

PROSPECTUS SUPPLEMENT
(To Prospectus dated May 22, 2026)



ALTO INGREDIENTS, INC.

Up to \$50,000,000 of Common Stock

We have entered into an At-The-Market Issuance Sales Agreement, or the Sales Agreement, with Craig-Hallum Capital Group LLC, or Craig-Hallum, The Benchmark Company, LLC, or Benchmark, and H.C. Wainwright & Co., LLC, or Wainwright, relating to shares of our common stock, par value \$0.001 per share, offered by this prospectus supplement and the accompanying prospectus. Craig-Hallum, Benchmark and Wainwright are each referred to as an Agent and, collectively, as the Agents. In accordance with the terms of the Sales Agreement, from time to time we may offer and sell shares of our common stock having an aggregate offering price of up to \$50.0 million through Craig-Hallum, or the Designated Agent, acting as designated sales agent and/or to any Agent selected by us, acting as principal.

Our common stock is listed on The Nasdaq Capital Market under the symbol "ALTO." On August 4, 2026, the last reported sale price of our common stock on The Nasdaq Capital Market was \$5.29 per share.

Sales of our common stock, if any, under this prospectus supplement and the accompanying prospectus will be made in sales deemed to be an "at the market offering" as defined in Rule 415(a)(4) promulgated under the Securities Act of 1933, as amended, or the Securities Act. Subject to terms of the Sales Agreement, the Designated Agent is not required to sell any specific number or dollar amount of common stock but will act as our sales agent using commercially reasonable efforts consistent with its normal trading and sales practices to sell on our behalf all of the shares of common stock requested to be sold by us, on mutually agreed terms between the Designated Agent and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

The compensation to the Agents for sales of our common stock sold pursuant to the Sales Agreement will be 3.0% of the gross proceeds of any shares of common stock sold under the Sales Agreement. See "Plan of Distribution" beginning on page S-10 for additional information regarding the Agents' compensation. In connection with the sale of our common stock on our behalf, each Agent will be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation paid to the Agents will be deemed to be underwriting commissions or discounts. We have also agreed to provide indemnification and contribution to the Agents against certain civil liabilities, including liabilities under the Securities Act and the Securities Exchange Act of 1934, as amended, or the Exchange Act.

We are a "smaller reporting company" as defined under federal securities laws and, as such, may elect to comply with certain reduced public company reporting requirements for future filings. See the section titled "Prospectus Supplement Summary — Implications of Being a Smaller Reporting Company."

Investing in our common stock involves a high degree of risk. See the section titled "Risk Factors" on page S-5 of this prospectus supplement and any similar section contained in the accompanying prospectus and in the documents that are incorporated by reference herein and therein.

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

Craig-Hallum

Benchmark, a StoneX Company

H.C. Wainwright & Co.

The date of this prospectus supplement is August 5, 2026.

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ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a registration statement on Form S-3 that we have filed with the Securities and Exchange Commission, or the SEC, using the “shelf” registration process. Under this shelf registration process, we may, from time to time, sell shares of our common stock in one or more offerings. This prospectus supplement describes the terms of this offering of our common stock and adds to and updates information contained in the accompanying prospectus and the documents incorporated by reference into this prospectus supplement and the accompanying prospectus. The accompanying prospectus, dated May 22, 2026, including the documents incorporated by reference therein, provides more general information, some of which may not apply to this offering. Generally, when we refer to “this prospectus” herein, we are referring to both this prospectus supplement and the accompanying prospectus combined.

Neither we nor the Agents have authorized anyone to provide you with information that is different from or in addition to the information contained or incorporated by reference in this prospectus supplement and the accompanying prospectus. If anyone provides you with different or inconsistent information, you should not rely on it. Neither we nor the Agents are making an offer to sell the securities in any jurisdiction where the offer or sale is not permitted or in which the person making such offer or solicitation is not qualified to do so or to any person to whom it is unlawful to make such offer or solicitation. You should not assume that the information in this prospectus supplement, the accompanying prospectus or any document incorporated by reference is accurate or complete as of any date other than the date of the applicable document. Our business, financial condition, results of operations and prospects may have changed since that date.

