficial owners holding through them.

Principal, premium, if any, and interest payments on debt securities, and any payments to holders with respect to warrants or units, represented by a registered global security registered in the name of a depository or its nominee will be made to the depository or its nominee, as the case may be, as the registered owner of the registered global security. None of Zymergen, the trustee, any warrant agent, unit agent or any other agent of Zymergen, or any of their respective agents will have any responsibility or liability for any aspect of the records relating to payments made on account of beneficial ownership interests in the registered global security or for maintaining, supervising or reviewing any records relating to those beneficial ownership interests.

We expect that the depository for any of the securities represented by a registered global security, upon receipt of any payment of principal, premium, interest or other distribution of underlying securities or other property to holders on that registered global security, will immediately credit participants' accounts in amounts proportionate to their respective beneficial interests in that registered global security as shown on the records of the depository. We also expect that payments by participants to owners of beneficial interests in a registered global security held through participants will be governed by standing customer instructions and customary practices, as is now the case with the securities held for the accounts of customers in bearer form or registered in "street name," and will be the responsibility of those participants.

If the depository for any of these securities represented by a registered global security is at any time unwilling or unable to continue as depository or ceases to be a clearing agency registered under the Exchange Act, and a successor depository registered as a clearing agency under the Exchange Act is not appointed by us within 90 days, we will issue securities in definitive form in exchange for the registered global security that had been held by the depository. Any securities issued in definitive form in exchange for a registered global security will be registered in the name or names that the depository gives to the relevant trustee, warrant agent, unit agent or other relevant agent of ours or theirs. It is expected that the depository's instructions will be based upon directions received by the depository from participants with respect to ownership of beneficial interests in the registered global security that had been held by the depository. In addition, we may at any time determine that the securities of any series shall no longer be represented by a global security and will issue securities in definitive form in exchange for such global security pursuant to the procedure described above.

PLAN OF DISTRIBUTION

We may sell any of the securities described in this prospectus in the following manner or any manner specified in a prospectus supplement:

- directly to purchasers, through a specific bidding or auction process or otherwise;
- through agents;
- to or through underwriters;
- through dealers; and
- through a combination of any of the foregoing methods of sale.

We may directly solicit offers to purchase securities, or agents may be designated to solicit such offers. We will, in the prospectus supplement relating to such offering, name any agent that could be viewed as an underwriter under the Securities Act, and describe any commissions that we must pay. Any such agent will be acting on a best efforts basis for the period of its appointment or, if indicated in the applicable prospectus supplement, on a firm commitment basis. Agents, dealers and underwriters may be customers of, engage in transactions with, or perform services for us in the ordinary course of business.

If any underwriters or agents are utilized in the sale of the securities in respect of which this prospectus is delivered, we will enter into an underwriting agreement or other agreement with them at the time of sale to them, and we will set forth in the prospectus supplement relating to such offering the names of the underwriters or agents and the terms of the related agreement with them.

If a dealer is utilized in the sale of the securities in respect of which the prospectus is delivered, we will sell such securities to the dealer, as principal. The dealer may then resell such securities to the public at varying prices to be determined by such dealer at the time of resale.

Remarketing firms, agents, underwriters and dealers may be entitled under agreements which they may enter into with us to indemnification by us against certain civil liabilities, including liabilities under the Securities Act, and may be customers of, engage in transactions with or perform services for us in the ordinary course of business.

In order to facilitate the offering of the securities, any underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the securities or any other securities the prices of which may be used to determine payments on such securities. Specifically, any underwriters may overallocate in connection with the offering, creating a short position for their own accounts. In addition, to cover overallocations or to stabilize the price of the securities or of any such other securities, the underwriters may bid for, and purchase, the securities or any such other securities in the open market. Finally, in any offering of the securities through a syndicate of underwriters, the underwriting syndicate may reclaim selling concessions allowed to an underwriter or a dealer for distributing the securities in the offering if the syndicate repurchases previously distributed securities in transactions to cover syndicate short positions, in stabilization transactions or otherwise. Any of these activities may stabilize or maintain the market price of the securities above independent market levels. Any such underwriters are not required to engage in these activities and may end any of these activities at any time.

Any underwriter, agent or dealer utilized in the initial offering of securities will not confirm sales to accounts over which it exercises discretionary authority without the prior specific written approval of its customer.

VALIDITY OF SECURITIES

In connection with particular offerings of the securities in the future, and if stated in the applicable prospectus supplements, the validity of those securities will be passed on for us by Freshfields Bruckhaus Deringer US LLP. Additional legal matters may be passed on for us, or for any underwriters, dealers or agents, by counsel named in the applicable prospectus supplement.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in our Annual Report on Form 10-K for the year ended December 31, 2021, as set forth in their report, which is incorporated by reference in this prospectus and elsewhere in the registration statement. Our financial statements are incorporated by reference in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

\$200,000,000



**COMMON STOCK
PREFERRED STOCK
DEPOSITARY SHARES
DEBT SECURITIES
WARRANTS
PURCHASE CONTRACTS
UNITS**

PROSPECTUS

, 2022

Part II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution

The following table sets forth the costs and expenses payable by the Registrant in connection with the sale of the securities being registered hereby.

	Amount to Be Paid
Registration fee	\$ 18,540
Financial Industry Regulatory Authority filing fee	30,500
Printing	*
Legal fees and expenses (including Blue Sky fees)	*
Trustee fees	*
Rating Agency fees	*
Accounting fees and expenses	*
Miscellaneous	*
TOTAL	*

* Omitted because these fees and expenses will depend on the securities offered and the number of issuances, and accordingly cannot be estimated at this time. The expenses of any offering will be set forth in the applicable prospectus supplement.

Item 15. Indemnification of Directors and Officers

Our amended and restated certificate of incorporation provides that, to the fullest extent permitted by the Delaware General Corporation Law (the "DGCL"), no director shall be personally liable to our company or its stockholders for monetary damages for breach of fiduciary duty as a director. Our amended and restated bylaws provide that each person who was or is party or is threatened to be made a party to, or was or is otherwise involved in, any threatened, pending or completed proceeding by reason of the fact that he or she is or was a director or officer of our company or was serving at the request of our company as a director, officer, employee, agent or trustee of another entity shall be indemnified and held harmless by us to the full extent authorized by the DGCL against all expense, liability and loss actually and reasonably incurred in connection therewith, subject to certain limitations.

Section 145(a) of the DGCL authorizes a corporation to indemnify any person who was or is a party, or is threatened to be made a party, to a threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation), by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by the person in connection with such action, suit or proceeding, if the person acted in good faith and in a manner the person reasonably believed to be in, or not opposed to, the best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe the person's conduct was unlawful.

Section 145(b) of the DGCL provides in relevant part that a corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor by reason of the fact that the person is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against expenses (including attorneys' fees) actually and reasonably incurred by the person in connection with the defense or settlement of such action or suit if the person acted in good faith and in a manner the person reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper.

The DGCL also provides that indemnification under Sections 145(a) and (b) can only be made upon a determination that indemnification of the present or former director, officer or employee or agent is proper in the circumstances because such person has met the applicable standard of conduct set forth in Sections 145(a) and (b). Such determination shall be made, with respect to a person who is a director or officer at the time of such determination, (1) by a majority vote of directors who are not a party to the action at issue (even though less than a quorum), (2) by a majority vote of a designated committee of these directors (even though less than a quorum), (3) if there are no such directors, or these directors authorize, by the written opinion of independent legal counsel or (4) by the stockholders.

Section 145(g) of the DGCL also empowers a corporation to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the corporation would have the power to indemnify such person against such liability under Section 145 of the DGCL. We maintain standard policies of insurance under which, subject to the limitations of the policies, coverage is provided (a) to our directors and officers against loss rising from claims made by reason of breach of duty or other wrongful acts as a director or officer, including claims relating to public securities matters and (b) to us with respect to payments which we may make to such officers and directors pursuant to our indemnification obligations or otherwise as a matter of law.

Section 102(b)(7) of the DGCL permits a corporation to provide for eliminating or limiting the personal liability of one of its directors for any monetary damages related to a breach of fiduciary duty as a director, as long as the corporation does not eliminate or limit the liability of a director for acts or omissions which (1) were in bad faith, (2) were the result of active and deliberate dishonesty and were material to the cause of action so adjudicated, (3) the director derived an improper personal benefit from (such as a financial profit or other advantage to which such director was not legally entitled) or (4) breached the director's duty of loyalty. We have entered into indemnification agreements with each of our executive officers and directors that provide, in general, that we will indemnify them to the fullest extent permitted by law in connection with their service to us or on our behalf. Certain of our non-employee directors may, through their relationships with their employers, be insured and/or indemnified against certain liabilities incurred in their capacity as members of our board of directors.

Any underwriting agreement or distribution agreement that we enter into with any underwriters or agents involved in the offering or sale of any securities registered hereby may require such underwriters or dealers to indemnify us, some or all of our directors and officers and our controlling persons, if any, for specified liabilities, which may include liabilities under the Securities Act of 1933, as amended.

Item 16. Exhibits and Financial Statement Schedules

(a) The following exhibits are filed as part of this Registration Statement:

Exhibit Number	Description	Incorporation by Reference			
		Form	File No.	Exhibit(s)	Filing Date
1.1†	Form of Underwriting Agreement				
3.1	Amended and Restated Certificate of Incorporation of Zymergen Inc.	8-K	001-40354	3.1	April 26, 2021
3.2	Amended and Restated Bylaws of Zymergen Inc.	8-K	001-40354	3.2	April 26, 2021
4.1	Amended and Restated Investors' Rights Agreement, dated July 29, 2020, by and among the Company and certain Investors listed therein.	S-1	333-254612	4.1	March 23, 2021
4.2	Form of Stock Certificate for Common Stock of the Registrant.	S-1	333-254612	4.2	March 23, 2021
4.3†	Form of Preferred Stock Certificate				
4.4*	Form of Indenture				
4.5†	Form of Warrant Agreement				
4.6†	Form of Purchase Contract				
4.7†	Form of Unit Agreement				
4.8†	Form of Depositary Agreement				
5.1*	Opinion of Freshfields Bruckhaus Deringer US LLP				
23.1*	Consent of Ernst & Young LLP				
23.2*	Consent of Freshfields Bruckhaus Deringer US LLP (included in Exhibit 5.1)				
24.1*	Power of Attorney (included on the signature page of the Registration Statement).				
25.1†	Statement of Eligibility of Trustee for Indenture on Form T-1.				
107*	Filing Fee Table				

* Filed herewith.

† To be filed, if necessary, by amendment or on a Current Report on Form 8-K in connection with the issuance of the applicable securities.

Item 17. Undertakings

(a) The undersigned Registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made of securities registered hereby, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered

(if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Securities and Exchange Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

- (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (i), (ii) and (iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Securities and Exchange Commission by the Registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:
 - (A) Each prospectus filed by the Registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and
 - (B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5) or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii) or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof, provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.
- (5) That, for the purpose of determining liability of the Registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities:
 - (a) The undersigned Registrant undertakes that in a primary offering of securities of the undersigned Registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned Registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
 - (i) Any preliminary prospectus or prospectus of the undersigned Registrant relating to the offering required to be filed pursuant to Rule 424;

- (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned Registrant or used or referred to by the undersigned Registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned Registrant or its securities provided by or on behalf of the undersigned Registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned Registrant to the purchaser.
- (b) The undersigned Registrant hereby undertakes to file an application for the purpose of determining the eligibility of the trustee to act under subsection (a) of Section 310 of the Trust Indenture Act in accordance with the rules and regulations prescribed by the Commission under Section 305(b)(2) of the Trust Indenture Act.
 - (c) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
 - (d) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrants pursuant to the foregoing provisions, or otherwise, the Registrants have been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrants will, unless in the opinion of their counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Emeryville, State of California, on May 12, 2022.

ZYMERGEN INC

By: /s/ Jay Flatley

Jay Flatley

Chairman and Acting Chief Executive
Officer

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints each of Jay Flatley, Enakshi Singh and Mina Kim, and each of them, as his or her true and lawful attorneys-in-fact and agents, each with full power to act separately and full power of substitution and resubstitution, for him and her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this registration statement and to file the same, with all exhibits thereto, and all other documents in connection therewith, with the Securities and Exchange Commission, granting unto each said attorney-in-fact and agent full power and authority to do and perform each and every act in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or either of them or his or their substitute or substitutes may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed by the following persons in the capacities, in the locations and on the dates indicated.

Name	Title	Date
/s/ Jay Flatley Jay Flatley	Chairman and Acting Chief Executive Officer (Principal Executive Officer)	May 12, 2022
/s/ Enakshi Singh Enakshi Singh	Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)	May 12, 2022
/s/ Sandra E. Peterson Sandra E. Peterson	Lead Independent Director	May 12, 2022
/s/ Steven Chu Steven Chu	Director	May 12, 2022
/s/ Christine M. Gorjanc Christine M. Gorjanc	Director	May 12, 2022
/s/ Travis Murdoch Travis Murdoch	Director	May 12, 2022
/s/ Matthew A. Ocko Matthew A. Ocko	Director	May 12, 2022
/s/ Zach Serber Zach Serber	Director	May 12, 2022
/s/ Rohit Sharma Rohit Sharma	Director	May 12, 2022

Calculation of Filing Fee Tables

FORM S-3
(Form Type)**ZYMERGEN INC.**

(Exact Name of Registrant as Specified in its Charter)

Table 1: Newly Registered Securities

	Security Type	Security Class Title	Fee Calculation Rule	Amount Registered	Proposed Maximum Offering Price Per Share	Maximum Aggregate Offering Price	Fee Rate	Amount of Registration Fee
Fees to Be Paid	Equity	Common Stock, par value \$0.001 per share					—	—
	Equity	Preferred Stock, par value \$0.001 per share					—	—
	Debt	Debt Securities					—	—
	Equity	Depository Shares					—	—
	Other	Warrants					—	—
	Other	Purchase Contracts					—	—
	Other	Units					—	—
	Unallocated (Universal Shelf)	Unallocated (Universal Shelf)	457(o)	(1)	(2)	\$ 200,000,000	\$ \$92.70 per \$1,000,000	\$ 18,540
Fees Previously Paid	N/A	N/A	N/A	N/A	N/A	—	—	—
		Total Offering Amounts				\$ 200,000,000	\$ \$92.70 per \$1,000,000	\$ 18,540
		Total Fees Previously Paid						—
		Total Fee Offsets						—
		Net Fee Due						\$ 18,540

(1) The securities registered hereunder include such indeterminate number of (a) shares of common stock, (b) shares of preferred stock, (c) debt securities, (d) depository shares, (e) warrants to purchase common stock, preferred stock, debt securities or depository shares of the registrant, (f) purchase contracts, and (g) units consisting of some or all of these securities, as may be sold from time to time by the registrant. There are also being registered hereunder an indeterminate number of shares of common stock and preferred stock as shall be issuable upon conversion, exchange or exercise of any securities that provide for such issuance. Pursuant to Rule 416 under the Securities Act of 1933, as amended (the "Securities Act"), this registration statement shall also cover any additional shares of the registrant's securities that become issuable by reason of any share splits, share dividends or similar transactions.

(2) The proposed maximum offering price per security and proposed maximum aggregate offering price per class of security will be determined from time to time by the registrant in connection with the issuance by the registrant of the securities registered hereunder and is not specified as to each class of security pursuant to General Instruction II.F. and the Instructions to the Calculation of Filing Fee Tables and Related Disclosure of Form S-3 under the Securities Act. Separate consideration may or may not be received for securities that are issuable on exercise, conversion or exchange of other securities, or that are issued in units. Subject to Rule 462(b) under the Securities Act, the aggregate maximum offering price of all securities issued by the registrant pursuant to this registration statement will not exceed \$200,000,000.

Zymergen Inc.
and
[], Trustee
INDENTURE
Dated as of [], 20[]

**Cross-Reference Table Between Trust Indenture Act of 1939
and Indenture.**

Section of Trust Indenture Act of 1939, as amended	Section of Indenture
Section 310 (a)(1)	5.09
(a)(2)	5.09
(a)(3)	NOT APPLICABLE
(a)(4)	NOT APPLICABLE
(a)(5)	5.09
(b)	5.08
Section 311 (a)	5.13
(b)	5.13
Section 312 (a)	3.06
(b)	3.06
(c)	3.06
Section 313 (a)	5.03
(b)(1)	5.03
(b)(2)	5.03
(c)(1)	5.03
(d)	5.03
Section 314 (a)	3.07
(b)	NOT APPLICABLE
(c)(1)	11.05
(c)(2)	11.05
(c)(3)	NOT APPLICABLE
(d)	NOT APPLICABLE
(e)	11.05
(f)	NOT APPLICABLE
Section 315 (a)	5.07
(b)	5.02
(c)	5.01
(d)	5.01
(e)	4.11
Section 316 (a)	4.09
(a)(1)(a)	4.09
(a)(1)(b)	4.10
(b)	4.07
Section 317 (a)(1)	4.02
(a)(2)	4.02
(b)	3.04
Section 318 (a)	11.07

*This reconciliation and tie shall not, for any purpose, be deemed to be part of the Indenture.

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THIS INDENTURE, dated as of [], 2022 between Zymergen Inc. (the “Issuer”) and [], as trustee (the “Trustee”),

WITNESSETH:

WHEREAS, for its lawful corporate purposes, the Issuer has duly authorized the execution and delivery of the Indenture to provide for the issuance of unsecured debt securities in one or more series (the “Securities”) up to such principal amount or amounts as may from time to time be authorized in accordance with the terms of the Indenture and to provide, among other things, for the authentication, delivery and administration thereof;

WHEREAS, all things necessary to make the Indenture a valid indenture and agreement according to its terms have been done; and

WHEREAS, the Indenture is subject to, and will be governed by, the provisions of the Trust Indenture Act of 1939, as amended (the “Trust Indenture Act”) that are required to be a part of and govern indentures qualified under the Trust Indenture Act.

NOW, THEREFORE, in consideration of the premises and the purchases of the Securities by the holders thereof, the Issuer and the Trustee mutually covenant and agree for the equal and proportionate benefit of the respective holders from time to time of the Securities as follows:

Article 1 DEFINITIONS

Section 1.01 Certain Terms Defined; Rules of Construction. The following terms (except as otherwise expressly provided or unless the context otherwise clearly requires) for all purposes of the Indenture and of any indenture supplemental hereto shall have the respective meanings specified in this Section. All other terms used in the Indenture that are defined in the Trust Indenture Act, or the definitions of which are referred to in the Trust Indenture Act, including terms defined therein by reference to the Securities Act (except as herein otherwise expressly provided or unless the context otherwise clearly requires), shall have the meanings assigned to such terms in the Trust Indenture Act and in the Securities Act as in force at the date of the Indenture. All accounting terms used herein and not expressly defined shall have the meanings assigned to such terms in accordance with generally accepted accounting principles, and the term “**generally accepted accounting principles**” means such accounting principles as are generally accepted at the time of any computation. The words “**herein**”, “**hereof**” and “**hereunder**” and other words of similar import refer to the Indenture as a whole and not to any particular Article, Section or other subdivision. The terms defined in this Article have the meanings assigned to them in this Article and include the plural as well as the singular. Except as otherwise expressly provided or unless the context otherwise clearly requires, references to agreements or instruments, or to statutes or regulations, are to such agreements or instruments, or statutes or regulations, as amended from time to time (or to successor statutes and regulations).

“Bankruptcy Law” means Title 11 of the United States Code or any similar Federal or State law for the relief of debtors.

“Board of Directors” means either the Board of Directors of the Issuer or any committee of such Board duly authorized to act hereunder.

“Business Day” means, with respect to any Security, a day that in the Borough of Manhattan, City of New York is not a day on which banking institutions are authorized by law, regulation or executive order to close.

“Commission” means the Securities and Exchange Commission, as from time to time constituted, created under the Exchange Act, or if at any time after the execution and delivery of the Indenture such Commission is not existing and performing the duties now assigned to it under the Trust Indenture Act, then the body performing such duties on such date.

“company” means a corporation or a limited liability company.

“Corporate Trust Office” means the office of the Trustee at which the corporate trust business of the Trustee shall, at any particular time, be principally administered, which office is, at the date as of which this Indenture is dated, located at [], or such other address as the Trustee may designate from time to time by notice to the Company, or the principal corporate trust office of any successor Trustee (or such other address as such successor Trustee may designate from time to time by notice to the Company).

“Debt” of any Person as of any date means, without duplication, all indebtedness of such Person in respect of borrowed money, including all interest, fees and expenses owed in respect thereto (whether or not the recourse of the lender is to the whole of the assets of such Person or only to a portion thereof), or evidenced by bonds, notes, debentures or similar instruments.

“Depository” means, with respect to Securities of any series, for which the Issuer shall determine that such Securities will be issued as a Global Security, the Person designated as Depository for such series of Securities by the Issuer, which Depository shall be a clearing

agency registered under the Exchange Act; and if at any time there is more than one such Person, “Depository” as used with respect to the Securities of any series shall mean the Depository with respect to the Securities of such series.

“Event of Default” has the meaning assigned to such term in Section 4.01.

“Exchange Act” means the Securities Exchange Act of 1934, as amended.

“Global Security” means, with respect to any series of Securities, a Security executed by the Issuer and delivered by the Trustee to the Depository or pursuant to a safekeeping agreement with the Depository, all in accordance with the Indenture, which shall be registered in global form without interest coupons in the name of the Depository or its nominee.

“Governmental Obligations” means securities that are (i) direct obligations of the United States of America for the payment of which its full faith and credit is pledged or (ii) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America, the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America that, in either case, are not callable or redeemable at the option of the issuer thereof, and shall also include a depository receipt issued by a bank (as defined in Section 3(a)(2) of the Securities Act) as custodian with respect to any such Governmental Obligation or a specific payment of principal of or interest on any such Governmental Obligation held by such custodian for the account of the holder of such depository receipt; provided however, that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depository receipt from any amount received by the custodian in respect of the Governmental Obligation or the specific payment of principal of or interest on the Governmental Obligation evidenced by such depository receipt.

“Holder” means the registered holder of any Security.

“Indenture” means this instrument as originally executed and delivered or, if amended or supplemented as herein provided, as so amended or supplemented or both, and shall include the forms and terms of particular series of Securities established as contemplated hereunder.

“Interest Payment Date”, when used with respect to any installment of interest on a Security of a particular series, means the date specified in such Security or in a resolution of the Board of Directors or in an indenture supplemental hereto with respect to such series as the fixed date on which an installment of interest with respect to Securities of that series is due and payable.

“Issue Date” means the date on which the Securities are originally issued.

“Issuer” means, unless otherwise explicitly provided herein, Zymergen Inc., and subject to Article 8, its successors and assigns.

“Issuer Order” has the meaning assigned to such term in Section 2.04.

“Notice of Default” has the meaning assigned to such term in Section 4.01(d).

“Officers’ Certificate” means a certificate signed by any two of the following officers: the chairman of the Board of Directors, the chief executive officer, the chief financial officer, any president, any executive vice president, the treasurer or the secretary of the Issuer, and delivered to the Trustee.

“Opinion of Counsel” means an opinion in writing signed by legal counsel who may be an employee of or counsel to the Issuer.

“Original Issue Discount Security” means any Security that provides for an amount less than the principal amount thereof to be due and payable upon a declaration of acceleration of the maturity thereof pursuant to Section 4.01.

“Outstanding”, when used with reference to Securities, shall, subject to the provisions of Section 6.04, mean, as of any particular time, all Securities authenticated and delivered by the Trustee under the Indenture, except:

(a) Securities cancelled by the Trustee or accepted by the Trustee for cancellation;

(b) Securities, or portions thereof, for the payment or redemption of which moneys in the necessary amount to pay all amounts then due shall have been deposited in trust with the Trustee or with any paying agent (other than the Issuer) or shall have been set aside, segregated and held in trust by the Issuer for the holders of such Securities (if the Issuer shall act as its own paying agent), provided that if such Securities, or portions thereof, are to be redeemed prior to the maturity thereof, notice of such redemption shall have been given as herein provided, or provision satisfactory to the Trustee shall have been made for giving such notice; and

(c) Securities in substitution for which other Securities shall have been authenticated and delivered, or which shall have been paid, pursuant to the terms of Section 2.09 unless and until the Trustee and the Issuer receive proof satisfactory to them that the substituted Security is held by a *bona fide* purchaser.

In determining whether the holders of the requisite principal amount of Outstanding Securities of any or all series have given any request, demand, authorization, direction, notice, consent or waiver hereunder, the principal amount of an Original Issue Discount Security that shall be deemed to be Outstanding for such purposes shall be the amount of the principal thereof that would be due and payable as of the date of such determination upon a declaration of acceleration of the maturity thereof pursuant to Section 4.01.

“Person” means any individual, corporation, limited liability company, partnership, joint venture, association, joint stock company, trust, unincorporated organization, or any other entity, including any government or any agency or political subdivision thereof.

“principal” whenever used with reference to the Securities or any Security or any portion thereof, shall be deemed to include “and premium, if any”.

“Register” has the meaning assigned to it in Section 2.08.

“Registrar” means a Person engaged to maintain the Register.

“Responsible Officer” means, with respect to the Trustee, any officer assigned to the Corporate Trust Division - Corporate Finance Unit (or any successor division or unit) of the Trustee located at the Corporate Trust Office of the Trustee, who shall have direct responsibility for the administration of this Indenture, and for the purposes of Section 2.04, Section 5.01(c)(ii) and Section 5.02 shall also include any other officer of the Trustee to whom any corporate trust matter is referred because of such officer’s knowledge of and familiarity with the particular subject.

“Securities Act” means the Securities Act of 1933, as amended.

“Security” or “Securities” has the meaning stated in the first recital of the Indenture, or, as the case may be, Securities that have been authenticated and delivered under the Indenture.

“Senior Debt” means the principal of, premium, if any, unpaid interest, and all fees and other amounts payable in connection with the following, whether outstanding on the date hereof or thereafter created, incurred, assumed or guaranteed, on (x) the Debt of the Issuer, for money borrowed other than (a) any Debt of the Issuer which when incurred and without respect to any election under Section 1111(b) of the Federal Bankruptcy Code, was without recourse to the Issuer, (b) any Debt of the Issuer to any of its subsidiaries, (c) Debt to any employee of the Issuer, (d) any liability for taxes and (e) trade payables, unless the instrument creating or evidencing the same or pursuant to which the same is outstanding provides that such Debt is not senior or prior in right of payment to the Securities, (y) all obligations of the Issuer under interest rate, currency and commodity swaps, caps, floors, collars, hedge arrangements, forward contracts or similar agreements or arrangements and (z) renewals extensions, modifications and refundings of any such Debt. This definition may be modified or superseded by a supplemental indenture.

“Senior Securities” means Securities other than Subordinated Securities.

“Subordinated Securities” means Securities that by the terms established pursuant to Section 2.03(i) are subordinated in right of payment to Senior Debt of the Issuer.

“Subordination Provisions” when used with respect to the Subordinated Securities of any series of Securities, shall have the meaning established pursuant to Section 2.03(i) with respect to the Subordinated Securities of such series.

“Surviving Entity” has the meaning assigned to it in Section 8.01.

“Trustee” means the Person identified as “Trustee” in the first paragraph hereof and any successor trustee under the Indenture pursuant to Article 5.

“Trust Indenture Act” means the Trust Indenture Act of 1939, as amended.

“vice president” when used with respect to the Issuer, means any vice president, whether or not designated by a number or a word or words added before or after the title of “vice president”.

“Yield to Maturity” means the yield to maturity on a series of securities, calculated at the time of issuance of such series, or, if applicable, at the most recent redetermination of interest on such series, and calculated in accordance with accepted financial practice.

Article 2
SECURITIES

Section 2.01 Forms Generally. The Securities of each series shall be substantially in such form (not inconsistent with the Indenture) as shall be established by or pursuant to a resolution of the Board of Directors and set forth in an Officers' Certificate or in one or more indentures supplemental hereto, in each case with such appropriate insertions, omissions, substitutions and other variations as are required or permitted by the Indenture and may have imprinted or otherwise reproduced thereon such legends, notations or endorsements as may be required to comply with any law or with any rules or regulations pursuant thereto, or with any rules of any securities exchange or to conform to general usage, all as may be determined by the officers executing such Securities, as evidenced by their execution of the Securities.

The definitive Securities shall be printed, lithographed or engraved on steel engraved borders or may be produced in any other manner, all as determined by the officers executing such Securities, as evidenced by their execution of such Securities.

Section 2.02 Form of Trustee's Certification of Authentication. The Trustee's certificate of authentication on all Securities shall be in substantially the following form:

This is one of the Securities of the series designated herein and referred to in the within-mentioned Indenture.

[]
as Trustee

By: _____
Authorized Signatory

Section 2.03 Amount Unlimited; Issuable in Series. The aggregate principal amount of Securities which may be authenticated and delivered under the Indenture is unlimited.

The Securities may be issued in one or more series. There shall be established in or pursuant to a resolution of the Board of Directors and set forth in an Officers' Certificate or established in one or more indentures supplemental hereto, prior to the issuance of Securities of any series:

- (a) the title of the Securities of the series (which shall distinguish the Securities of the series from all other Securities);
- (b) any limit upon the aggregate principal amount of the Securities of the series that may be authenticated and delivered under the Indenture (except for Securities authenticated and delivered upon registration of transfer of, or in exchange for, or in lieu of, other Securities of the series pursuant to Section 2.08, 2.09, 2.11 or 2.03);
- (c) the date or dates on which the principal of the Securities of the series is payable;
- (d) the rate or rates at which the Securities of the series shall bear interest, if any, or the method by which such rate shall be determined, the date or dates from which such interest shall accrue, the Interest Payment Dates on which such interest shall be payable and the record dates for the determination of Holders to whom interest is payable on such Interest Payment Dates;

- (e) the right, if any, to extend the interest payment periods and the duration of such extension;
- (f) the place or places where the principal of and any interest on Securities of the series shall be payable (if other than as provided in Section 3.02);
- (g) the price or prices at which, the period or periods within which and the terms and conditions upon which Securities of the series may be redeemed, in whole or in part, at the option of the Issuer, pursuant to any sinking fund or otherwise;
- (h) the obligation, if any, of the Issuer to redeem, purchase or repay Securities of the series pursuant to any sinking fund or otherwise or at the option of a Holder thereof and the price or prices at which and the period or periods within which and the terms and conditions upon which Securities of the series shall be redeemed, purchased or repaid, in whole or in part, pursuant to such obligation;
- (i) if the Securities of such series are Subordinated Securities, the terms pursuant to which the Securities of such series will be made subordinate in right of payment to Senior Debt and the definition of such Senior Debt with respect to such series (in the absence of an express statement to the effect that the Securities of such Series are subordinate in right of payment to all such Senior Debt, the Securities of such series shall not be subordinate to Senior Debt and shall not constitute Subordinated Securities); and, in the event that the Securities of such series are Subordinated Securities, such resolution of the Board of Directors, Officers' Certificate or supplemental indenture, as the case may be, establishing the terms of such series shall expressly state which articles, sections or other provisions thereof constitute "Subordination Provisions" with respect to the Securities of such series;
- (j) if other than denominations of \$1,000 and any multiple thereof, the denominations in which Securities of the series shall be issuable;
- (k) the percentage of the principal amount at which the Securities will be issued, and, if other than the principal amount thereof, the portion of the principal amount of Securities of the series which shall be payable upon declaration of acceleration of the maturity thereof pursuant to Section 4.01 or provable in bankruptcy pursuant to Section 4.02;
- (l) whether the Securities are issuable as a Global Security and, in such case, the identity for the Depositary for such series;
- (m) any deletion from, modification of or addition to the Events of Default or covenants provided for with respect to the Securities of the series;
- (n) any provisions granting special rights to holders when a specified event occurs;
- (o) whether and under what circumstances the Issuer will pay additional amounts on the Securities of the series held by a person who is not a U.S. person in respect of any tax, assessment or governmental charge withheld or deducted and, if so, whether the Issuer will have the option to redeem the Securities of the series rather than pay such additional amounts;
- (p) any special tax implications of the notes, including provisions for Original Issue Discount Securities;
- (q) any trustees, authenticating or paying agents, transfer agents or registrars or any other agents with respect to the Securities of such series;

- (r) any guarantor or co-issuer of the Securities of the series;
- (s) any special interest premium or other premium;
- (t) whether the Securities are convertible or exchangeable into common stock or other equity securities of the Issuer or a combination thereof and the terms and conditions upon which such conversion or exchange shall be effected;
- (u) the currency in which payments shall be made, if other than U.S. dollars; and
- (v) any and all other terms of the series (which terms shall not be inconsistent with the provisions of the Indenture) including any terms which may be required by or advisable under U.S. law or regulations or advisable in connection with the marketing of Securities in that series.

All Securities of any one series shall be substantially identical except as to denomination and except as may otherwise be provided in or pursuant to such resolution of the Board of Directors and set forth in an Officers' Certificate, or in any indenture supplemental hereto. All Securities of any one series need not be issued at the same time, and unless otherwise provided, a series may be reopened for issuance of additional Securities of such series. Additional Securities of such series will be consolidated with, and form a single series with, Securities then Outstanding of such series.

Section 2.04 Authentication and Delivery of Securities. At any time and from time to time after the execution and delivery of the Indenture, the Issuer may deliver Securities of any series executed by the Issuer to the Trustee for authentication, together with a written order of the Issuer, signed in the name of the Issuer by any two of the following officers: the chairman of the Board of Directors, the chief executive officer, the chief financial officer, any president, any executive vice president, the treasurer or the secretary of the Issuer (an "Issuer Order"). The Trustee, in accordance with such written order, shall authenticate and deliver such Securities.

In authenticating such Securities and accepting the additional responsibilities under the Indenture in relation to such Securities, the Trustee shall be entitled to receive and (subject to Section 5.01) shall be fully protected in relying upon:

- (a) [reserved];
- (b) a copy of any resolution or resolutions of the Board of Directors relating to such series, in each case certified by the secretary or an assistant secretary of the Issuer;
- (c) an executed supplemental indenture, if any;
- (d) in lieu of a supplemental indenture, an Officers' Certificate setting forth the form and terms of the Securities as required pursuant to Section 2.01 and 2.03, respectively, and prepared in accordance with Section 11.05;
- (e) an Opinion of Counsel, prepared in accordance with Section 11.05, to the effect that:
 - (i) that the form or forms and terms of such Securities have been established by or pursuant to a resolution of the Board of Directors and set forth in an Officers' Certificate, or by a supplemental indenture as permitted by Section 2.01 and 2.03 in conformity with the provisions of the Indenture; and

(ii) that such Securities, when authenticated and delivered by the Trustee and issued by the Issuer in the manner and subject to any conditions specified in such Opinion of Counsel, will constitute valid and binding obligations of the Issuer entitled to the benefits of the Indenture, and enforceable against the Issuer in accordance with their terms, except to the extent that enforcement thereof may be limited by bankruptcy, insolvency, reorganization, moratorium, fraudulent conveyance or similar laws now or hereafter in effect relating to creditor's rights generally, and general principles of equity (regardless of whether enforceability is considered in a proceeding in equity or at law).

The Trustee shall have the right to decline to authenticate and deliver any Securities under this section if the Trustee, being advised by counsel, determines that such action may not lawfully be taken by the Issuer or if the Trustee in good faith by its board of directors or board of trustees, executive committee, or a trust committee of directors or trustees or Responsible Officers shall determine that such action would expose the Trustee to personal liability to existing Holders.

Section 2.05 Execution of Securities. The Securities shall be signed in the name of the Issuer by any two of the following officers: the chairman of the Board of Directors, the chief executive officer, the chief financial officer, any president, any executive vice president, the treasurer or the secretary of the Issuer. Such signatures may be the manual or facsimile signatures of the present or any future such officers. Typographical and other minor errors or defects in any such signature shall not affect the validity or enforceability of any Security that has been duly authenticated and delivered by the Trustee.

In case any officer of the Issuer who shall have signed any of the Securities shall cease to be such officer before the Security so signed shall be authenticated and delivered by the Trustee or disposed of by the Issuer, such Security nevertheless may be authenticated and delivered or disposed of as though the person who signed such Security had not ceased to be such officer of the Issuer; and any Security may be signed on behalf of the Issuer by such persons as, at the actual date of the execution of such Security, shall be the proper officers of the Issuer, although at the date of the execution and delivery of the Indenture any such person was not such an officer.

Section 2.06 Certificate of Authentication. Only such Securities as shall bear thereon a certificate of authentication substantially in the form recited herein, executed by the Trustee by the manual signature of one of its authorized officers, shall be entitled to the benefits of the Indenture or be valid or obligatory for any purpose. Such certificate by the Trustee upon any Security executed by the Issuer shall be conclusive evidence that the Security so authenticated has been duly authenticated and delivered hereunder and that the holder is entitled to the benefits of the Indenture.

Section 2.07 Denomination and Date of Securities; Payments of Interest. The Securities shall be issuable as registered securities without coupons and in denominations as shall be specified as contemplated by Section 2.03. In the absence of any such specification with respect to the Securities of any series, the Securities of such series shall be issuable in denominations of \$1,000 and any multiple thereof. The Securities shall be numbered, lettered, or otherwise distinguished in such manner or in accordance with such plan as the officers of the Issuer executing the same may determine with the approval of the Trustee as evidenced by the execution and authentication thereof.

The principal of and the interest on the Securities of any series, shall be payable in the coin or currency of the United States of America that at the time is legal tender for public and private debt, at the office or agency of the Issuer maintained for that purpose.

Each Security shall be dated the date of its authentication, shall bear interest, if any, from the date and shall be payable on the dates, in each case, established as contemplated by Section 2.03.

The person in whose name any Security of any series is registered at the close of business on any record date applicable to a particular series with respect to any interest payment date for such series shall be entitled to receive the interest, if any, payable on such interest payment date notwithstanding any transfer or exchange of such Security subsequent to the record date and prior to such interest payment date, except if and to the extent the Issuer shall default in the payment of the interest due on such interest payment date for such series, in which case such defaulted interest shall be paid to the persons in whose names Outstanding Securities for such series are registered at the close of business on a subsequent record date (which shall be not less than five Business Days prior to the date of payment of such defaulted interest) established by notice given by mail by or on behalf of the Issuer to the Holders not less than 15 days preceding such subsequent record date. The term "record date" as used with respect to any interest payment date (except a date for payment of defaulted interest) shall mean the date specified as such in the terms of the Securities of any particular series, or, if no such date is so specified, if such interest payment date is the first day of a calendar month, the fifteenth day of the next preceding calendar month or, if such interest payment date is the fifteenth day of a calendar month, the first day of such calendar month, whether or not such record date is a Business Day.