In this prospectus supplement, as permitted by law, we “incorporate by reference” information from other documents that we file with the SEC. This means that we can disclose important information to you by referring you to those documents. To the extent there is a conflict between the information contained in this prospectus supplement, on the one hand, and the information contained in the accompanying prospectus or in any document incorporated by reference that was filed with the SEC before the date of this prospectus supplement, on the other hand, you should rely on the information in this prospectus supplement. If any statement in one of these documents is inconsistent with a statement in another document having a later date (for example, a document incorporated by reference in this prospectus supplement or in the accompanying prospectus), the statement in the document having the later date modifies or supersedes the earlier statement. When we update the information contained in documents that have been incorporated by reference by making future filings with the SEC, the information included or incorporated by reference in this prospectus supplement is considered to be automatically updated and superseded. This prospectus supplement and the accompanying prospectus do not contain all of the information in the registration statement. We have omitted certain parts of the registration statement, as permitted by the rules and regulations of the SEC. You may find the registration statement, including exhibits, on the SEC’s website at www.sec.gov. See “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

You should not consider any information in this prospectus supplement or the accompanying prospectus to be investment, legal or tax advice. You should consult your own counsel, accountants and other advisers for legal, tax, business, financial and related advice regarding the purchase of the common stock offered by this prospectus supplement. If the description of the offering varies between this prospectus supplement and the accompanying prospectus, you should rely on the information contained in this prospectus supplement as indicated or as the context otherwise requires.

Unless the context otherwise indicates, references in this prospectus to “Company,” “we,” “our” and “us” refer, collectively, to Alto Ingredients, Inc., a Delaware corporation, and its consolidated subsidiaries.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus and the documents incorporated herein and therein contain certain statements that constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. The words “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “intend,” “expect,” “could,” “would,” “project,” “plan,” “potentially,” “likely,” and similar expressions and variations thereof are intended to identify forward-looking statements, but are not the exclusive means of identifying such statements. Those statements appear in this prospectus supplement, the accompanying prospectus and the documents incorporated herein and therein by reference, particularly in the sections captioned “Business Overview,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and include statements regarding the intent, belief or current expectations of our management that are subject to known and unknown risks, uncertainties and assumptions. You are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, and that actual results may differ materially from those projected in the forward-looking statements as a result of various factors.

There are a number of important factors that could cause the actual results to differ materially from those expressed in any forward-looking statement made by us, including known and unknown risks, uncertainties and assumptions. These factors are described in the section titled “Risk Factors” and elsewhere in this prospectus supplement and the accompanying prospectus, and include, but are not limited to:

- general business and economic conditions;
- fluctuations in the market prices of alcohols and essential ingredients;
- fluctuations in the costs of key production input commodities such as corn and natural gas;
- our ability to fund, and the costs, timing and effects of, our plant improvement initiatives and other capital projects;
- regulatory developments relating to our initiatives and projects or to our business;
- our ability to qualify for and receive Section 45Z clean fuel production tax credits under the Internal Revenue Code, as added by the Inflation Reduction Act of 2022 and amended by the One Big Beautiful Bill Act, including in anticipated amounts and at the expected times;
- our ability to obtain any necessary financing;
- our ability to maintain contracts that are critical to our operations;
- environmental, product or other liabilities we may incur;
- difficulties or delays in identifying, negotiating and completing acquisitions and integrating acquired companies;
- the inability to realize anticipated synergies and expansion possibilities;
- political, economic, and health (including pandemics) instabilities; and

- other factors affecting our operations, markets, products, services, and prices that are set forth in our Annual Report on Form 10-K for the fiscal year ended December 31, 2025 and our most recent Quarterly Report on Form 10-Q.

These statements reflect our current views with respect to future events and are based on assumptions and are subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss in greater detail many of these risks under the heading “Risk Factors” contained in our most recent Annual Report on Form 10-K and in our most recent Quarterly Report on Form 10-Q, which are incorporated by reference into this prospectus supplement in their entirety, as well as any amendments thereto reflected in subsequent filings with the SEC. These risks are not exhaustive. Additional factors could harm our business and financial performance, such as risks associated with the current macroeconomic environment, including as a result of the impacts of inflation, high interest rates, current or potential future bank failures or ongoing overseas conflicts. Moreover, we operate in a very competitive and rapidly changing environment. New risk factors emerge from time to time, and it is not possible for our management to predict all risk factors, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in, or implied by, any forward-looking statements.

Forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement. Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements. You should read this prospectus supplement and the accompanying prospectus, together with the documents we have filed with the SEC that are incorporated by reference herein and therein and any free writing prospectus that we may authorize for use in connection with this offering completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in the foregoing documents by these cautionary statements.

This prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein contain market data and industry statistics and forecasts that are based on independent industry publications and other publicly available information. Although we believe that these sources are reliable, we do not guarantee the accuracy or completeness of this information, and we have not independently verified this information. Although we are not aware of any misstatements regarding the market and industry data presented in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein, these estimates involve risks and uncertainties and are subject to change based on various factors, including those discussed under the heading “Risk Factors” contained in this prospectus supplement, the accompanying prospectus and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus supplement and the accompanying prospectus. Accordingly, investors should not place undue reliance on this information.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus supplement, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information about us, this offering and the information appearing elsewhere in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein and does not contain all of the information that you need to consider in making your investment decision. You should carefully read the entire prospectus supplement, the accompanying prospectus and any related free writing prospectus that we authorize for use in connection with this offering, including the risks of investing in our securities discussed under the section titled “Risk Factors” in this prospectus supplement and under similar headings in the documents incorporated by reference, including our most recent Annual Report on Form 10-K and any subsequent Quarterly Reports on Form 10-Q as filed with the SEC. You should also carefully read the information incorporated by reference into this prospectus supplement and the accompanying prospectus, including our financial statements and related notes, and the exhibits to the registration statement of which this prospectus supplement and the accompanying prospectus are a part, before making your investment decision. See the sections titled “Where You Can Find More Information” and “Incorporation of Certain Information By Reference” in this prospectus supplement.

Business Overview

We are a leading producer and distributor of specialty alcohols, renewable fuels and essential ingredients in the United States.

We operate five alcohol production facilities. Three of our production facilities are located in Illinois, one is located in Oregon, and another is located in Idaho. We have an annual alcohol production capacity of 330 million gallons, including both renewable fuels and specialty alcohols ranging from industrial-, pharmaceutical-, and high-quality food- and beverage-grade alcohols. Of this amount, we can produce up to 110 million gallons annually of specialty alcohols, depending on our product mix among high-quality beverage-grade alcohol and other quality specification alcohols. We market and distribute all of the alcohols produced at our facilities as well as alcohols produced by third parties. In 2025, we marketed and distributed approximately 350 million gallons combined of our own produced alcohols as well as fuel-grade ethanol produced by third parties, and over 1.2 million tons of essential ingredients.

We also own and operate a liquid carbon dioxide, or CO₂, production facility adjacent to our plant in Oregon for the offtake of CO₂ gas from the plant for conversion to liquid CO₂ and subsequent sale. In addition, we break bulk and distribute specialty alcohols, produced by us and third parties.

We report our financial and operating performance in three distinct segments:

- **Pekin production**, which includes the production and sale of alcohols and other products we refer to as “essential ingredients” described below, produced at our three production facilities located in Pekin, Illinois, which we refer to as our Pekin Campus;
- **Marketing and distribution**, which includes marketing and merchant trading for company-produced alcohols and essential ingredients on an aggregated basis, and sales of fuel-grade ethanol sourced from third parties; and
- **Western production**, which includes the production and sale of renewable fuels and essential ingredients produced at our production facilities located in Burley, Idaho and Boardman, Oregon, including our liquid CO₂ plant, on an aggregated basis, none of which are individually so significant as to be considered a separately reportable segment.

Our mission is to produce the highest quality, sustainable ingredients that make everyday products better. We intend to accomplish this goal in part by investing in our specialized and higher value specialty alcohol production and distribution infrastructure, expanding production in high-demand essential ingredients, expanding and extending the sale of our products into new regional and international markets, building efficiencies and economies of scale and by capturing a greater portion of the value stream.

Production Segments

We produce specialty alcohols, renewable fuels and essential ingredients, focusing on five key markets: Health, Home & Beauty; Food & Beverage; Industry & Agriculture; Essential Ingredients; and Renewable Fuels. Products for Health, Home & Beauty markets include specialty alcohols used in mouthwash, cosmetics, pharmaceuticals, hand sanitizers, disinfectants and cleaners. Products for Food & Beverage markets include grain neutral spirits used in alcoholic beverages and vinegar, as well as corn germ used for corn oils. Products for Industry & Agriculture markets include alcohols and other products for paint applications, inks, vehicle fluids and fertilizers. Products for Essential Ingredients markets include dried yeast, corn protein meal, corn protein feed, corn germ, distillers grains, gas and liquid CO₂ and liquid feed used in commercial animal feed and pet foods. We also sell yeast and gas and liquid CO₂ for human consumption. Our products for the Renewable Fuels markets include fuel-grade ethanol and distillers corn oil used as a feedstock for renewable diesel and biodiesel fuels. Our specialty alcohols for the Industry & Agriculture, Food & Beverage and Health, Home & Beauty markets represented approximately 11%, 6% and 2%, respectively, of our sales in 2025 to customers in these three markets.