Section 2.08 Registration, Transfer and Exchange. The Issuer may appoint one or more Registrars. The Issuer initially appoints the Trustee as Registrar. The Issuer will keep or cause to be kept at each office or agency to be maintained for the purpose as provided in Section 3.02 a register or registers (the "Register") in which, subject to such reasonable regulations as it may prescribe, it will register, and will register the transfer of, Securities as in this Article provided. The Register shall be in written form in the English language or in any other form capable of being converted into such form within a reasonable time. At all reasonable times the Register shall be open for inspection by the Trustee.

Upon due presentation for registration of transfer of any Security of any series at any such office or agency to be maintained for the purpose as provided in Section 3.02, the Issuer shall execute and the Trustee shall authenticate and deliver in the name of the transferee or transferees a new Security or Securities of the same series in authorized denominations for a like aggregate principal amount.

Any Security or Securities of any series may be exchanged for a Security or Securities of the same series in other authorized denominations, in an equal aggregate principal amount. Securities of any series to be exchanged shall be surrendered at any office or agency to be maintained by the Issuer for the purpose as provided in Section 3.02, and the Issuer shall execute and the Trustee shall authenticate and deliver in exchange therefor the Security or Securities of the same series which the Holder making the exchange shall be entitled to receive, bearing numbers not contemporaneously Outstanding.

All Securities presented for registration of transfer, exchange, redemption or payment shall (if so required by the Issuer or the Trustee) be duly endorsed by, or be accompanied by a written instrument or instruments of transfer in form satisfactory to the Issuer and the Trustee duly executed by, the holder or his attorney duly authorized in writing.

The Issuer may require payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in connection with any exchange or registration of transfer of Securities. No service charge shall be made for any such transaction.

The Issuer shall not be required to exchange or register a transfer of (a) any Securities of any series for a period of 15 days preceding the first mailing of notice of redemption of

Securities of such series to be redeemed, or (b) any Securities selected, called or being called for redemption except, in the case of any Security where public notice has been given that such Security is to be redeemed in part, the portion thereof not so to be redeemed.

In addition to the transfer requirements provided in this Section 2.08, any Security or Securities will be subject to such further transfer restrictions as may be contained in an Officers' Certificate or indenture supplemental hereto applicable to such series of Securities.

All Securities issued upon any transfer or exchange of Securities shall be valid obligations of the Issuer, evidencing the same debt, and entitled to the same benefits under the Indenture, as the Securities surrendered upon such transfer or exchange.

None of the Trustee, the Paying Agent or the Registrar shall have any obligation or duty to monitor, determine or inquire as to compliance with any restrictions on transfer imposed under this Indenture or under applicable law with respect to any transfer of any interest in any Security (including any transfers between or among Depository participants, members or beneficial owners in any Global Security) other than to require delivery of such certificates and other documentation or evidence as are expressly required by, and to do so if and when expressly required by, the terms of this Indenture, and to examine the same to determine substantial compliance as to form with the express requirements hereof.

Section 2.09 Mutilated, Defaced, Destroyed, Lost and Stolen Securities. In case any temporary or definitive Security shall become mutilated, defaced or be destroyed, lost or stolen, the Issuer in its discretion may execute, and upon the receipt of an Issuer Order, the Trustee shall authenticate and deliver, a new Security of the same series, bearing a number not contemporaneously Outstanding, in exchange and substitution for the mutilated or defaced Security, or in lieu of and substitution for the Security so destroyed, lost or stolen. In every case the applicant for a substitute Security shall furnish to the Issuer and to the Trustee and any agent of the Issuer or the Trustee such security or indemnity as may be required by them to indemnify and defend and to save each of them harmless and, in every case of destruction, loss or theft, evidence to their satisfaction of the destruction, loss or theft of such Security and of the ownership thereof.

Upon the issuance of any substitute Security, the Issuer may require the payment of a sum sufficient to cover any tax or other governmental charge that may be imposed in relation thereto and any other expenses (including the fees and expenses of the Trustee) connected therewith. In case any Security which has matured or is about to mature or has been called for redemption in full shall become mutilated or defaced or be destroyed, lost or stolen, the Issuer may instead of issuing a substitute Security, pay or authorize the payment of the same (without surrender thereof except in the case of a mutilated or defaced Security), if the applicant for such payment shall furnish to the Issuer and to the Trustee and any agent of the Issuer or the Trustee such security or indemnity as any of them may require to save each of them harmless, and, in every case of destruction, loss or theft, the applicant shall also furnish to the Issuer and the Trustee and any agent of the Issuer or the Trustee evidence to their satisfaction of the destruction, loss or theft of such Security and of the ownership thereof. In case the mutilated, deleted, destroyed, or lost or stolen Security has become or is about to become due and payable, the Issuer in its discretion may pay the Security instead of issuing a substitute Security.

Every substitute Security of any series issued pursuant to the provisions of this section by virtue of the fact that any such Security is destroyed, lost or stolen shall constitute an additional contractual obligation of the Issuer, whether or not the destroyed, lost or stolen Security shall be at any time enforceable by anyone and shall be entitled to all the benefits of (but shall be subject to all the limitations of rights set forth in) the Indenture equally and proportionately with any and all other Securities of such series duly authenticated and delivered hereunder. All Securities shall

be held and owned upon the express condition that, to the extent permitted by law, the foregoing provisions are exclusive with respect to the replacement or payment of mutilated, defaced or destroyed, lost or stolen Securities and shall preclude any and all other rights or remedies notwithstanding any law or statute existing or hereafter enacted to the contrary with respect to the replacement or payment of negotiable instruments or other securities without their surrender.

Section 2.10 Cancellation of Securities; Destruction Thereof. All Securities surrendered for payment, redemption, registration of transfer or exchange, or for credit against any payment in respect of a sinking or analogous fund, if surrendered to the Issuer or any agent of the Issuer or the Trustee, shall be delivered to the Trustee for cancellation or, if surrendered to the Trustee, shall be cancelled by it; and no Securities shall be issued in lieu thereof except as expressly permitted by any of the provisions of the Indenture. On written request of the Issuer at the time of such surrender, the Trustee shall deliver to the Issuer the Securities cancelled by the Trustee. In the absence of such request, the Trustee shall destroy cancelled Securities held by it and deliver a certificate of destruction to the Issuer. If the Issuer shall acquire any of the Securities, such acquisition shall not operate as a redemption or satisfaction of the indebtedness represented by such Securities unless and until the same are delivered to the Trustee for cancellation.

Section 2.11 Temporary Securities. Pending the preparation of definitive Securities for any series, the Issuer may execute and the Trustee shall authenticate and deliver temporary Securities for such series (printed, lithographed, typewritten or otherwise reproduced, in each case in form satisfactory to the Trustee). Temporary Securities of any series shall be issuable as registered Securities without coupons, of any authorized denomination, and substantially in the form of the definitive Securities of such series but with such omissions, insertions and variations as may be appropriate for temporary Securities, all as may be determined by the Issuer with the concurrence of the Trustee. Temporary Securities may contain such reference to any provisions of the Indenture as may be appropriate. Every temporary Security shall be executed by the Issuer and be authenticated by the Trustee upon the same conditions and in substantially the same manner, and with like effect, as the definitive Securities. Without unreasonable delay the Issuer shall execute and shall furnish definitive Securities of such series and thereupon temporary Securities of such series may be surrendered in exchange therefor without charge at each office or agency to be maintained by the Issuer for that purpose pursuant to Section 3.02, and the Trustee shall, upon receipt of an Issuer Order, authenticate and deliver in exchange for such temporary Securities of such series a like aggregate principal amount of definitive Securities of the same series of authorized denominations. Until so exchanged, the temporary Securities of any series shall be entitled to the same benefits under the Indenture as definitive Securities of such series.

Section 2.12 Global Securities. If the Issuer shall establish pursuant to Section 2.01 that the Securities of a particular series are to be issued as a Global Security, then the Issuer shall execute and the Trustee shall, in accordance with Section 2.04, authenticate and deliver, a Global Security that shall (i) represent, and be issued in a denomination or aggregate denominations equal to the aggregate principal amount of all the Securities to be represented by a Global Security, (ii) be registered in the name of the Depository or its nominee, (iii) be delivered by the Trustee to the Depository or pursuant to the Depository's instruction and (iv) bear a legend substantially to the following effect: "Except as otherwise provided in Section 2.12 of the Indenture, this Security may be transferred, in whole but not in part, only to another nominee of the Depository or to a successor Depository or to a nominee of such successor Depository."

Notwithstanding the provisions of Section 2.08, the Global Security of a series may be transferred, in whole but not in part and in the manner provided in Section 2.08, only to another nominee of the Depository for such series, or to a successor Depository for such series selected or approved by the Issuer or to a nominee of such successor Depository.

Principal, premium, if any, and interest payments on Securities represented by a Global Security registered in the name of the Depositary or its nominee will be made to the Depositary or its nominee, as the case may be, as the registered owner of the registered Global Security. None of the Issuer, the Trustee or any other agent of the Issuer, or any agent of the Trustee will have any responsibility or liability for any aspect of the records relating to payments made on account of beneficial ownership interests in the registered Global Security or for maintaining, supervising or reviewing any records relating to those beneficial ownership interests.

If at any time the Depositary for a series of the Securities notifies the Issuer that it is unwilling or unable to continue as Depositary for such series or if at any time the Depositary for such series shall no longer be registered or in good standing under the Exchange Act, or other applicable statute or regulation, and a successor Depositary for such series is not appointed by the Issuer within 90 days after the Issuer receives such notice or becomes aware of such condition, as the case may be, this Section 2.12 shall no longer be applicable to the Securities of such series and the Issuer will execute, and subject to Section 2.08, the Trustee will authenticate and deliver the Securities of such series in definitive registered form without coupons, in authorized denominations, and in an aggregate principal amount equal to the principal amount of the Global Security of such series in exchange for such Global Security. In addition, the Issuer may at any time determine that the Securities of any series shall no longer be represented by a Global Security and that the provisions of this Section 2.12 shall no longer apply to the Securities of such series. In such event the Issuer will execute and subject to Section 2.08, the Trustee, upon receipt of an Officers' Certificate evidencing such determination by the Issuer, will authenticate and deliver the Securities of such series in definitive registered form without coupons, in authorized denominations, and in an aggregate principal amount equal to the principal amount of the Global Security of such series in exchange for such Global Security. Upon the exchange of the Global Security for such Securities in definitive registered form without coupons, in authorized denominations, the Global Security shall be cancelled by the Trustee. Such Securities in definitive registered form issued in exchange for the Global Security pursuant to this Section 2.12 shall be registered in such names and in such authorized denominations as the Depositary, pursuant to instructions from its direct or indirect participants or otherwise, shall instruct the Trustee in writing. The Issuer and the Trustee shall be entitled to conclusively rely on such instructions from the Depositary. The Trustee shall deliver such Securities to the Depositary for delivery to the Persons in whose names such Securities are so registered.

Section 2.13 CUSIP Numbers. The Issuer in issuing the Securities may use "CUSIP", "ISIN" or other similar numbers (if then generally in use), and, if so, the Trustee shall use "CUSIP", "ISIN" or other similar numbers in notices of redemption as a convenience to Holders; provided that any such notice may state that no representation is made as to the correctness of such numbers either as printed on the Securities or as contained in any notice of a redemption and that reliance may be placed only on the other identification numbers printed on the Securities, and any such redemption shall not be affected by any defect in or omission of such numbers. The Issuer will promptly notify the Trustee in writing of any change in the "CUSIP", "ISIN" or other similar numbers.

Article 3
COVENANTS OF THE ISSUER

Section 3.01 Payment of Principal and Interest.

(a) The Issuer covenants and agrees for the benefit of each series of Securities that it will duly and punctually pay or cause to be paid the principal of, and interest on, each of the Securities of such series at the place or places, at the respective times and in the manner provided in such Securities. Unless otherwise provided in the Securities of any series, on or prior to the due date of any principal of or interest on any Securities, the Issuer will deposit with the Trustee (or paying agent) money in immediately available funds sufficient to pay such amounts, provided that if the Issuer or any affiliate of the Issuer is acting as paying agent, it will, on or before each due date, segregate and hold in a separate trust fund for the benefit of the Holders a sum of money sufficient to pay such amounts until paid to such Holders or otherwise disposed of as provided in the Indenture. In each case the Issuer will promptly notify the Trustee of its compliance with this paragraph.

(b) An installment of principal or interest will be considered paid on the date due if the Trustee (or paying agent, other than the Issuer or any affiliate of the Issuer) holds on that date money designated for and sufficient to pay the installment. If the Issuer or any affiliate of the Issuer acts as paying agent, an installment of principal or interest will be considered paid on the due date only if paid to the Holders.

(c) Payments in respect of the Securities represented by the Global Security are to be made by wire transfer of immediately available funds to the accounts specified by the Holder of the Global Security. With respect to certificated Securities, the Issuer will make all payments by wire transfer of immediately available funds to the accounts specified by the Holders thereof or, if no such account is specified, by mailing a check to each Holder's registered address.

Section 3.02 Offices for Payments, etc. So long as any of the Securities remain Outstanding, the Issuer will maintain the following for each series: an office or agency (a) where the Securities may be presented for payment, (b) where the Securities may be presented for registration of transfer and for exchange as in the Indenture provided and (c) where notices and demands to or upon the Issuer in respect of the Securities or of the Indenture may be given or served. The Issuer will give to the Trustee written notice of the location of any such office or agency and of any change of location thereof. Unless otherwise specified in accordance with Section 2.03, the Issuer hereby initially designates the Corporate Trust Office of the Trustee as the office to be maintained by it for each such purpose. In case the Issuer shall fail to so designate or maintain any such office or agency or shall fail to give such notice of the location or of any change in the location thereof, presentations and demands may be made and notices may be served at the applicable Corporate Trust Office of the Trustee and the Issuer hereby appoints the Trustee as its agent to receive all such presentations, notices and demands.

Section 3.03 Appointment to Fill a Vacancy in Office of Trustee. The Issuer, whenever necessary to avoid or fill a vacancy in the office of Trustee, will appoint, in the manner provided in Section 5.10, a Trustee, so that there shall at all times be a Trustee with respect to each series of Securities hereunder.

Section 3.04 Paying Agents. Whenever the Issuer shall appoint a paying agent other than the Trustee with respect to the Securities of any series, it will cause such paying agent to

execute and deliver to the Trustee an instrument in which such agent shall agree with the Trustee, subject to the provisions of this Section,

(a) that it will hold all sums received by it as such agent for the payment of the principal of or interest on the Securities of such series (whether such sums have been paid to it by the Issuer or by any other obligor on the Securities of such series) in trust for the benefit of the holders of the Securities of such series or of the Trustee,

(b) that it will give the Trustee notice of any failure by the Issuer (or by any other obligor on the Securities of such series) to make any payment of the principal of or interest on the Securities of such series when the same shall be due and payable,

(c) pay any such sums so held in trust by it to the Trustee upon the Trustee's written request at any time during the continuance of the failure referred to in clause 3.04(b) above, and

(d) that it will perform all other duties of paying agent as set forth in the Indenture.

The Issuer shall, on or prior to each due date of the principal of or interest on the Securities of such series, deposit with the paying agent a sum sufficient to pay such principal or interest so becoming due, and (unless such paying agent is the Trustee) the Issuer shall promptly notify the Trustee of any failure to take such action.

If the Issuer shall act as its own paying agent with respect to the Securities of any series, it will, on or before each due date of the principal of or interest on the Securities of such series, set aside, segregate and hold in trust for the benefit of the holders of the Securities of such series a sum sufficient to pay such principal or interest so becoming due. The Issuer will promptly notify the Trustee of any failure to take such action.

Anything in this section to the contrary notwithstanding, the Issuer may at any time, for the purpose of obtaining a satisfaction and discharge with respect to one or more or all series of Securities hereunder, or for any other reason, pay or cause to be paid to the Trustee all sums held in trust for any such series by the Issuer or any paying agent hereunder, as required by this Section, such sums to be held by the Trustee upon the trusts herein contained.

Anything in this section to the contrary notwithstanding, the agreement to hold sums in trust as provided in this section is subject to the provisions of Section 9.05 and 9.06.

Section 3.05 Certificate of the Issuer. The Issuer will furnish to the Trustee on or before 120 days after the end of each fiscal year (beginning with the fiscal year ended December 31, 20[]) a brief certificate (which need not comply with Section 11.05) from the principal executive, financial or accounting officer or vice president or treasurer of the Issuer as to his or her knowledge of the Issuer's compliance with all conditions and covenants under the Indenture (such compliance to be determined without regard to any period of grace or requirement of notice provided under the Indenture), or if there has been a default, specifying the default and its nature and status.

The Company shall deliver to the Trustee, within 30 days after the occurrence of any Event of Default, an Officers' Certificate setting forth the details of such Event of Default, its status and the action that the Company is taking or proposing to take in respect thereof.

Section 3.06 Securityholder Lists. The Trustee shall preserve in as current a form as is reasonably practicable the most recent list available to it of the names and addresses of the Holders of each series of Securities and shall otherwise comply with Section 312(a) of the Trust Indenture Act. If the Trustee is not the Registrar, the Issuer shall furnish, or cause the Registrar

to furnish, to the Trustee at least five Business Days before each Interest Payment Date, but in any event not less frequently than semi-annually, and at such other times as the Trustee may request in writing a list, in such form and as of such date as the Trustee may reasonably require, of the names and addresses of the Holders of each series of Securities.

Section 3.07 Reports by the Issuer. The Issuer covenants to comply with Section 314(a) of the Trust Indenture Act insofar as it relates to information, documents, and other reports which the Issuer may be required to file with the Commission pursuant to Section 13 or Section 15(d) of the Exchange Act.

Delivery of such reports, information and documents to the Trustee is for informational purposes only and the Trustee's receipt of such shall not constitute actual or constructive knowledge or notice of any information contained therein or determinable from information contained therein, including the Company's compliance with any of its covenants hereunder (as to which the Trustee is entitled to rely exclusively on Officers' Certificates).

Article 4
REMEDIES OF THE TRUSTEE AND HOLDERS ON EVENT OF DEFAULT

Section 4.01 Event of Default; Acceleration of Maturity; Waiver of Default. An Event of Default with respect to Securities of any series means each one of the following events which shall have occurred and be continuing (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body):

(a) default in the payment of any installment of interest upon any of the Securities of such series as and when the same shall become due and payable, and continuance of such default for a period of 30 days or more;

(b) default in the payment of the principal, or premium, if any, on any of the Securities of such series as and when the same shall become due and payable either at maturity, upon redemption, by declaration or otherwise;

(c) default in the payment of any sinking fund installment as and when the same shall become due and payable by the terms of the Securities of such series;

(d) default in the performance, or breach, of any covenant or warranty of the Issuer in respect of the Securities of such series (other than defaults pursuant to paragraphs (a) and (b) above), and continuance of such default or breach for a period of 90 days or more after there has been given, by registered or certified mail, to the Issuer by the Trustee or to the Issuer and the Trustee by the Holders of at least 25% in principal amount of the Outstanding Securities of all series affected thereby, a written notice specifying such default or breach and requiring it to be remedied and stating that such notice is a "Notice of Default" hereunder;

(e) a court having jurisdiction in the premises shall enter a decree or order for relief in respect of the Issuer in an involuntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or appointing a receiver, liquidator, assignee, custodian, trustee or sequestrator (or similar official) of the Issuer or for any substantial part of its property or ordering the winding up or liquidation of its affairs, and such decree or order shall remain unstayed and in effect for a period of 60 consecutive days;

(f) the Issuer shall commence a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or consent to the entry of an order for relief in an involuntary case under any such law, or consent to the appointment of or taking possession by a receiver, liquidator, assignee, custodian, trustee or sequestrator (or similar official) of the Issuer or for any substantial part of its property, or make any general assignment for the benefit of creditors; or

(g) any other Event of Default provided in the Officers' Certificate, supplemental indenture or resolution of the Board of Directors under which such series of Securities is issued or in the form of Security for such series.

Except as otherwise provided in the terms of any series of Securities pursuant to Section 2.03, if an Event of Default described in Section 4.01(a) or Section 4.01(b) above occurs and is continuing, then, and in each and every such case, unless the principal of all of the Securities of such series shall have already become due and payable, the Trustee or the Holders of not less than 25% in aggregate principal amount of the Securities of such series then Outstanding hereunder (each series voting as a separate class) by notice in writing to the Issuer (and to the Trustee if given by Holders), may declare the entire principal (or, if the Securities of such series

are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) of all Outstanding Securities of such series, together with all accrued and unpaid interest and premium, if any, to be due and payable immediately, and upon any such declaration the same shall become immediately due and payable.

Except as otherwise provided in the terms of any series of Senior Securities pursuant to Section 2.03, if an Event of Default described in Section 4.01(c) or Section 4.01(d) above with respect to all series of the Senior Securities then Outstanding, occurs and is continuing, then, and in each and every such case, unless the principal of all of the Senior Securities shall have already become due and payable, the Trustee or the Holders of not less than 25% in aggregate principal amount of all of the Senior Securities then Outstanding hereunder (treated as one class) by notice in writing to the Issuer (and to the Trustee if given by Holders), may declare the entire principal (or, if the Senior Securities of any series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) of all of the Senior Securities then Outstanding, together with all accrued and unpaid interest and premium, if any, to be due and payable immediately, and upon any such declaration the same shall become immediately due and payable.

Except as otherwise provided in the terms of any series of Subordinated Securities pursuant to Section 2.03, if an Event of Default described in Section 4.01(c) or Section 4.01(d) above with respect to all series of the Subordinated Securities then Outstanding, occurs and is continuing, then, and in each and every such case, unless the principal of all of the Subordinated Securities shall have already become due and payable, the Trustee or the Holders of not less than 25% in aggregate principal amount of all of the Subordinated Securities then Outstanding hereunder (treated as one class) by notice in writing to the Issuer (and to the Trustee if given by Holders), may declare the entire principal (or, if the Subordinated Securities of any series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) of all of the Subordinated Securities then outstanding, together with all accrued and unpaid interest and premium, if any, to be due and payable immediately, and upon any such declaration the same shall become immediately due and payable.

If an Event of Default described in Section 4.01(c) or Section 4.01(d) above occurs and is continuing, which Event of Default is with respect to less than all series of Senior Securities then Outstanding, then, and in each and every such case, except for any series of Senior Securities the principal of which shall have already become due and payable, the Trustee or the Holders of not less than 25% in aggregate principal amount of the Senior Securities of each such affected series then Outstanding hereunder (each such series voting as a separate class) by notice in writing to the Issuer (and to the Trustee if given by Holders), may declare the entire principal (or, if the Securities of such series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) of all Securities of such series, together with all accrued and unpaid interest and premium, if any, to be due and payable immediately, and upon any such declaration, the same shall become immediately due and payable.

If an Event of Default described in Section 4.01(c) or Section 4.01(d) above occurs and is continuing, which Event of Default is with respect to less than all series of Subordinated Securities then Outstanding, then, and in each and every such case, except for any series of Subordinated Securities the principal of which shall have already become due and payable, the Trustee or the Holders of not less than 25% in aggregate principal amount of the Subordinated Securities of each such affected series then Outstanding hereunder (each such series voting as a separate class) by notice in writing to the Issuer (and to the Trustee if given by Holders), may declare the entire principal (or, if the Securities of such series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) of all Securities of such series, together with all accrued and unpaid interest and premium, if any,

to be due and payable immediately, and upon any such declaration, the same shall become immediately due and payable.

If an Event of Default described in Section 4.01(e) or Section 4.01(f) above occurs and is continuing, then the principal amount of all the Securities then Outstanding, together with all accrued and unpaid interest and premium, if any, to be due and payable immediately, shall become immediately due and payable without any declaration or other act on the part of the Trustee or any Holder.

Notwithstanding the foregoing, the Holders of a majority in principal amount of the Outstanding Securities of any series (each such series voting as a separate class) by written notice to the Issuer and to the Trustee may on behalf of the Holders of all Securities of such series waive all past defaults and rescind and annul a declaration of acceleration and its consequences if:

- (i) all existing Events of Default, other than the nonpayment of the principal of and interest on the Securities that have become due solely by the declaration of acceleration, have been cured or waived, and
- (ii) the rescission would not conflict with any judgment or decree.

For all purposes under the Indenture, if a portion of the principal of any Original Issue Discount Securities shall have been accelerated and declared due and payable pursuant to the provisions hereof, then, from and after such declaration, unless such declaration has been rescinded and annulled, the principal amount of such Original Issue Discount Securities shall be deemed, for all purposes hereunder, to be such portion of the principal thereof as shall be due and payable as a result of such acceleration, and payment of such portion of the principal thereof as shall be due and payable as a result of such acceleration, together with interest, if any, thereon and all other amounts owing thereunder, shall constitute payment in full of such Original Issue Discount Securities.

Section 4.02 Collection of Indebtedness by Trustee; Trustee May Prove Debt. The Issuer covenants that (a) in case default shall be made in the payment of any installment of interest on any of the Securities of any series when such interest shall have become due and payable, and such default shall have continued for a period of 30 days or (b) in case default shall be made in the payment of all or any part of the principal of any of the Securities of any series when the same shall have become due and payable, whether upon maturity of the Securities of such series or upon any redemption or by declaration or otherwise-then upon demand of the Trustee, the Issuer will pay to the Trustee for the benefit of the Holders of the Securities of such series the whole amount that then shall have become due and payable on all Securities of such series for principal or interest, as the case may be (with interest to the date of such payment upon the overdue principal and, to the extent that payment of such interest is enforceable under applicable law, on overdue installments of interest at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in the Securities of such series); and in addition thereto, such further amount as shall be sufficient to cover the costs and expenses of collection, including reasonable compensation to the Trustee and each predecessor Trustee, their respective agents, attorneys and counsel, and any expenses and liabilities incurred by the Trustee and each predecessor.

Until such demand is made by the Trustee, the Issuer may pay the principal of and interest on the Securities of any series to the registered holders, whether or not the principal of and interest on the Securities of such series be overdue.

In case the Issuer shall fail forthwith to pay such amounts upon such demand, the Trustee, in its own name and as trustee of an express trust, shall be entitled and empowered to institute any action or proceedings at law or in equity for the collection of the sums so due and unpaid, and may prosecute any such action or proceedings to judgment or final decree, and may enforce any such judgment or final decree against the Issuer or other obligor upon such Securities and collect in the manner provided by law out of the property of the Issuer or other obligor upon such Securities, wherever situated, the moneys adjudged or decreed to be payable.

In case there shall be pending proceedings relative to the Issuer or any other obligor upon the Securities under Bankruptcy Law, or in case a receiver, assignee or trustee in bankruptcy or reorganization, liquidator, sequestrator or similar official shall have been appointed for or taken possession of the Issuer or its property or such other obligor, or in case of any other comparable judicial proceedings relative to the Issuer or other obligor upon the Securities of any series, or to the creditors or property of the Issuer or such other obligor, the Trustee, irrespective of whether the principal of any Securities shall then be due and payable as therein expressed or by declaration or otherwise and irrespective of whether the Trustee shall have made any demand pursuant to the provisions of this Section, shall be entitled and empowered, by intervention in such proceedings or otherwise:

(i) to file and prove a claim or claims for the whole amount of principal and interest (or, if the Securities of any series are Original Issue Discount Securities, such portion of the principal amount as may be specified in the terms of such series) owing and unpaid in respect of the Securities of any series, and to file such other papers or documents as may be necessary or advisable in order to have the claims of the Trustee (including any claim for reasonable compensation to the Trustee and each predecessor Trustee, and their respective agents, attorneys and counsel, and for reimbursement of all expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor Trustee and of the Holders allowed in any judicial proceedings relative to the Issuer or other obligor upon the Securities of any series, or to the creditors or property of the Issuer or such other obligor,

(ii) unless prohibited by applicable law and regulations, to vote on behalf of the holders of the Securities of any series in any election of a trustee or a standby trustee in arrangement, reorganization, liquidation or other bankruptcy or insolvency proceedings or person performing similar functions in comparable proceedings, and

(iii) to collect and receive any moneys or other property payable or deliverable on any such claims, and to distribute all amounts received with respect to the claims of the Holders and of the Trustee on their behalf; and any trustee, receiver, or liquidator, custodian or other similar official is hereby authorized by each of the Holders to make payments to the Trustee, and, in the event that the Trustee shall consent to the making of payments directly to the Holders, to pay to the Trustee such amounts as shall be sufficient to cover reasonable compensation to the Trustee, each predecessor Trustee and their respective agents, attorneys and counsel, and all other expenses and liabilities incurred, and all advances made, by the Trustee and each predecessor Trustee and all other amounts due to the Trustee or any predecessor Trustee pursuant to Section 5.06.

Nothing herein contained shall be deemed to authorize the Trustee to authorize or consent to or vote for or accept or adopt on behalf of any Holder any plan or reorganization, arrangement, adjustment or composition affecting the Securities of any series or the rights of any Holder thereof, or to authorize the Trustee to vote in respect of the claim of any Holder in any such proceeding except, as aforesaid, to vote for the election of a trustee in bankruptcy or similar person.

All rights of action and of asserting claims under the Indenture, or under any of the Securities, may be enforced by the Trustee without the possession of any of the Securities or the production thereof on any trial or other proceedings relative thereto, and any such action or proceedings instituted by the Trustee shall be brought in its own name as trustee of an express trust, and any recovery of judgment, subject to the payment of the reasonable expenses, disbursements and compensation of the Trustee, each predecessor Trustee and their respective agents and attorneys, shall be for the ratable benefit of the holders of the Securities in respect of which such action was taken.

In any proceedings brought by the Trustee (and also any proceedings involving the interpretation of any provision of the Indenture to which the Trustee shall be a party) the Trustee shall be held to represent all the holders of the Securities in respect to which such action was taken, and it shall not be necessary to make any holders of such Securities parties to any such proceedings.

Section 4.03 Application of Proceeds. Any moneys collected by the Trustee pursuant to this Article or, after an Event of Default, any money or other property distributable in respect of the Company's obligations under this Indenture in respect of any series shall be applied in the following order at the date or dates fixed by the Trustee and, in case of the distribution of such moneys or property on account of principal or interest, upon presentation of the several Securities in respect of which moneys or property have been collected and stamping (or otherwise noting) thereon the payment, or issuing Securities of such series in reduced principal amounts in exchange for the presented Securities of like series if only partially paid, or upon surrender thereof if fully paid:

FIRST: To the payment of all amounts payable to the Trustee and each predecessor Trustee and their respective agents and attorneys and of all expenses and liabilities incurred by the Trustee and each predecessor Trustee and all other amounts due to the Trustee or any predecessor Trustee pursuant to Section 5.06 applicable to such series in respect of which moneys have been collected;

SECOND: In case the principal of the Securities of such series in respect of which moneys have been collected shall not have become and be then due and payable, to the payment of interest on the Securities of such series in default in the order of the maturity of the installments of such interest, with interest (to the extent that such interest has been collected by the Trustee) upon the overdue installments of interest at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in such Securities, such payments to be made ratably to the persons entitled thereto, without discrimination or preference;

THIRD: In case the principal of the Securities of such series in respect of which moneys have been collected shall have become and shall be then due and payable, to the payment of the whole amount then owing and unpaid upon all the Securities of such series for principal and interest, with interest upon the overdue principal, and (to the extent that such interest has been collected by the Trustee) upon overdue installments of interest at the same rate as the rate of interest or Yield to Maturity (in the case of Original Issue Discount Securities) specified in the Securities of such series; and in case such moneys shall be insufficient to pay in full the whole amount so due and unpaid upon the Securities of such series, then to the payment of such principal and interest or yield to maturity, without preference or priority of principal over interest or yield to maturity, or of interest or yield to maturity over principal, or of any installment of interest over any other installment of interest, or of any Security of such series over any other Security of such series, ratably to the aggregate of such principal and accrued and unpaid interest or yield to maturity; and

FOURTH: To the payment of the remainder, if any, to the Issuer or any other person lawfully entitled thereto.

Section 4.04 Suits for Enforcement. In case an Event of Default has occurred, has not been waived and is continuing, the Trustee may in its discretion proceed to protect and enforce the rights vested in it by the Indenture by such appropriate judicial proceedings as the Trustee shall deem most effectual to protect and enforce any of such rights, either at law or in equity or in bankruptcy or otherwise, whether for the specific enforcement of any covenant or agreement contained in the Indenture or in aid of the exercise of any power granted in the Indenture or to enforce any other legal or equitable right vested in the Trustee by the Indenture or by law.

Section 4.05 Restoration of Rights on Abandonment of Proceedings. In case the Trustee shall have proceeded to enforce any right under the Indenture and such proceedings shall have been discontinued or abandoned for any reason, or shall have been determined adversely to the Trustee, then and in every such case the Issuer and the Trustee shall be restored respectively to their former positions and rights hereunder, and all rights, remedies and powers of the Issuer, the Trustee and the Holders shall continue as though no such proceedings had been taken.

Section 4.06 Limitations on Suits by Holder. No Holder of any Security of any series shall have any right by virtue or by availing of any provision of the Indenture to institute any action or proceeding at law or in equity or in bankruptcy or otherwise upon or under or with respect to the Indenture, or for the appointment of a trustee, receiver, liquidator, custodian or other similar official or for any other remedy hereunder, unless (i) such holder previously shall have given to the Trustee written notice of default and of the continuance thereof, as hereinbefore provided; (ii) the Holders of not less than 25% in aggregate principal amount of the Securities of such series then Outstanding shall have made written request upon the Trustee to institute such action or proceedings in its own name as trustee hereunder; (iii) such Holder or Holders shall have offered to the Trustee such indemnity as it may reasonably require against the costs, expenses and liabilities to be incurred in compliance with such request; (iv) the Trustee for 60 days after its receipt of such notice, request and offer of indemnity shall have failed to institute any such action or proceeding; and (v) no direction inconsistent with such written request shall have been given to the Trustee during such 60-day period by the Holders of a majority in aggregate principal amount of the Securities of such series then Outstanding. It is understood and intended, and expressly covenanted by the taker and Holder of every Security with every other taker and Holder and the Trustee, that no one or more Holders of any series shall have any right in any manner whatever by virtue or by availing of any provision of the Indenture to affect, disturb or prejudice the rights of any other such Holder, or to obtain or seek to obtain priority over or preference to any other such Holder or to enforce any right under the Indenture, except in the manner herein provided and for the equal, ratable and common benefit of all Holders of the applicable series. For the protection and enforcement of the provisions of this Section, each and every Holder and the Trustee shall be entitled to such relief as can be given either at law or in equity.

Section 4.07 Unconditional Right of Holders to Institute Certain Suits. Notwithstanding any other provision in the Indenture and any provision of any Security, the right of any Holder of any Security to receive payment of the principal of and interest on such Security on or after the respective due dates expressed in such Security, or to institute suit for the enforcement of any such payment on or after such respective dates, shall not be impaired or affected without the consent of such Holder.

Section 4.08 Powers and Remedies Cumulative; Delay or Omission Not Waiver of Default. Except as provided in Section 4.06, no right or remedy herein conferred upon or reserved to the Trustee or to the Holders is intended to be exclusive of any other right or remedy, and every right and remedy shall, to the extent permitted by law, be cumulative and in addition to

every other right and remedy given hereunder or now or hereafter existing at law or in equity or otherwise. The assertion or employment of any right or remedy hereunder, or otherwise, shall not prevent the concurrent assertion or employment of any other appropriate right or remedy.

No delay or omission of the Trustee or of any Holder to exercise any right or power accruing upon any Event of Default occurring and continuing as aforesaid shall impair any such right or power or shall be construed to be a waiver of any such Event of Default or an acquiescence therein; and, subject to Section 4.06, every power and remedy given by the Indenture or by law to the Trustee or to the Holders may be exercised from time to time, and as often as shall be deemed expedient, by the Trustee or by the Holders.

Section 4.09 Control by Holders. The Holders of a majority in aggregate principal amount of the Securities of each series affected (voting as one class) at the time Outstanding shall have the right to direct the time, method, and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred on the Trustee with respect to the Securities of such series by the Indenture; provided, however, that such direction shall not be otherwise than in accordance with law and the provisions of the Indenture. Subject to the provisions of Section 5.01, the Trustee shall have the right to decline to follow any such direction if the Trustee, being advised by counsel, shall determine that the action or proceeding so directed may not lawfully be taken or if the Trustee in good faith shall determine that the action or proceedings so directed would involve the Trustee in personal liability or if the Trustee in good faith shall determine that the actions or forbearances specified in or pursuant to such direction would be unduly prejudicial to the interests of Holders of the Securities of all series so affected not joining in the giving of said direction, it being understood that (subject to Section 5.01) the Trustee shall have no duty to ascertain whether or not such actions or forbearances are unduly prejudicial to such Holders.

Nothing in the Indenture shall impair the right of the Trustee in its discretion to take any action deemed proper by the Trustee and which is not inconsistent with such direction or directions by Holders.

Section 4.10 Waiver of Past Defaults. Prior to a declaration of the acceleration of the maturity of the Securities of any series as provided in Section 4.01, the Holders of a majority in aggregate principal amount of the Securities of such series at the time Outstanding (each such series voting as a separate class) may on behalf of the Holders of all the Securities of such series waive any past default or Event of Default described in clause 4.01(d) or 4.01(g) which relates to less than all series of Securities then Outstanding, except a default in respect of a covenant or provision hereof which cannot be modified or amended without the consent of each Holder affected as provided in Section 7.02. Prior to a declaration of acceleration of the maturity of the Securities of any series as provided in Section 4.01, the Holders of Securities of a majority in principal amount of all the Securities then Outstanding (voting as one class) may on behalf of all Holders waive any past default or Event of Default referred to in said clause 4.01(d) or 4.01(g) which relates to all series of Securities then Outstanding, or described in clause 4.01(e) or 4.01(f), except a default in respect of a covenant or provision hereof which cannot be modified or amended without the consent of the Holder of each Security affected as provided in Section 7.02. In the case of any such waiver, the Issuer, the Trustee and the Holders of the Securities of each series affected shall be restored to their former positions and rights hereunder, respectively.