We produce our alcohols and essential ingredients at our facilities described above. Our production facilities located in Illinois are in the heart of the Corn Belt, benefit from relatively low-cost and abundant feedstock and enjoy logistical advantages that enable us to provide our products to both domestic and international markets via truck, rail or barge. Our production facilities located in Oregon and Idaho are near their respective fuel and feed customers, offering significant timing, product transportation cost and logistical advantages.

All of our production facilities, other than our Magic Valley plant, were operating for all of 2025, other than for scheduled and unscheduled downtimes to address facility repair and maintenance.

Our Magic Valley facility remained cold-idled for all of 2025, the first quarter of 2026 and through the date of this prospectus to minimize financial losses. We continue to provide ethanol terminaling services at the plant and may resume operations at the facility if the economic environment in the region sustainably improves.

As market conditions change, we may increase, decrease or idle production at one or more operating facilities or resume operations at any idled facility.

Marketing and Distribution Segment

We market and distribute all the alcohols and essential ingredients we produce at our facilities. We also market and distribute alcohols produced by third parties.

We have extensive and long-standing customer relationships, both domestic and international, for our specialty alcohols, renewable fuels and essential ingredients. These customers include producers and distributors of ingredients for cosmetics, sanitizers and related products, distilled spirits producers, food products manufacturers, producers of personal health/consumer health and personal care hygiene products, and global trading firms.

Our renewable fuels customers are located throughout the Western and Midwestern United States and consist of integrated oil companies and gasoline marketers who blend fuel-grade ethanol into gasoline. Our customers depend on us to provide a reliable supply of fuel-grade ethanol and manage the logistics and timing of delivery. Our customers collectively require fuel-grade ethanol volumes in excess of the supplies we produce at our facilities. We secure additional fuel-grade ethanol supplies from third-party ethanol producers. We arrange for transportation, storage and delivery of fuel-grade ethanol purchased by our customers through our agreements with third-party service providers in the Western United States as well as in the Midwest from a variety of sources.

We market food-grade essential ingredients to human and pet food markets, our feed products (such as distillers grains) primarily to export markets from our Pekin Campus, and other feed products to dairies and feedlots, in many cases located near our production facilities. These customers use our feed products for livestock as a substitute for corn and other sources of starch and protein. We sell our corn oil to poultry, renewable diesel and biodiesel customers.

Corporate Information

We are a Delaware corporation formed in February 2005. Our principal executive offices are located at 1300 South Second Street, Pekin, Illinois 61554. Our telephone number is (833) 710-2586 and our Internet website is www.altoingredients.com. The content of our Internet website does not constitute a part of this prospectus.

Additional information about us and our subsidiaries can be obtained from the documents incorporated by reference herein. See “Where You Can Find More Information.”

Implications of Being a Smaller Reporting Company

We are a “smaller reporting company” as defined in the Exchange Act which allows us to take advantage of certain of the scaled disclosures available to smaller reporting companies and we are able to take advantage of these scaled disclosures for so long as (i) the market value of our voting and non-voting common stock held by non-affiliates is less than \$250 million measured on the last business day of our second fiscal quarter or (ii) our annual revenue is less than \$100 million during the most recently completed fiscal year and the market value of our voting and non-voting common stock held by non-affiliates is less than \$700 million measured on the last business day of our second fiscal quarter. Specifically, as a smaller reporting company, we may choose to present only the two most recent fiscal years of audited financial statements in our annual reports on Form 10-K and have reduced disclosure obligations regarding executive compensation, and, similar to emerging growth companies, if we are a smaller reporting company with less than \$100 million in annual revenue, we would not be required to obtain an attestation report on internal control over financial reporting issued by our independent registered public accounting firm.

The Offering

Common stock to be Offered by Us	Shares of our common stock having an aggregate offering price of up to \$50,000,000.
Common stock to be Outstanding After this Offering	Up to 87,019,359 shares of our common stock, assuming an aggregate of 9,451,795 shares of our common stock are sold at an assumed public offering price of \$5.29 per share, which was the last reported sale price of our common stock on The Nasdaq Capital Market on August 4, 2026. The actual number of shares issued will vary depending on how many shares of our common stock we choose to sell and the prices at which such sales occur, and in no event will the actual number of shares issued and sold pursuant to the Sales Agreement exceed the number of shares of our common stock that we have available and authorized for issuance under our certificate of incorporation, as the same may be amended or amended and restated from time to time.
Plan of Distribution	Sales of our common stock, if any, under this prospectus supplement and the accompanying prospectus will be made in sales deemed to be an “at the market offering” as defined in Rule 415(a)(4) promulgated under the Securities Act. Subject to terms of the Sales Agreement, the Designated Agent is not required to sell any specific number or dollar amount of securities but will act as our sales agent using commercially reasonable efforts consistent with its normal trading and sales practices to sell on our behalf all of the shares of common stock requested to be sold by us, on mutually agreed terms between the Designated Agent and us. See “Plan of Distribution” on page S-10 of this prospectus supplement.
Use of Proceeds	Any net proceeds from the sales of shares pursuant to this offering will be used for general corporate purposes, including working capital and capital expenditures. See “Use of Proceeds.”
The Nasdaq Capital Market Symbol	“ALTO”
Risk Factors	See “Risk Factors” beginning on page S-5 of this prospectus supplement and the other information included in, or incorporated by reference into, this prospectus supplement for a discussion of certain factors you should carefully consider before deciding to invest in shares of our common stock.
Transfer Agent and Registrar	Equiniti Trust Company, LLC