Upon any such waiver, such default shall cease to exist and be deemed to have been cured and not to have occurred, and any Event of Default arising therefrom shall be deemed to have been cured, and not to have occurred for every purpose of this Indenture; but no such waiver shall extend to any subsequent or other default or Event of Default or impair any right consequent thereon.

Section 4.11 Right of Court to Require Filing of Undertaking to Pay Costs. In any suit for the enforcement of any right or remedy under the Indenture or in any suit against the Trustee for any action taken or omitted by it as Trustee, a court may require any party litigant in such suit (other than the Trustee) to file an undertaking to pay the costs of the suit, and the court may assess reasonable costs, including reasonable attorney's fees, against any party litigant (other than the Trustee) in the suit having due regard to the merits and good faith of the claims or defenses made by the party litigant.

This Section does not apply to a suit by a Holder to enforce payment of principal of or interest on any Security on the respective due dates, or a suit by Holders of more than 10% in principal amount of the Outstanding Securities.

Article 5
CONCERNING THE TRUSTEE

Section 5.01 Duties and Responsibilities of the Trustee.

(a) Except during the continuance of an Event of Default,

(1) the Trustee undertakes to perform such duties and only such duties as are specifically set forth in this Indenture, and no implied covenants or obligations shall be read into this Indenture against the Trustee; and

(2) in the absence of bad faith on its part, the Trustee may conclusively rely, as to the truth of the statements and the correctness of the opinions expressed therein, upon certificates or opinions furnished to the Trustee and conforming to the requirements of this Indenture; but in the case of any such certificates or opinions which by any provision hereof are specifically required to be furnished to the Trustee, the Trustee shall be under a duty to examine the same to determine whether or not they conform to the requirements of this Indenture (but need not confirm or investigate the accuracy of mathematical calculations or other facts, statements, opinions or conclusions stated therein).

(b) In case an Event of Default has occurred and is continuing, the Trustee shall exercise such of the rights and powers vested in it by this Indenture, and use the same degree of care and skill in their exercise, as a prudent person would exercise or use under the circumstances in the conduct of his or her own affairs.

(c) No provision of this Indenture shall be construed to relieve the Trustee from liability for its own negligent action, its own negligent failure to act or its own willful misconduct, except that

(i) this Subsection (c) shall not be construed to limit the effect of Subsections (a) or (d) of this Section;

(ii) the Trustee shall not be liable for any error of judgment made in good faith by a Responsible Officer, unless it shall be proved that the Trustee was negligent in ascertaining the pertinent facts; and

(iii) the Trustee shall not be liable with respect to any action taken or omitted to be taken by it in good faith in accordance with the direction of the Holders of a majority in principal amount of the Outstanding Securities of any series, determined as provided herein, relating to the time, method and place of conducting any proceeding for any remedy available to the Trustee, or exercising any trust or power conferred upon the Trustee, under this Indenture with respect to the Securities of such series.

(d) No provision of this Indenture shall require the Trustee to expend or risk its own funds or otherwise incur any financial liability in the performance of any of its duties hereunder, or in the exercise of any of its rights or powers, if it shall have reasonable grounds for believing that repayment of such funds or adequate indemnity against such risk or liability is not reasonably assured to it.

(e) Whether or not therein expressly so provided, every provision of this Indenture relating to the conduct or affecting the liability of or affording protection to the Trustee shall be subject to the provisions of this Section 5.01.

(f) The Trustee shall not be responsible for the application of any money by any Paying Agent other than the Trustee.

(g) All moneys received by the Trustee shall, until used or applied as herein provided, be held in trust for the purposes for which they were received, but need not be segregated from other funds except to the extent required by law. Neither the Trustee nor any agent of the Issuer or the Trustee shall be liable for interest on any money received by it hereunder except such as it may agree with the Issuer in writing to pay thereon.

Section 5.02 Notice of Default. Within 90 days after the occurrence of any default hereunder with respect to the Securities of any series, the Trustee shall transmit first-class by mail, postage prepaid, to all Holders of Securities of such series, as their names and addresses appear in the Security Register, notice of such default hereunder known to the Trustee, unless such default shall have been cured or waived; provided, however, that, except in the case of a default in the payment of the principal of (or premium, if any) or interest on any Security of such series or in the payment of any sinking fund installment with respect to Securities of such series, the Trustee shall be protected in withholding such notice if and so long as the board of directors, the executive committee or a trust committee of directors or Responsible Officers of the Trustee in good faith determines that the withholding of such notice is in the interest of the Holders of Securities of such series. For the purpose of this Section, the term “default” means any event which is, or after notice or lapse of time or both would become, an Event of Default with respect to Securities of such series.

Section 5.03 Reports by the Trustee to Holders. Any Trustee’s report required under Trust Indenture Act Section 313(a) shall be transmitted on or before July 15 in each year following the date hereof, so long as any Securities are outstanding hereunder, and shall be dated as of a date convenient to the Trustee no more than 60 nor less than 45 days prior thereto, and shall be filed with each stock exchange upon which its Securities are listed and with the Commission as required by Trust Indenture Act Section 313(d).

The Trustee shall comply with Section 313(b) and 313(c) of the Trust Indenture Act.

A copy of each such report shall, at the time of such transmission to Holders, be filed by the Trustee with the Issuer, with each stock exchange upon which any Securities are listed (if so listed) and also with the Commission.

Section 5.04 Certain Rights of the Trustee. Subject to the provisions of Section 5.01:

(a) The Trustee may conclusively rely, and will be protected in acting or refraining from acting, upon any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, bond, debenture, note, other evidence of indebtedness or other paper or document believed by it to be genuine and to have been signed or presented by the proper party or parties.

(b) The Trustee shall not be bound to make any investigation into the facts or matters stated in any resolution, certificate, statement, instrument, opinion, report, notice, request, direction, consent, order, approval, appraisal, bond, debenture, note, other evidence of indebtedness or other paper or document, but the Trustee, in its discretion, may make such further inquiry or investigation into such facts or matters as it may see fit, and, if the Trustee shall determine to make such further inquiry or investigation, it shall be entitled to examine the books, records and premises of the Company, personally or by agent or attorney at the sole cost of the Company and shall incur no liability or additional liability of any kind by reason of such inquiry or investigation.

(c) Before the Trustee acts or refrains from acting, it may require an Officers' Certificate or an Opinion of Counsel conforming to Section 11.05 and the Trustee will not be liable for any action it takes or omits to take in good faith in reliance on the certificate or opinion.

(d) The Trustee may act through its attorneys and agents and will not be responsible for the misconduct or negligence of any attorney or agent appointed by the Trustee with due care.

(e) The Trustee will be under no obligation to exercise any of the rights or powers vested in it by the Indenture or to institute, conduct or defend any litigation hereunder or in relation hereto at the request or direction of any of the Holders, unless such Holders have offered to the Trustee security or indemnity satisfactory to it against the costs, expenses and liabilities that might be incurred by it in compliance with such request or direction.

(f) The Trustee may consult with counsel, and any advice of such counsel or any Opinion of Counsel will be full and complete authorization and protection in respect of any action taken, suffered or omitted by it hereunder in good faith and in reliance thereon.

(g) The Trustee shall not be liable for any action taken, suffered or omitted by it in good faith and believed by it to be authorized or within the discretion or rights or powers conferred upon it by the Indenture.

(h) The Trustee shall have no duty to see to any recording, filing or depositing of the Indenture or any agreement referred to herein or any financing statement or continuation statement evidencing a security interest, or to see to the maintenance of any such re-recording or re-filing or re-depositing thereof.

(i) The Trustee shall not be required to take notice or be deemed to have notice or knowledge of any default or Event of Default unless a Responsible Officer of the Trustee shall have received written notice from the Issuer or any holder of the Securities at the Corporate Trust Office of the Trustee, and such notice references the Securities and this Indenture. In the absence of receipt of such notice or actual knowledge, the Trustee may conclusively presume that there is no default or Event of Default.

(j) Anything in this Indenture notwithstanding, in no event shall the Trustee be liable for special, indirect, exemplary, incidental, punitive or consequential or other similar loss or damage of any kind whatsoever (including but not limited to loss of profit), even if the Trustee has been advised as to the likelihood of such loss or damage and regardless of the form of action.

(k) The Trustee shall not be responsible or liable for any failure or delay in the performance of its obligations under this Indenture arising out of or caused, directly or indirectly, by circumstances beyond its control, including, without limitation, any provision of any law or regulation or any act of any governmental authority, acts of God; earthquakes; fire; flood; terrorism; wars and other military disturbances; sabotage; epidemics; riots; interruptions; loss or malfunctions of utilities, computer (hardware or software) or communication services; accidents; labor disputes; acts of civil or military authority and governmental action.

(l) The rights, privileges, protections, immunities and benefits given to the Trustee, including, without limitation, its right to be indemnified, are extended to, and shall be enforceable by, the Trustee in each of its capacities hereunder, and each agent, custodian and other Person employed to act hereunder.

(m) The Trustee may request that the Company deliver a certificate setting forth the names of individuals and/or titles of officers authorized at such time to take specified actions

pursuant to this Indenture, which certificate may be signed by any person authorized to sign an Officers' Certificate, including any person specified as so authorized in any such certificate previously delivered and not superseded.

(n) The permissive right of the Trustee to take or refrain from taking action hereunder shall not be construed as a duty.

Section 5.05 Trustee and Agents May Hold Securities; Collections, etc. The Trustee or any agent of the Issuer or the Trustee, in its individual or any other capacity, may become the owner or pledgee of Securities with the same rights it would have if it were not the Trustee or such agent and may otherwise deal with the Issuer and receive, collect, hold and retain collections from the Issuer with the same rights it would have if it were not the Trustee or such agent.

Section 5.06 Compensation and Indemnification of Trustee and Its Prior Claim.

(a) The Issuer will pay the Trustee compensation as agreed upon in writing for its services. The compensation of the Trustee is not limited by any law on compensation of a Trustee of an express trust. The Issuer will reimburse the Trustee upon request for all reasonable expenses (including out-of-pocket expenses), disbursements and advances incurred or made by the Trustee, (including the reasonable compensation and the expenses and disbursements of its counsel and of all agents and other persons not regularly in its employ) except to the extent any such expense, disbursement or advance may arise from its gross negligence or willful misconduct. The Issuer also covenants to indemnify the Trustee, its directors, officers, employees and agents and each predecessor Trustee, its directors, officers, employees and agents for, and to hold each of them harmless against, any and all loss, damage, claims, liability or expense, including fees and expenses of counsel, including taxes (other than taxes based upon, measured by or determined by the income of the Trustee), arising out of or in connection with this Indenture, the Securities, the acceptance or administration of the trust or trusts hereunder, including the costs and expenses of defending itself against any claim (whether asserted by the Company, or any Holder or any other Person) or liability in connection with the exercise or performance of any of its powers or duties hereunder, or in connection with enforcing the provisions of this Section, except to the extent that such loss, damage, claim, liability or expense is due to the Trustee's or any predecessor Trustee's own gross negligence or willful misconduct.

(b) To secure the Issuer's payment obligations in this Section, the Trustee will have a lien prior to the Securities on all money or property held or collected by the Trustee, in its capacity as Trustee, except money or property held in trust to pay principal of, and interest on particular Securities.

(c) In addition to, but without prejudice to its other rights under this Indenture, when the Trustee incurs expenses or renders services in connection with an Event of Default specified in Section 4.01(e) and Section 4.01(f), the expenses (including the reasonable charges and expenses of its counsel) and the compensation for the services are intended to constitute expenses of administration under any applicable federal or state bankruptcy, insolvency or other similar law.

(d) "Trustee" for purposes of this Section shall include any predecessor Trustee; provided, however, that the negligence, willful misconduct or bad faith of any Trustee hereunder shall not affect the rights of any other Trustee hereunder.

(e) The obligations of the Issuer under this Section 5.06 shall survive the resignation and removal of the Trustee and payment of the Securities, and shall extend to any co-trustee or separate trustee.

Section 5.07 Right of Trustee to Rely on Officers' Certificate, etc. Subject to Sections 5.01 and 5.04, whenever in the administration of the trusts of the Indenture the Trustee shall deem it necessary or desirable that a matter be proved or established prior to taking or suffering or omitting any action hereunder, such matter (unless other evidence in respect thereof be herein specifically prescribed) may, in the absence of gross negligence or willful misconduct on the part of the Trustee, be deemed to be conclusively proved and established by an Officers' Certificate delivered to the Trustee, and such certificate, in the absence of negligence or bad faith on the part of the Trustee, shall be full warrant to the Trustee for any action taken, suffered or omitted by it under the provisions of the Indenture upon the faith thereof.

Section 5.08 Disqualification; Conflicting Interests. If the Trustee has or shall acquire any "conflicting interest" within the meaning of Section 310(b) of the Trust Indenture Act, the Trustee and the Issuer shall in all respects comply with the provisions of Section 310(b) of the Trust Indenture Act.

Section 5.09 Persons Eligible for Appointment as Trustee. The Indenture must always have a Trustee that satisfies the requirements of Trust Indenture Act Section 310(a) and has a combined capital and surplus of at least \$50,000,000 as set forth in its most recent published annual report of condition.

Section 5.10 Resignation and Removal; Appointment of Successor Trustee. The Trustee, or any trustee or trustees hereafter appointed, may at any time resign with respect to one or more or all series of Securities by giving written notice of resignation to the Issuer and by mailing notice thereof by first class mail to Holders of the applicable series of Securities at their last addresses as they shall appear on the Register. Upon receiving such notice of resignation, the Issuer shall promptly appoint a successor trustee or trustees with respect to the applicable series by written instrument in duplicate, executed by authority of the Board of Directors, one copy of which instrument shall be delivered to the resigning Trustee and one copy to the successor trustee or trustees. If no successor trustee shall have been so appointed with respect to any series and have accepted appointment within 30 days after the mailing of such notice of resignation, the resigning Trustee may petition any court of competent jurisdiction for the appointment of a successor trustee, or any Holder who has been a *bona fide* Holder of a Security or Securities of the applicable series for at least six months may, subject to the provisions of Section 4.11, on behalf of himself and all others similarly situated, petition any such court for the appointment of a successor trustee. Such court may thereupon, after such notice, if any, as it may deem proper and prescribe, appoint a successor trustee.

(a) In case at any time any of the following shall occur:

(i) the Trustee shall fail to comply with the provisions of Section 310(b) of the Trust Indenture Act with respect to any series of Securities after written request therefor by the Issuer or by any Holder who has been a *bona fide* Holder of a Security or Securities of such series for at least six months; or

(ii) the Trustee shall cease to be eligible in accordance with the provisions of Section 310(a) of the Trust Indenture Act and shall fail to resign after written request therefor by the Issuer or by any Holder; or

(iii) the Trustee shall become incapable of acting with respect to any series of Securities, or shall be adjudged a bankrupt or insolvent, or a receiver or liquidator of the Trustee or of its property shall be appointed, or any public officer shall take charge or control of the Trustee or of its property or affairs for the purpose of rehabilitation, conservation or liquidation; then, in any such case, the Issuer may remove the Trustee with respect to the applicable series of Securities and appoint a successor trustee for such

series by written instrument, in duplicate, executed by order of the Board of Directors of the Issuer, one copy of which instrument shall be delivered to the Trustee so removed and one copy to the successor trustee, or any Holder who has been a *bona fide* Holder of a Security or Securities of such series for at least six months may on behalf of himself and all others similarly situated, petition any court of competent jurisdiction for the removal of the Trustee and the appointment of a successor trustee with respect to such series. Such court may thereupon, after such notice, if any, as it may deem proper and prescribe, remove the Trustee and appoint a successor trustee.

(b) The Holders of a majority in aggregate principal amount of the Securities of each series at the time Outstanding may at any time, with 30 days prior notice, remove the Trustee with respect to Securities of such series and appoint a successor trustee with respect to the Securities of such series with the consent of the Issuer by delivering to the Trustee so removed, to the successor trustee so appointed and to the Issuer the evidence provided for in Section 6.01 of the action in that regard taken by the Holders.

(c) Any resignation or removal of the Trustee with respect to any series and any appointment of a successor trustee with respect to such series pursuant to any of the provisions of this Section 5.10 shall become effective upon acceptance of appointment by the successor trustee as provided in Section 5.11.

(d) Any successor trustee appointed pursuant to this Section may be appointed with respect to the Securities of one or more series or all of such series, and at any time there shall be only one Trustee with respect to the Securities of any particular series.

Section 5.11 Acceptance of Appointment by Successor. Any successor trustee appointed as provided in Section 5.10 shall execute and deliver to the Issuer and to its predecessor trustee an instrument accepting such appointment hereunder, and thereupon the resignation or removal of the predecessor trustee with respect to all or any applicable series shall become effective and such successor trustee, without any further act, deed or conveyance, shall become vested with all rights, powers, duties and obligations with respect to such series of its predecessor hereunder, with like effect as if originally named as trustee for such series hereunder; but, nevertheless, on the written request of the Issuer or of the successor trustee, upon payment of its charges then unpaid, the trustee ceasing to act shall, subject to Section 9.06 and subject to the lien provided for in Section 5.06(b), pay over to the successor trustee all moneys at the time held by it hereunder and shall execute and deliver an instrument transferring to such successor trustee all such rights, powers, duties and obligations.

If a successor trustee is appointed with respect to the Securities of one or more (but not all) series, the Issuer, the predecessor Trustee and each successor trustee with respect to the Securities of any applicable series shall execute and deliver an indenture supplemental hereto which shall contain such provisions as shall be deemed necessary or desirable to confirm that all the rights, powers, trusts and duties of the predecessor Trustee with respect to the Securities of any series as to which the predecessor Trustee is not retiring shall continue to be vested in the predecessor Trustee, and shall add to or change any of the provisions of the Indenture as shall be necessary to provide for or facilitate the administration of the trusts hereunder by more than one trustee, it being understood that nothing herein or in such supplemental indenture shall constitute such trustees co-trustees of the same trust and that each such trustee shall be trustee of a trust or trusts under separate indentures.

Upon acceptance of appointment by any successor trustee as provided in this Section 5.11, the Issuer shall mail notice thereof by first-class mail to the Holders of any series for which such successor trustee is acting as trustee at their last addresses as they shall appear in the Register. If the acceptance of appointment is substantially contemporaneous with the resignation,

then the notice called for by the preceding sentence may be combined with the notice called for by Section 5.10. If the Issuer fails to mail such notice within ten days after acceptance of appointment by the successor trustee, the successor trustee shall cause such notice to be mailed at the expense of the Issuer.

Section 5.12 Merger, Conversion, Consolidation or Succession to Business of Trustee. If the Trustee consolidates with, merges or converts into, or transfers all or substantially all of its corporate trust business to, another corporation or national banking association, the resulting, surviving or transferee corporation or national banking association without any further act will be the successor Trustee with the same effect as if the successor Trustee had been named as the Trustee in the Indenture.

In case at the time such successor to the Trustee shall succeed to the trusts created by the Indenture any of the Securities of any series shall have been authenticated but not delivered, any such successor to the Trustee may adopt the certificate of authentication of any predecessor Trustee and deliver such Securities so authenticated; and, in case at that time any of the Securities of any series shall not have been authenticated, any successor to the Trustee may authenticate such Securities either in the name of any predecessor hereunder or in the name of the successor Trustee; and in all such cases such certificate shall have the full force which it is anywhere in the Securities of such series or in the Indenture provided that the certificate of the Trustee shall have; provided, that the right to adopt the certificate of authentication of any predecessor Trustee or to authenticate Securities of any series in the name of any predecessor Trustee shall apply only to its successor or successors by merger, conversion or consolidation.

Section 5.13 Preferential Collection of Claims Against the Issuer. The Trustees shall comply with Section 311(a) of the Trust Indenture Act, excluding any creditor relationship described in Section 311(b) of the Trust Indenture Act. A Trustee who has resigned or been removed shall be subject to Section 311(a) of the Trust Indenture Act to the extent included therein.

Section 5.14 Tax Withholding.

Notwithstanding any other provision of this Agreement, the Trustee shall be entitled to make a deduction or withholding from any payment which it makes under this Indenture for or on account of any present or future taxes, duties or charges if and to the extent so required by any applicable law and any current or future regulations or agreements thereunder or official interpretations thereof or any law implementing an intergovernmental approach thereto or by virtue of the relevant holder failing to satisfy any certification or other requirements in respect of the Securities, in which event the Trustee shall make such payment after such withholding or deduction has been made and shall timely account to the relevant authorities for the amount so withheld or deducted and shall have no obligation to gross up any payment hereunder or pay any additional amount as a result of such withholding tax.

Each of the Issuer and the Trustee agrees to reasonably cooperate and, at the reasonable request of the other, to provide the other with such information as each may have in its possession that is necessary to enable the determination of whether any payments hereunder are subject to any withholding or deduction pursuant to an agreement described in Section 1471(b) of the US Internal Revenue Code of 1986, as amended (the "Code") or otherwise imposed pursuant to Sections 1471 through 1474 of the Code and any regulations, or agreements thereunder or official interpretations thereof or any intergovernmental agreement between the United States and another jurisdiction facilitating the implementation thereof (or any law implementing such an intergovernmental agreement).

Article 6
CONCERNING THE HOLDERS

Section 6.01 Evidence of Action Taken by Holders. Any request, demand, authorization, direction, notice, consent, waiver or other action provided by the Indenture to be given or taken by a specified percentage in principal amount of the Holders of any or all series may be embodied in and evidenced by one or more instruments of substantially similar tenor signed by such specified percentage of Holders in person or by agent duly appointed in writing; and, except as herein otherwise expressly provided, such action shall become effective when such instrument or instruments are delivered to the Trustee.

If the Issuer shall solicit from the Holders of any series any request, demand, authorization, direction, notice, consent, waiver or other action, the Issuer may, at its option, as evidenced by an Officers' Certificate, fix in advance a record date for such series for the determination of Holders entitled to give such request, demand, authorization, direction, notice, consent, waiver or other action, but the Issuer shall have no obligation to do so. If such a record date is fixed, such request, demand, authorization, direction, notice, consent, waiver or other action, may be given before or after the record date, but only the Holders of the requisite proportion of Outstanding Securities of that series who have authorized or agreed or consented to such request, demand, authorization, direction, notice, consent, waiver or other action, and for that purpose the Outstanding Securities of that series shall be computed as of the record date; provided, however, that no such authorization, agreement or consent by such Holders on the record date shall be deemed effective unless it shall become effective pursuant to the provisions of the Indenture not later than six months after the record date.

Proof of execution of any instrument or of a writing appointing any such agent shall be sufficient for any purpose of the Indenture and (subject to Sections 5.01 and 5.04) conclusive in favor of the Trustee and the Issuer, if made in the manner provided in this Article.

Section 6.02 Proof of Execution of Instruments and of Holding of Securities; Record Date. Subject to Sections 5.01 and 5.04, the execution of any instrument by a Holder or his agent or proxy may be proved in accordance with such reasonable rules and regulations as may be prescribed by the Trustee or in such manner as shall be satisfactory to the Trustee. The holding of Securities shall be proved by the Register or by a certificate of the registrar thereof. The Issuer may set a record date for purposes of determining the identity of Holders of any series entitled to vote or consent to any action referred to in Section 6.01, which record date may be set at any time or from time to time by notice to the Trustee, for any date or dates (in the case of any adjournment or reconsideration) not more than 60 days nor less than five days prior to the proposed date of such vote or consent, and thereafter, notwithstanding any other provisions hereof, only Holders of such series of record on such record date shall be entitled to so vote or give such consent or revoke such vote or consent. Notice of such record date may be given before or after any request for any action referred to in Section 6.01 is made by the Issuer.

Section 6.03 Holders to Be Treated as Owners. Prior to the due presentment for registration of transfer of any Security, the Issuer, the Trustee and any agent of the Issuer or the Trustee may deem and treat the person in whose name any Security shall be registered upon the Register for such series as the absolute owner of such Security (whether or not such Security shall be overdue and notwithstanding any notation of ownership or other writing thereon) for the purpose of receiving payment of or on account of the principal of, and, subject to the provisions of the Indenture, interest on such Security and for all other purposes; and neither the Issuer, the Trustee, nor any agent of the Issuer or the Trustee shall be affected by any notice to the contrary. All such payments so made to any such person, or upon his order, shall be valid, and, to the

extent of the sum or sums so paid, effectual to satisfy and discharge the liability for moneys payable upon any such Security.

None of the Trustee, the Paying Agent or Registrar shall have any responsibility or obligation to any beneficial owner in a Global Security, a Depositary participant or other Person with respect to the accuracy of the records of the Depositary or its nominee or of any Depositary participant, with respect to any ownership interest in the Securities or with respect to the delivery to any Depositary participant, beneficial owner or other Person (other than the Depositary) of any notice (including any notice of redemption) or the payment of any amount, under or with respect to such Securities. All notices and communications to be given to the Holders and all payments to be made to Holders under the Securities and this Indenture shall be given or made only to or upon the order of the registered holders (which shall be the Depositary or its nominee in the case of the Global Security). The rights of beneficial owners in the Global Security shall be exercised only through the Depositary subject to the applicable procedures.

The Trustee, the Paying Agent and the Registrar shall be entitled to rely and shall be fully protected in relying upon information furnished by the Depositary with respect to its members, participants and any beneficial owners. The Trustee, the Paying Agent and the Registrar shall be entitled to deal with the Depositary, and any nominee thereof, that is the registered holder of any Global Security for all purposes of this Indenture relating to such Global Security (including the payment of principal, premium, if any, and interest and additional amounts, if any, and the giving of instructions or directions by or to the owner or holder of a beneficial ownership interest in such Global Security) as the sole holder of such Global Security and shall have no obligations to the beneficial owners thereof. None of the Trustee, the Paying Agent or the Registrar shall have any responsibility or liability for any acts or omissions of the Depositary with respect to such Global Security, for the records of any such depositary, including records in respect of beneficial ownership interests in respect of any such Global Security, for any transactions between the Depositary and any Depositary participant or between or among the Depositary, any such Depositary participant and/or any holder or owner of a beneficial interest in such Global Security, or for any transfers of beneficial interests in any such Global Security.

Notwithstanding the foregoing, with respect to any Global Security, nothing herein shall prevent the Company, the Trustee, or any agent of the Company or the Trustee from giving effect to any written certification, proxy or other authorization furnished by any Depositary (or its nominee), as a Holder, with respect to such Global Security or shall impair, as between such Depositary and owners of beneficial interests in such Global Security, the operation of customary practices governing the exercise of the rights of such Depositary (or its nominee) as Holder of such Global Security.

Section 6.04 Securities Owned by Issuer Deemed Not Outstanding. In determining whether the Holders of the requisite aggregate principal amount of Outstanding Securities of any or all series have concurred in any direction, consent or waiver under the Indenture, Securities which are owned by the Issuer or any other obligor on the Securities with respect to which such determination is being made or by any person directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer or any other obligor on the Securities with respect to which such determination is being made shall be disregarded and deemed not to be Outstanding for the purpose of any such determination, except that for the purpose of determining whether the Trustee shall be protected in relying on any such direction, consent or waiver only Securities which a Responsible Officer of the Trustee actually knows are so owned, or has received written notice that such Securities are so owned, shall be so disregarded. Securities so owned which have been pledged in good faith may be regarded as Outstanding if the pledgee establishes to the satisfaction of the Trustee the pledgee's right so to act with respect to such Securities and that the pledgee is not the Issuer or any other obligor upon the Securities or any person directly or indirectly controlling or controlled by or under direct or indirect

common control with the Issuer or any other obligor on the Securities. In case of a dispute as to such right, the advice of counsel shall be full protection in respect of any decision made by the Trustee in accordance with such advice. Upon request of the Trustee, the Issuer shall furnish to the Trustee promptly an Officers' Certificate listing and identifying all Securities, if any, known by the Issuer to be owned or held by or for the account of any of the above-described persons; and, subject to Sections 5.01 and 5.04, the Trustee shall be entitled to accept such Officers' Certificate as conclusive evidence of the facts therein set forth and of the fact that all Securities not listed therein are Outstanding for the purpose of any such determination.

Section 6.05 Right of Revocation of Action Taken. At any time prior to (but not after) the evidencing to the Trustee, as provided in Section 6.01, of the taking of any action by the Holders of the percentage in aggregate principal amount of the Securities of any or all series, as the case may be, specified in the Indenture in connection with such action, any Holder of a Security the serial number of which is shown by the evidence to be included among the serial numbers of the Securities the Holders of which have consented to such action may, by filing written notice at the applicable Corporate Trust Office and upon proof of holding as provided in this Article, revoke such action so far as concerns such Security. Except as aforesaid any such action taken by the Holder of any Security shall be conclusive and binding upon such Holder and upon all future Holders and owners of such Security and of any Securities issued in exchange or substitution therefor, irrespective of whether or not any notation in regard thereto is made upon any such Security. Any action taken by the Holders of the percentage in aggregate principal amount of the Securities of any or all series, as the case may be, specified in the Indenture in connection with such action shall be conclusively binding upon the Issuer, the Trustee and the Holders of all the Securities affected by such action.

Article 7
AMENDMENTS, SUPPLEMENTS AND WAIVERS

Section 7.01 Supplemental Indentures without Consent of Holders. The Issuer and the Trustee may amend the Indenture or the Securities or enter into an indenture supplemental hereto without notice to or the consent of any Holder to

- (a) cure ambiguities, mistakes, defects or inconsistencies;
- (b) to comply with Article 8 in the case of a merger or consolidation;
- (c) make any change that would provide any additional rights or benefits to the Holders of the Securities of a series;
- (d) provide for or add guarantors with respect to the Securities of any series;
- (e) secure the Securities of a series;
- (f) establish the form or forms of Securities of any series;
- (g) maintain the qualification of the Indenture under the Trust Indenture Act;
- (h) conform any provision in the Indenture to the prospectus, offering memorandum, offering circular or any other document pursuant to which the Securities of such series were offered;
- (i) make any change that does not adversely affect the rights of any Holder in any material respect; or

The Trustee is hereby authorized to join with the Issuer in the execution of any such amendment or supplemental indenture, to make any further appropriate agreements and stipulations which may be therein contained and to accept the conveyance, transfer, assignment, mortgage or pledge of any property thereunder, but the Trustee shall not be obligated to enter into any such amendment or supplemental indenture which affects the Trustee's own rights, duties or immunities under the Indenture or otherwise.

Any amendment or supplemental indenture authorized by the provisions of this section may be executed without notice to and without the consent of the Holders of any of the Securities at the time Outstanding, notwithstanding any of the provisions of Section 7.02.

Section 7.02 Supplemental Indentures with Consent of Holders.

(a) With the consent (evidenced as provided in Article 6) of the Holders of not less than a majority in aggregate principal amount of the Securities at the time Outstanding of all series affected by such amendment or supplemental indenture (voting as one class), the Issuer, when authorized by a resolution of its Board of Directors, and the Trustee may, from time to time and at any time, enter into an indenture or indentures supplemental hereto for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of the Indenture or of any supplemental indenture or of modifying in any manner the rights of the Holders of the Securities of each such series and such Holders may waive future compliance by the Issuer with a provision of the Indenture or the Securities.

(b) Notwithstanding the provisions of paragraph (a), without the consent of each affected Holder of a particular series, an amendment, supplement or waiver may not

- (i) reduce the principal amount, or extend the fixed maturity, of the Securities, alter or waive the redemption provisions of the Securities;
- (ii) change the currency in which principal, any premium or interest is paid;
- (iii) reduce the percentage in principal amount Outstanding of Securities of any series which must consent to an amendment, supplement or waiver or consent to take any action;
- (iv) impair the right to institute suit for the enforcement of any payment on the Securities;
- (v) waive a payment default with respect to the Securities or any guarantor;
- (vi) reduce the interest rate or extend the time for payment of interest on the Securities; or
- (vii) adversely affect the ranking of the Securities of any series.

It shall not be necessary for the consent of the Holders under this section to approve the particular form of any proposed supplemental indenture, but it shall be sufficient if such consent shall approve the substance thereof.

Section 7.03 Execution of Amendments or Supplemental Indentures or Waivers. Upon the request of the Issuer, accompanied by a copy of a resolution of the Board of Directors certified by the secretary or an assistant secretary of the Issuer authorizing the execution of any such amendment, supplemental indenture or waiver and upon the filing with the Trustee of evidence of the consent of Holders as aforesaid and other documents, if any, required by Section 6.01, the Trustee shall join with the Issuer in the execution of such amendment, supplemental indenture or waiver unless such supplemental indenture or waiver affects the Trustee's own rights, duties or immunities under the Indenture or otherwise, in which case the Trustee may in its discretion, but shall not be obligated to, enter into such amendment, supplemental indenture or waiver.

The Trustee, subject to the provisions of Sections 5.01 and 5.04, shall receive an Officers' Certificate and an Opinion of Counsel as conclusive evidence that any amendment, supplemental indenture or waiver executed pursuant to this Article 7 complies with the Indenture; provided, however, that such Officers' Certificate and Opinion of Counsel need not be provided in connection with the execution of an amendment, supplemental indenture or waiver that establishes the terms of a series of Securities pursuant to Section 2.01 hereof.

Promptly after the execution by the Issuer and the Trustee of any amendment, supplemental indenture or waiver pursuant to the provisions of this Section, the Issuer shall mail a notice thereof by first class mail to the Holders of each series affected thereby at their addresses as they shall appear on the registry books of the Issuer, setting forth in general terms the substance of such amendment, supplemental indenture or waiver. Any failure of the Issuer to mail such notice, or any defect therein, shall not, however, in any way impair or affect the validity of any such amendment, supplemental indenture or waiver.

Section 7.04 Effect of Amendment, Supplemental Indenture or Waiver. Upon the execution of any amendment, supplemental indenture or waiver pursuant to the provisions hereof, the Indenture shall be and be deemed to be modified and amended in accordance therewith and the respective rights, limitations of rights, obligations, duties and immunities under the Indenture of the Trustee, the Issuer and the Holders of each series affected thereby shall

thereafter be determined, exercised and enforced hereunder subject in all respects to such modifications and amendments, and all the terms and conditions of any such amendment, supplemental indenture or waiver shall be and be deemed to be part of the terms and conditions of the Indenture for any and all purposes.

Section 7.05 Effect of Consent. After an amendment, supplement or waiver becomes effective, it will bind every Holder unless it is of the type requiring the consent of each Holder affected. If the amendment, supplement or waiver is of the type requiring the consent of each Holder affected, the amendment, supplement or waiver will bind each Holder that has consented to it and every subsequent Holder of a Security that evidences the same debt as the Security of the consenting Holder.

Section 7.06 Notation on Securities in Respect of Amendments, Supplemental Indentures or Waivers. Securities of any series authenticated and delivered after the execution of any amendment, supplemental indenture or waiver pursuant to the provisions of this Article may bear a notation in form approved by the Trustee for such series, as to any matter provided for by such amendment, supplemental indenture or waiver or as to any action taken at any such meeting. If the Trustee shall so determine, new Securities of any series so modified as to conform, in the opinion of the Trustee and the Board of Directors of the Issuer, to any modification of the Indenture contained in any such amendment, supplemental indenture or waiver may be prepared by the Issuer, authenticated by the Trustee and delivered in exchange for the Securities of such series then Outstanding.

Section 7.07 Conformity with the Trust Indenture Act. Every amendment, supplemental indenture or waiver executed pursuant to this Article shall conform to the requirements of the Trust Indenture Act as then in effect.

Article 8
CONSOLIDATION, MERGER, SALE OR CONVEYANCE

Section 8.01 Consolidation, Merger or Sale of Assets by the Issuer.

(a) The Issuer shall not merge or consolidate or combine with or into or, directly or indirectly, sell, assign, convey, lease, transfer or otherwise dispose of all or substantially all of its assets to any Person or persons in a single transaction or through a series of transactions, unless:

(i) the Issuer shall be the continuing person or, if the Issuer is not the continuing person, the resulting, surviving or transferee person (the “Surviving Entity”) is a company organized and existing under the laws of the United States or any State or territory;

(ii) the Surviving Entity shall expressly assume all of the Issuer’s obligations under the Securities and the Indenture, and shall execute a supplemental indenture in form reasonably satisfactory to the Trustee;

(iii) immediately after giving effect to such transaction or series of transactions on a pro forma basis, no Event of Default has occurred and is continuing; and

(iv) the Issuer or the Surviving Entity will have delivered to the Trustee an Officers’ Certificate and Opinion of Counsel stating that the transaction or series of transactions and a supplemental indenture, if any, complies with this Article 8 and that all conditions precedent in the Indenture relating to the transaction or series of transactions have been complied with.

(b) The restrictions in paragraph Sections Section 8.01(a)(iii) and Section 8.01(a)(iv) shall not be applicable to:

(i) the merger or consolidation of the Issuer with an affiliate of the Issuer if the Board of Directors determines in good faith that the purpose of such transaction is principally to change the state of incorporation of the Issuer or convert the form of organization of the Issuer to another form; or

(ii) the merger of the Issuer with or into a single direct or indirect wholly owned subsidiary of the Issuer pursuant to Section 251(g) of the General Corporation Law of the State of Delaware.

Section 8.02 Successor Corporation Substituted. If any consolidation or merger or any sale, assignment, conveyance, lease, transfer or other disposition of all or substantially all of the Issuer’s assets occurs in accordance with the Indenture, the Surviving Entity shall succeed to, and be substituted for, and may exercise every right and power of the Issuer under the Indenture with the same effect as if such Surviving Entity had been named herein as the Issuer and the Issuer shall (except in the case of a lease) be discharged from all obligations and covenants under the Indenture and the Securities.

Section 8.03 Opinion of Counsel to Trustee. The Trustee, subject to the provisions of Sections 5.01 and 5.05, shall receive an Opinion of Counsel, prepared in accordance with this Section 8.01 and Section 11.05, as conclusive evidence that any such consolidation, combination, merger, sale, conveyance, lease, transfer or other disposition, and any such succession, substitution and assumption complies with the applicable provisions of the Indenture.

Article 9
DEFEASANCE AND DISCHARGE; UNCLAIMED MONEYS

Section 9.01 Satisfaction and Discharge of Indenture. The Issuer may terminate its obligations under the Indenture, when:

(a) either (i) all the Securities of any series issued that have been authenticated and delivered have been accepted by the Trustee for cancellation (other than any Securities of such series which shall have been destroyed, lost or stolen and which shall have been replaced or paid as provided in Section 2.09); or (ii) all the Securities of any series issued that have not been accepted by the Trustee for cancellation shall have become due and payable, or by their terms will become due and payable within one year or are to be called for redemption within one year, and the Issuer shall have made irrevocable arrangements satisfactory to the Trustee for the giving of notice of redemption by such Trustee in the Issuer's name, and at the Issuer's expense, and in all cases the Issuer have irrevocably deposited or caused to be deposited with the Trustee sufficient funds, without reinvestment, to pay and discharge the entire indebtedness on the series of Securities to pay principal, interest and any premium; and

(b) The Issuer shall have paid or caused to be paid all other sums then due and payable under the Indenture; and

(c) The Issuer shall have delivered to the Trustee an Officers' Certificate and an Opinion of Counsel each stating that all conditions precedent under the Indenture relating to the satisfaction and discharge of the indenture have been complied with.

If the foregoing conditions are met, the Trustee, on demand of the Issuer accompanied by an Officers' Certificate and an Opinion of counsel and at the cost and expense of the Issuer, shall execute proper instruments prepared by the Issuer acknowledging such satisfaction of and discharging the Indenture with respect to such series except as to:

- (1) rights of registration of transfer and exchange of Securities of such series, and the Issuer's right of optional redemption, if any;
- (2) substitution of mutilated, defaced, destroyed, lost or stolen Securities;
- (3) rights of Holders to receive payments when due of principal thereof and interest thereon, and remaining rights of the holders to receive mandatory sinking fund payments, if any;
- (4) the rights, powers, trusts, duties and immunities of the Trustee hereunder,
- (5) the rights of the Holders of such series as beneficiaries hereof with respect to the property so deposited with the Trustee payable to all or any of them; and
- (6) the rights of the Issuer to be repaid any money pursuant to Sections 9.05 and 9.06.

Section 9.02 Legal Defeasance. After the 91st day following the deposit referred to in Section 9.01, the Issuer will be deemed to have paid and will be discharged from its obligations in respect of the Securities of any series and the Indenture, other than its obligations

in Article 2 and Sections 3.01, 3.02, 5.06, 5.10, and listed in clauses (1), (2), (3), (4), (5) and (6) of Section 9.01, provided the following conditions have been satisfied:

(a) The Issuer has irrevocably deposited or caused to be deposited with the Trustee as trust funds for the purpose of making the following payments, specifically pledged as security for, and dedicated solely to the benefits of the holders of the Securities of a series in cash or Governmental Obligations or a combination thereof (other than moneys repaid by the Trustee or any paying agent to the Issuer in accordance with Section 9.06) in each case sufficient without reinvestment, in the written opinion of an internationally recognized firm of independent public accountants to pay and discharge, and which shall be applied by the Trustee to pay and discharge, all of the principal, interest and any premium at due date or maturity or if the Issuer has made irrevocable arrangements satisfactory to the Trustee for the giving of notice of redemption by the trustee in the Issuer's name and at the Issuer's expense, the redemption date;

(b) The Issuer has delivered to the Trustee an Opinion of Counsel stating that, as a result of an IRS ruling or a change in applicable federal income tax law, the holders of the Securities of that series will not recognize gain or loss for federal income tax purposes as a result of the deposit, defeasance and discharge to be effected and will be subject to the same federal income tax as would be the case if the deposit, defeasance and discharge did not occur;

(c) No default with respect to the outstanding Securities of that series has occurred and is continuing at the time of such deposit after giving effect to the deposit or, in the case of legal defeasance, no default relating to bankruptcy or insolvency has occurred and is continuing at any time on or before the 91st day after the date of such deposit, it being understood that this condition is not deemed satisfied until after the 91st day;

(d) The defeasance will not cause the Trustee to have a conflicting interest within the meaning of the Trust Indenture Act, assuming all Securities of a series were in default within the meaning of such Act;

(e) The deposit will not result in a breach or violation of, or constitute a default under, any other agreement or instrument to which the Issuer is a party or by which it is bound;

(f) The defeasance will not result in the trust arising from such deposit constituting an investment company within the meaning of the Investment Company Act of 1940, as amended, unless the trust is registered under such Act or exempt from registration; and

(g) The Issuer has delivered to the Trustee an Officers' Certificate and an Opinion of Counsel, in each case stating that all conditions precedent provided for herein relating to the defeasance have been complied with;

Prior to the end of the 91-day period, none of the Issuer's obligations under the Indenture will be discharged. Thereafter, the Trustee upon request will acknowledge in writing the discharge of the Issuer's obligations under the Securities and the Indenture except for the surviving obligations specified above.

Section 9.03 Covenant Defeasance. After the 91st day following the deposit referred to in Section 9.01, the Issuer's obligations set forth in Sections 3.04, 3.05 and 8.01 will terminate and Section 4.01(d) will no longer constitute an Event of Default, provided the following conditions have been satisfied:

(a) The Issuer has complied with clauses (a), (c), (d), (e), (f) and (g) of Section 9.02; and

(b) the Issuer has delivered to the Trustee an Opinion of Counsel to the effect that the holders of the Securities of that series will not recognize gain or loss for U.S. federal income tax purposes as a result of the deposit and covenant defeasance to be effected and will be subject to the same federal income tax as would be the case if the deposit and covenant defeasance did not occur.

Except as specifically stated above, none of the Issuer's obligations under the Indenture will be discharged.

Section 9.04 Application by Trustee of Funds Deposited for Payment of Securities. Subject to Section 9.06, all moneys deposited with the Trustee pursuant to Section 9.01 shall be held in trust and applied by it to the payment, either directly or through any paying agent (including the Issuer acting as its own paying agent), to the Holders of the particular Securities of such series for the payment or redemption of which such moneys or Governmental Obligations have been deposited with the Trustee, of all sums due and to become due thereon for principal and interest. Such money need not be segregated from other funds except to the extent required by law.

Section 9.05 Repayment of Moneys Held by Paying Agent. In connection with the satisfaction and discharge of the Indenture with respect to Securities of any series, all moneys then held by any paying agent under the provisions of the Indenture with respect to such series of Securities shall, upon demand of the Issuer, be repaid to the Issuer or paid to the Trustee and thereupon such paying agent shall be released from all further liability with respect to such moneys or Governmental Obligations.

Section 9.06 Return of Moneys Held by Trustee and Paying Agent Unclaimed for Two Years. Any moneys or Governmental Obligations deposited with or paid to the Trustee or any paying agent for the payment of the principal of or interest on any Security of any series and not applied but remaining unclaimed for two years after the date upon which such principal or interest shall have become due and payable, shall, upon the written request of the Issuer and unless otherwise required by mandatory provisions of applicable escheat or abandoned or unclaimed property law, be repaid to the Issuer by the Trustee for such series or such paying agent, and the Holder of the Security of such series shall, unless otherwise required by mandatory provisions of applicable escheat or abandoned or unclaimed property laws, thereafter look only to the Issuer for any payment which such Holder may be entitled to collect, and all liability of the Trustee or any paying agent with respect to such moneys shall thereupon cease.

Section 9.07 Effect of Subordination Provisions. Unless otherwise expressly established pursuant to Section 2.03 with respect to the Subordinated Securities of any series, the provisions of Article 10 hereof, insofar as they pertain to the Subordinated Securities of such series, and the Subordination Provisions established pursuant to Section 2.03(i) with respect to such series, are hereby expressly made subject to the provisions for satisfaction and discharge and defeasance and covenant defeasance set forth in this Article and, anything herein to the contrary notwithstanding, upon the effectiveness of such satisfaction and discharge and defeasance and covenant defeasance pursuant to this Article with respect to the Securities of such series, such Securities shall thereupon cease to be so subordinated and shall no longer be subject to the provisions of Article 10 or the Subordination Provision established pursuant to Section 2.03(i) with respect to such series and, without limitation to the foregoing, all moneys, U.S. government obligations and other securities or property deposited with the Trustee (or other qualifying trustee) in trust in connection with such satisfaction and discharge, defeasance or covenant defeasance, as the case may be, and all proceeds therefrom may be applied to pay the principal of, premium, if any, on, and mandatory sinking fund payments, if any, with respect to the

Securities of such series as and when the same shall become due and payable notwithstanding the provisions of Article 10 or such Subordination Provisions.

Article 10
SUBORDINATION OF SECURITIES

Section 10.01 Agreement to Subordinate. The Company, for itself, its successors and assigns, covenants and agrees, and each Holder of Subordinated Securities of any series by his or her acceptance thereof, likewise covenants and agrees, that the payment of the principal of (and premium, if any) and interest, if any, on, and mandatory sinking fund payments, if any, in respect of each and all of the Subordinated Securities of such series shall be expressly subordinated, to the extent and in the manner provided in the Subordination Provisions established with respect to the Subordinated Securities of such series pursuant to Section 2.03(i) hereof, in right of payment to the prior payment in full of all Senior Debt with respect to such series.

Article 11
MISCELLANEOUS PROVISIONS

Section 11.01 Incorporators, Stockholders, Employees, Officers and Directors of Issuer Exempt from Individual Liability. No recourse under or upon any obligation, covenant or agreement contained in the Indenture, or in any Security, or because of any indebtedness evidenced thereby, shall be had against any incorporator, as such, or against any past, present or future stockholder, employee, officer or director, as such, of the Issuer or of any successor, either directly or through the Issuer or any successor, under any rule of law, statute or constitutional provision or by the enforcement of any assessment or by any legal or equitable proceeding or otherwise, all such liability being expressly waived and released by the acceptance of the Securities by the holders thereof and as part of the consideration for the issue of the Securities.

Section 11.02 Provisions of Indenture for the Sole Benefit of Parties and Holders. Nothing in the Indenture or in the Securities, expressed or implied, shall give or be construed to give to any person, firm or corporation, other than the parties hereto and their successors and the Holders of the Securities, any legal or equitable right, remedy or claim under the Indenture or under any covenant or provision herein contained, all such covenants and provisions being for the sole benefit of the parties hereto and their successors and of the Holders of the Securities.

Section 11.03 Successors and Assigns of Issuer Bound by Indenture. All the agreements of the Issuer in the Indenture and the Securities shall bind its successors and assigns.

Section 11.04 Notices and Demands on Issuer, Trustee and Holders. Any notice or demand which by any provision of the Indenture is required or permitted to be given or served by the Trustee or by the Holders to or on the Issuer may be given or served by being deposited postage prepaid, first-class mail (except as otherwise specifically provided herein) addressed (until another address of the Issuer is filed by the Issuer with the Trustee) to Zymergen Inc., 5980 Horton Street, Suite 105, Emeryville, California 94608, Attention: Chief Legal Officer. Any notice, direction, request or demand by the Issuer or any Holder to or upon the Trustee shall be deemed to have been sufficiently given or made, for all purposes, if given or made at the applicable Corporate Trust Office of the Trustee upon actual receipt by the Trustee.

Where the Indenture provides for notice to Holders, such notice shall be sufficiently given (unless otherwise herein expressly provided) if in writing and mailed, first-class postage prepaid, to each Holder entitled thereto, at his last address as it appears in the Register. In any case where notice to Holders is given by mail, neither the failure to mail such notice, nor any defect in any notice so mailed, to any particular Holder shall affect the sufficiency of such notice with respect to other Holders. Where the Indenture provides for notice in any manner, such notice may be waived in writing by the person entitled to receive such notice, either before or after the event, and such waiver shall be the equivalent of such notice. Waivers of notice by Holders shall be filed with the Trustee, but such filing shall not be a condition precedent to the validity of any action taken in reliance upon such waiver.

In case, by reason of the suspension of or irregularities in regular mail service, it shall be impracticable to mail notice to the Issuer and Holders when such notice is required to be given pursuant to any provision of the Indenture, then any manner of giving such notice as shall be satisfactory to the Trustee shall be deemed to be a sufficient giving of such notice.

The Trustee shall have the right, but shall not be required, to rely upon and comply with notices, instructions, directions or other communications sent by e-mail, facsimile and other similar unsecured electronic methods by persons believed by the Trustee to be authorized to give instructions and directions on behalf of the Company. The Trustee shall have no duty or obligation to verify or confirm that the person who sent such instructions or directions is, in fact,

a person authorized to give instructions or directions on behalf of the Company; and the Trustee shall have no liability for any losses, liabilities, costs or expenses incurred or sustained by the Company as a result of such reliance upon or compliance with such notices, instructions, directions or other communications. The Company agrees to assume all risks arising out of the use of such electronic methods to submit notices, instructions, directions or other communications to the Trustee, including without limitation the risk of the Trustee acting on unauthorized instructions, and the risk of interception and misuse by third parties. The Company shall use all reasonable endeavors to ensure that any such notices, instructions, directions or other communications transmitted to the Trustee pursuant to this Indenture are complete and correct. Any such notices, instructions, directions or other communications shall be conclusively deemed to be valid instructions from the Company to the Trustee for the purposes of this Indenture.

Section 11.05 Officers' Certificates and Opinions of Counsel; Statements to Be Contained Therein. Upon any application or demand by the Issuer to the Trustee to take any action under any of the provisions of the Indenture, the Issuer shall furnish to the Trustee an Officers' Certificate stating that all conditions precedent, if any, provided for in the Indenture relating to the proposed action have been complied with and an Opinion of Counsel stating that in the opinion of such counsel all such conditions precedent have been complied with, except that in the case of any such application or demand as to which the furnishing of such documents is specifically required by any provision of the Indenture relating to such particular application or demand, no additional certificate or opinion need be furnished.

Each certificate or opinion provided for in the Indenture and delivered to the Trustee with respect to compliance with a condition or covenant provided for in the Indenture shall include (a) a statement that the person making such certificate or opinion has read such covenant or condition, (b) a brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate or opinion are based, (c) a statement that, in the opinion of such person, he has made such examination or investigation as is necessary to enable him to express an informed opinion as to whether or not such covenant or condition has been complied with and (d) a statement as to whether or not, in the opinion of such person, such condition or covenant has been complied with.

Any certificate, statement or opinion of an officer of the Issuer may be based, insofar as it relates to legal matters, upon a certificate or opinion of or representations by counsel, unless such officer knows that the certificate or opinion or representations with respect to the matters upon which his certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous. Any certificate, statement or opinion of counsel may be based, insofar as it relates to factual matters, information with respect to which is in the possession of the Issuer, upon the certificate, statement or opinion of or representations by an officer or officers of the Issuer, unless such counsel knows that the certificate, statement or opinion or representations with respect to the matters upon which his certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous.

Any certificate, statement or opinion of an officer of the Issuer or of counsel may be based, insofar as it relates to accounting matters, upon a certificate or opinion of or representations by an accountant or firm of accountants in the employ of the Issuer, unless such officer or counsel, as the case may be, knows that the certificate or opinion or representations with respect to the accounting matters upon which his certificate, statement or opinion may be based as aforesaid are erroneous, or in the exercise of reasonable care should know that the same are erroneous.

Any certificate or opinion of any independent firm of public accountants filed with the Trustee shall contain a statement that such firm is independent.

Section 11.06 Payments Due on Saturdays, Sundays and Holidays. Except as provided pursuant to Section 2.01 pursuant to a resolution of the Board of Directors and set forth in an Officers' Certificate or established in one or more indentures supplemental to the Indenture, if the date of maturity of interest on or principal of the Securities of any series or the date fixed for redemption or repayment of any such Security shall not be a Business Day, then payment of interest or principal need not be made on such date, but may be made on the next succeeding Business Day with the same force and effect as if made on the date of maturity or the date fixed for redemption, and no interest shall accrue for the period after such date.

Section 11.07 Trust Indenture Act of 1939. If any provision of the Indenture limits, qualifies, or conflicts with another provision which is required or deemed to be included in this Indenture by the Trust Indenture Act, such required or deemed provision shall control.

Section 11.08 Governing Law, etc. The Indenture and each Security shall be governed by and construed in accordance with the laws of the State of New York.

The Company irrevocably consents and submits, for itself and in respect of any of its assets or property, to the nonexclusive jurisdiction of any court of the State of New York or any United States Federal court sitting, in each case, in the Borough of Manhattan, The City of New York, New York, United States of America, and any appellate court from any thereof in any suit, action or proceeding that may be brought in connection with this Indenture or the Securities, and waives any immunity from the jurisdiction of such courts. The Company irrevocably waives, to the fullest extent permitted by law, any objection to any such suit, action or proceeding that may be brought in such courts whether on the grounds of venue, residence or domicile or on the ground that any such suit, action or proceeding has been brought in an inconvenient forum. The Company agrees, to the fullest extent that it lawfully may do so, that final judgment in any such suit, action or proceeding brought in such a court shall be conclusive and binding upon the Company, and waives, to the fullest extent permitted by law, any objection to the enforcement by any competent court in the Company's jurisdiction of organization of judgments validly obtained in any such court in New York on the basis of such suit, action or proceeding.

EACH OF THE COMPANY AND THE TRUSTEE AND EACH HOLDER OF A SECURITY BY ITS ACCEPTANCE THEREOF, HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL RIGHT IT MAY HAVE TO TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS INDENTURE, THE SECURITIES OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY.

Section 11.09 Counterparts. The Indenture may be executed in any number of counterparts, each of which shall be an original, but such counterparts shall together constitute but one and the same instrument. The exchange of copies of this Indenture and of signature pages by facsimile or electronic (*i.e.*, "pdf" or "tif") transmission shall constitute effective execution and delivery of this Indenture as to the parties hereto and may be used in lieu of the original Indenture for all purposes. Signatures of the parties hereto transmitted by facsimile or electronic (*i.e.*, "pdf" or "tif") transmission shall be deemed to be their original signatures for all purposes.

Section 11.10 Effect of Headings. The Article and Section headings herein and the Table of Contents are for convenience only and shall not affect the construction hereof.

Section 11.11 Separability. In case any one or more of the provisions contained in the Indenture or in the Securities of any series shall for any reason be held to be invalid, illegal, or

unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect or impair any other provisions of the Indenture or of such Securities, but the Indenture and such Securities shall be construed as if such invalid or illegal or unenforceable provision had never been contained herein or therein.

Article 12
REDEMPTION OF SECURITIES AND SINKING FUND PROVISIONS

Section 12.01 Applicability of Article. The provisions of this Article shall be applicable to the Securities of any series which are redeemable before their maturity or to any sinking fund for the retirement of Securities of a series except as otherwise specified as contemplated by Section 2.03 for Securities of such series.

Section 12.02 Notice of Redemption; Partial Redemptions. Notice of redemption to the Holders of Securities of any series to be redeemed as a whole or in part at the option of the Issuer shall be given by mailing notice of such redemption by first class mail, postage prepaid, at least 30 days and not more than 60 days prior to the date fixed for redemption to such Holders of Securities of such series at their last addresses as they shall appear upon the registry books. Any notice which is mailed in the manner herein provided shall be conclusively presumed to have been duly given, whether or not the Holder receives the notice. Failure to give notice by mail, or any defect in the notice to the Holder of any Security of a series designated for redemption as a whole or in part shall not affect the validity of the proceedings for the redemption of any other Security of such series.

The notice of redemption to each such Holder shall specify the principal amount of each Security of such series held by such Holder to be redeemed, the date fixed for redemption, the redemption price, the place or places of payment, that payment will be made upon presentation and surrender of such Securities, that such redemption is pursuant to the mandatory or optional sinking fund, or both, if such be the case, that interest accrued to the date fixed for redemption will be paid as specified in such notice and that on and after said date interest thereon or on the portions thereof to be redeemed will cease to accrue. In case any Security of a series is to be redeemed in part only the notice of redemption shall state the portion of the principal amount thereof to be redeemed and shall state that on and after the date fixed for redemption, upon surrender of such Security, a new Security or Securities of such series in principal amount equal to the unredeemed portion thereof will be issued.

The notice of redemption of Securities of any series to be redeemed shall be prepared and given by the Issuer or, at the Issuer's request, prepared by the Issuer and given by the Trustee in the name and at the expense of the Issuer.

If less than all the Securities of a series are to be redeemed, the Securities to be redeemed shall be selected by lot by the Depositary in the case of Securities represented by a Global Security, or, in the case of Securities not represented by a Global Security, the Trustee shall select, in such manner as it shall deem appropriate and fair, Securities of such series to be redeemed in whole or in part. Securities may be redeemed in part in multiples equal to the minimum authorized denomination for Securities of such series or any multiple thereof. The Trustee shall promptly notify the Issuer in writing of the Securities of such series selected for redemption and, in the case of any Securities of such series selected for partial redemption, the principal amount thereof to be redeemed. For all purposes of the Indenture, unless the context otherwise requires, all provisions relating to the redemption of Securities of any series shall relate, in the case of any Security redeemed or to be redeemed only in part, to the portion of the principal amount of such Security which has been or is to be redeemed.

At least one Business Day prior to the redemption date specified in the notice of redemption given as provided in this Section, the Issuer will deposit with the Trustee or with one or more paying agents (or, if the Issuer is acting as its own paying agent, set aside, segregate and hold in trust as provided in Section 3.04) an amount of money sufficient to redeem on the redemption date all the Securities of such series so called for redemption at the appropriate redemption price, together with accrued interest to the date fixed for redemption.

Section 12.03 Payment of Securities Called for Redemption. If notice of redemption has been given as above provided, the Securities or portions of Securities specified in such notice shall become due and payable on the date and at the place stated in such notice at the applicable redemption price, together with interest accrued to the date fixed for redemption, and on and after said date (unless the Issuer shall default in the payment of such Securities at the redemption price, together with interest accrued to said date) interest on the Securities or portions of Securities so called for redemption shall cease to accrue and such Securities shall cease from and after the date fixed for redemption to be entitled to any benefit or security under the Indenture, and the Holders thereof shall have no right in respect of such Securities except the right to receive the redemption price thereof and unpaid interest to the date fixed for redemption. On presentation and surrender of such Securities at a place of payment specified in said notice, said Securities or the specified portions thereof shall be paid and redeemed by the Issuer at the applicable redemption price, together with interest accrued thereon to the date fixed for redemption; provided that any payment of interest becoming due on or before the date fixed for redemption shall be payable to the Holders of such Securities registered as such on the relevant record date.

If any Security called for redemption shall not be so paid upon surrender thereof for redemption, the principal shall, until paid or duly provided for, bear interest from the date fixed for redemption at the rate of interest or Yield to Maturity (in the case of an Original Issue Discount Security) borne by the Security.

Upon presentation of any Security redeemed in part only, the Issuer shall execute and the Trustee shall authenticate and deliver to or on the order of the Holder thereof, at the expense of the Issuer, a new Security or Securities of such series, of authorized denominations, in principal amount equal to the unredeemed portion of the Security so presented.

Section 12.04 Exclusion of Certain Securities from Eligibility for Selection for Redemption. Securities shall be excluded from eligibility for selection for redemption if they are identified by registration and certificate number in a written statement signed by an authorized officer of the Issuer and delivered to the Trustee at least 15 days prior to the last date on which notice of redemption may be given as being owned of record and beneficially by, and not pledged or hypothecated by either (a) the Issuer or (b) an entity specifically identified in such written statement directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer.

Section 12.05 Mandatory and Optional Sinking Funds. The minimum amount of any sinking fund payment provided for by the terms of Securities of any series is herein referred to as a “**mandatory sinking fund payment**”, and any payment in excess of such minimum amount provided for by the terms of Securities of any series is herein referred to as an “**optional sinking fund payment**”. The date on which a sinking fund payment is to be made is herein referred to as the “**sinking fund payment date**”.

In lieu of making all or any part of any mandatory sinking fund payment with respect to any series of Securities in cash, the Issuer may at its option (a) deliver to the Trustee Securities of such series theretofore purchased or otherwise acquired (except upon redemption pursuant to the mandatory sinking fund) by the Issuer or receive credit for Securities of such series (not previously so credited) theretofore purchased or otherwise acquired (except as aforesaid) by the Issuer and delivered to the Trustee for cancellation pursuant to Section 2.10, (b) receive credit for optional sinking fund payments (not previously so credited) made pursuant to this Section, or (c) receive credit for Securities of such series (not previously so credited) redeemed by the Issuer through any optional redemption provision contained in the terms of such series. Securities so delivered or credited shall be received or credited by the Trustee at the sinking fund redemption price specified in such Securities.

Not less than 60 days prior to each sinking fund payment date for any series, the Issuer will deliver to the Trustee a written statement (which need not contain the statements required by Section 11.05) signed by an authorized officer of the Issuer (a) specifying the portion of the mandatory sinking fund payment to be satisfied by payment of cash and the portion to be satisfied by credit of Securities of such series, (b) stating that none of the Securities of such series has theretofore been so credited, (c) stating that no defaults in the payment of interest or Events of Default with respect to such series have occurred (which have not been waived or cured) and are continuing and (d) stating whether or not the Issuer intends to exercise its right to make an optional sinking fund payment with respect to such series and, if so, specifying the amount of such optional sinking fund payment which the Issuer intends to pay on or before the next succeeding sinking fund payment date. Any Securities of such series to be credited and required to be delivered to the Trustee in order for the Issuer to be entitled to credit therefor as aforesaid which have not theretofore been delivered to the Trustee shall be delivered for cancellation pursuant to Section 2.10 to the Trustee with such written statement (or reasonably promptly thereafter if acceptable to the Trustee). Such written statement shall be irrevocable and upon its receipt by the Trustee the Issuer shall become unconditionally obligated to make all the cash payments or payments therein referred to, if any, on or before the next succeeding sinking fund payment date. Failure of the Issuer, at least 60 days prior to such sinking fund payment date, to deliver such written statement and Securities specified in this paragraph, if any, shall not constitute a default but shall constitute, on and as of such date, the irrevocable election of the Issuer (i) that the mandatory sinking fund payment for such series due on the next succeeding sinking fund payment date shall be paid entirely in cash without the option to deliver or credit Securities of such series in respect thereof and (ii) that the Issuer will make no optional sinking fund payment with respect to such series as provided in this Section.

The Trustee shall select, in the manner provided in Section 12.02, for redemption on such sinking fund payment date a sufficient principal amount of Securities of such series to absorb said cash, as nearly as may be, and shall (if requested in writing by the Issuer) inform the Issuer of the serial numbers of the Securities of such series (or portions thereof) so selected. Securities of any series which are (a) owned by the Issuer or an entity known by the Trustee to be directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer, as shown by the Register, and not known to the Trustee to have been pledged or hypothecated by the Issuer or any such entity or (b) identified in an Officers' Certificate at least 60 days prior to the sinking fund payment date as being beneficially owned by, and not pledged or hypothecated by, the Issuer or an entity directly or indirectly controlling or controlled by or under direct or indirect common control with the Issuer shall be excluded from Securities of such series eligible for selection for redemption. The Trustee, in the name and at the expense of the Issuer (or the Issuer, if they shall so request the Trustee in writing) shall cause notice of redemption of the Securities of such series to be given in substantially the manner provided in Section 12.02 (and with the effect provided in Section 12.03) for the redemption of Securities of such series in part at the option of the Issuer. The amount of any sinking fund payments not so applied or allocated to the redemption of Securities of such series shall be added to the next cash sinking fund payment for such series and, together with such payment, shall be applied in accordance with the provisions of this Section. Any and all sinking fund moneys held on the stated maturity date of the Securities of any particular series (or earlier, if such maturity is accelerated), which are not held for the payment or redemption of particular Securities of such series, shall be applied, together with other moneys, if necessary, sufficient for the purpose, to the payment of the principal of, and interest on, the Securities of such series at maturity.

At least one Business Day before each sinking fund payment date, the Issuer shall pay to the Trustee in cash or shall otherwise provide for the payment of all interest accrued to the date fixed for redemption on Securities to be redeemed on the next following sinking fund payment date.

The Trustee shall not redeem or cause to be redeemed any Securities of a series with sinking fund moneys or mail any notice of redemption of Securities for such series by operation of the sinking fund during the continuance of a default in payment of interest on such Securities or of any Event of Default except that, where the mailing of notice of redemption of any Securities shall theretofore have been made, the Trustee shall redeem or cause to be redeemed such Securities, provided that it shall have received from the Issuer a sum sufficient for such redemption. Except as aforesaid, any moneys in the sinking fund for such series at the time when any such default or Event of Default shall occur, and any moneys thereafter paid into the sinking fund, shall, during the continuance of such default or Event of Default, be deemed to have been collected under Article 4 and held for the payment of all such Securities. In case such Event of Default shall have been waived as provided in Section 4.09 or the default cured on or before the 60th day preceding the sinking fund payment date in any year, such moneys shall thereafter be applied on the next succeeding sinking fund payment date in accordance with this section to the redemption of such Securities.

IN WITNESS WHEREOF, the parties hereto have caused the Indenture to be duly executed as of the date set forth above.

ZYMERGEN INC.

By: _____

Name:

Title:

[]
as Trustee

By: _____

Name:

Title:



Silicon Valley
2710 Sand Hill Road
Menlo Park, CA 94025
T +1 650 618 9250 (Switchboard)
www.freshfields.com

Doc ID
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Our Ref
173354.0023

Zymergen Inc.
5980 Horton Street, Suite 105
Emeryville, CA 94608

May 12, 2022

Ladies and Gentlemen:

Zymergen, Inc., a Delaware public benefit corporation (the “*Company*”), is filing with the Securities and Exchange Commission (the “*Commission*”) a Registration Statement on Form S-3 (the “*Registration Statement*”) for the purpose of registering under the Securities Act of 1933, as amended (the “*Securities Act*”), for the registration of the sale from time to time up to an aggregate offering price of \$200,000,000 of (a) shares of common stock, par value \$0.001 per share (the “*Common Stock*”) of the Company; (b) shares of preferred stock, par value \$0.001 per share (the “*Preferred Stock*”) of the Company; (c) the Company’s senior debt securities and subordinated debt securities (collectively, the “*Debt Securities*”), which may be issued pursuant to an indenture, between the Company and a trustee to be named in a prospectus supplement to the Registration Statement, as trustee (the “*Trustee*”) (the “*Indenture*”); (d) warrants of the Company (the “*Warrants*”), which may be issued under one or more warrant agreements (each, a “*Warrant Agreement*”) to be entered into between the Company and the warrant agent to be named therein (the “*Warrant Agent*”); (e) purchase contracts (the “*Purchase Contracts*”) which may be issued under one or more purchase contract agreements (each, a “*Purchase Contract Agreement*”) to be entered into between the Company and the purchase contract agent to be named therein (the “*Purchase Contract Agent*”); (f) units (the “*Units*”) to be issued under one or more unit agreements to be entered into among the Company, a bank or trust company, as unit agent (the “*Unit Agent*”), and the holders from time to time of the Units (each such unit agreement, a “*Unit Agreement*”); and (g) depositary shares representing fractional interests in shares or multiple shares of the Preferred Stock (the “*Depositary Shares*”), which may be issued under a preferred stock depositary agreement (the “*Depositary Agreement*”) to be entered into between the Company and the preferred stock depositary to be named therein (the “*Depositary*”).

We, as your counsel, have examined originals or copies of such documents, corporate records, certificates of public officials and other instruments as we have deemed necessary or advisable for the purpose of rendering this opinion.

In rendering the opinions expressed herein, we have, without independent inquiry or investigation, assumed that (i) all documents submitted to us as originals are authentic and complete, (ii) all documents submitted to us as copies conform to authentic, complete originals, (iii) all documents filed as exhibits to the Registration Statement that have not been executed will conform to the forms thereof, (iv) all signatures on all documents that we reviewed are genuine, (v) all natural persons executing documents had and have the legal capacity to do so, (vi) all statements in certificates of public officials and officers of the Company that we reviewed were and are accurate and (vii) all representations made by the Company as to matters of fact in the documents that we reviewed were and are accurate.

Based upon the foregoing, and subject to the additional assumptions and qualifications set forth below, we advise you that, in our opinion:

1. When the necessary corporate action on the part of the Company has been taken to authorize the issuance and sale of such shares of Common Stock proposed to be sold by the Company, and when such shares of Common Stock are issued and delivered in accordance with the applicable underwriting or other agreement against payment therefor (in excess of par value thereof) or upon conversion or exercise of any security offered under the Registration Statement (the “*Offered Security*”), in accordance with the terms of such Offered Security or the instrument governing such Offered Security providing for such conversion or exercise as approved by the Board of Directors of the Company, for the consideration approved by such Board of Directors (which consideration is not less than the par value of the Common Stock), such shares of Common Stock will be validly issued, fully-paid and non-assessable.
2. Upon designation of the relative rights, preferences and limitations of any series of Preferred Stock by the Board of Directors of the Company and the proper filing with the Secretary of State of the State of Delaware of a Certificate of Designation relating to such series of Preferred Stock, all necessary corporate action on the part of the Company will have been taken to authorize the issuance and sale of such series of Preferred Stock proposed to be sold by the Company, and when such shares of Preferred Stock are issued and delivered in accordance with the applicable underwriting or other agreement against payment therefor (in excess of par value thereof), such shares of Preferred Stock will be validly issued, fully paid and non-assessable.
3. When the Indenture and any supplemental indenture to be entered into in connection with the issuance of any Debt Securities have been duly authorized, executed and delivered by the Trustee and the Company; the specific terms of a particular series of Debt Securities have been duly authorized and established in accordance with the Indenture; and such Debt Securities have been duly authorized, executed, authenticated, issued and delivered in accordance with the Indenture and the applicable underwriting or other agreement against payment therefor, such Debt Securities will constitute valid and binding obligations of the Company, enforceable in accordance with their terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors’ rights generally, concepts of reasonableness and equitable principles of general applicability, provided that we express no opinion as to (w) the enforceability of any waiver of rights under any usury or stay law, (x) the effect of fraudulent conveyance, fraudulent transfer or similar provision of applicable law on the conclusions expressed above, (y) the validity, legally binding effect or enforceability of any provision of the Indenture or any supplemental indenture that requires or relates to adjustments to the conversion rate at a rate or in an amount that a court would determine in the circumstances under applicable law to be commercially unreasonable or a penalty or forfeiture or (z) the validity, legally binding effect or enforceability of any provision that permits holders to collect any portion of stated principal amount upon acceleration of the Debt Securities to the extent determined to constitute unearned interest.

4. When the Warrant Agreement to be entered into in connection with the issuance of any Warrants has been duly authorized, executed and delivered by the Warrant Agent and the Company; the specific terms of the Warrants have been duly authorized and established in accordance with the Warrant Agreement; and such Warrants have been duly authorized, executed, issued and delivered in accordance with the Warrant Agreement and the applicable underwriting or other agreement against payment therefor, such Warrants will constitute valid and binding obligations of the Company, enforceable in accordance with their terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability.
5. When the Purchase Contract Agreement to be entered into in connection with the issuance of any Purchase Contracts has been duly authorized, executed and delivered by the Purchase Contract Agent and the Company; the specific terms of the Purchase Contracts have been duly authorized and established in accordance with the Purchase Contract Agreement; and such Purchase Contracts have been duly authorized, executed, issued and delivered in accordance with the Purchase Contract Agreement and the applicable underwriting or other agreement against payment therefor, such Purchase Contracts will constitute valid and binding obligations of the Company, enforceable in accordance with their terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability.
6. When the Unit Agreement to be entered into in connection with the issuance of any Units has been duly authorized, executed and delivered by the Unit Agent and the Company; the specific terms of the Units have been duly authorized and established in accordance with the Unit Agreement; and such Units have been duly authorized, executed, issued and delivered in accordance with the Unit Agreement and the applicable underwriting or other agreement against payment therefor, such Units will constitute valid and binding obligations of the Company, enforceable in accordance with their terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability.
7. When the Depositary Agreement to be entered into in connection with the issuance of any Depositary Shares has been duly authorized, executed and delivered by the Depositary and the Company; the specific terms of the Depositary Shares have been duly authorized and established in accordance with the Depositary Agreement; and such Depositary Shares have been duly authorized, executed, issued and delivered in accordance with the Depositary Agreement and the applicable underwriting or other agreement against payment therefor, such Depositary Shares will constitute legal and valid interests in the corresponding shares of Preferred Stock, subject to applicable bankruptcy, insolvency and similar laws affecting creditors' rights generally, concepts of reasonableness and equitable principles of general applicability.

In connection with the opinions expressed above, we have assumed that, at or prior to the time of the delivery of any such security, (i) the Board of Directors of the Company shall have duly established the terms of such security and duly authorized the issuance and sale of such security and such authorization shall not have been modified or rescinded; (ii) the Company shall remain, validly existing as a corporation in good standing under the laws of the State of Delaware; (iii) the Registration Statement shall have become effective and such effectiveness shall not have been terminated or rescinded; and (iv) the Indenture, the Debt Securities, the Warrant Agreement, the Purchase Contract Agreement, the Unit Agreement, and the Depositary Agreement are each valid, binding and enforceable agreements of each party thereto (other than as expressly covered above in respect of the Company); and (v) there shall not have occurred any change in law affecting the validity or enforceability of such security. We have also assumed that (i) the terms of any security whose terms are established subsequent to the date hereof and the issuance, execution, delivery and performance by the Company of any such security (a) require no action by or in respect of, or filing with, any governmental body, agency or official and (b) do not contravene, or constitute a default under, any provision of applicable law or public policy or regulation or any judgment, injunction, order or decree or any agreement or other instrument binding upon the Company and (ii) any Warrant Agreement, Purchase Contract Agreement and Unit Agreement will be governed by the laws of the State of New York.

We are members of the Bars of the States of New York and California and the foregoing opinion is limited to the laws of the State of New York and the General Corporation Law of the State of Delaware.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement referred to above and further consent to the reference to our name under the caption "Validity of Securities" in the prospectus, which is a part of the Registration Statement. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act.

Very truly yours,

/s/ Freshfields Bruckhaus Deringer US LLP

Consent of Independent Registered Public Accounting Firm

We consent to the reference to our firm under the caption "Experts" in this Registration Statement (Form S-3) and related Prospectus of Zymergen Inc. for the registration of common stock, preferred stock, depository shares, debt securities, warrants, and purchase contracts units, and to the incorporation by reference therein of our report dated March 29, 2022, with respect to the consolidated financial statements of Zymergen Inc. included in its Annual Report (Form 10-K) for the year ended December 31, 2021, filed with the Securities and Exchange Commission.

/S/ Ernst & Young LLP

Redwood City, California

May 12, 2022