The number of shares of common stock to be outstanding immediately after this offering is based on 77,567,564 shares of our common stock outstanding as of August 4, 2026 and excludes the following securities outstanding on August 4, 2026:

- 830,940 shares of common stock issuable upon the vesting and settlement of outstanding performance share grants at the “target” level of performance achievement;
- 896 shares of common stock issuable upon the conversion of our non-voting common stock;
- 980,712 shares of common stock issuable upon the conversion of our Series B Cumulative Convertible Preferred Stock;
- 6,897,533 shares of common stock issuable under the 2026 Stock Plan; and
- any additional shares of common stock we may issue from time to time after that date.

RISK FACTORS

Investing in our shares of common stock involves a high degree of risk. You should carefully consider the risks, uncertainties and other factors described in our most recent Annual Report on Form 10-K, as supplemented and updated by subsequent quarterly reports on Form 10-Q and current reports on Form 8-K that we have filed or will file with the SEC, and in other documents incorporated by reference to our filings with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act and all other information contained or incorporated by reference in this prospectus supplement and the accompanying prospectus, including our consolidated financial statements and the related notes, before investing in our common stock. If any of these risks materialize, our business, financial condition or results of operations could be materially harmed. In that case, the trading price of our common stock could decline, and you may lose some or all of your investment. The risks and uncertainties we describe are not the only ones facing us. Additional risks not presently known to us, or that we currently deem immaterial, may also impair our business operations. If any of these risks were to occur, our business, financial condition, or results of operations would likely suffer. In that event, the trading price of our common stock could decline, and you could lose all or part of your investment.

Risks Related to our Business

The trading price of the shares of our common stock has been and is likely to continue to be highly volatile, and purchasers of our common stock could incur substantial losses.

Our stock price has been and will likely continue to be volatile for the foreseeable future. The stock market in general and the market for ethanol companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, investors may not be able to sell their common stock at or above the price they paid.

In addition, in the past, stockholders have initiated class action and other lawsuits against companies following periods of volatility in the market prices of these companies' securities. Such litigation and any litigation that may be instituted against us, our officers and/or our directors in the future, could cause us to incur substantial costs and divert management's attention and resources, which could have a material adverse effect on our business, financial condition and results of operations.

Additional Risks Related to This Offering

We have broad discretion as to the use of the net proceeds of this offering and may use them in ways with which you may not agree and in ways that may not earn a profit.

We intend to use the net proceeds, if any, from this offering for general corporate purposes, including working capital and capital expenditures. We will have considerable discretion in the use and application of the net proceeds, and may use the net proceeds for purposes that do not yield a significant return or any return at all for our stockholders. In addition, pending their use, we may invest the net proceeds from this offering in short-term, interest-bearing instruments. These investments may not yield a favorable return, or any return, to us or our stockholders. See "Use of Proceeds" below.

Future sales, or the perception of future sales, of our common stock in the public market or other financings could cause our stock price to decline.

Sales of a substantial number of shares of our common stock in the public market by us or existing stockholders, or the perception that such sales might occur in the future or the occurrence of other financings, could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. The registration of shares of common stock for resale creates the possibility of a significant increase in the supply of our common stock in the market. The increased supply, coupled with the potential disparity in purchase prices, could lead to heightened selling pressure, which could negatively affect the public trading price of our common stock.

All of the shares sold in this offering upon issuance will be freely tradable without restriction or further registration under the Securities Act, unless these shares are purchased by “affiliates” as that term is defined in Rule 144 under the Securities Act, or Rule 144, or are subject to a lock-up agreement. In addition, shares of common stock issuable upon exercise of outstanding warrants, options, restricted stock units and shares reserved for future issuance under our equity incentive plan will be eligible for sale in the public market to the extent permitted by applicable vesting requirements and, in some cases, subject to compliance with the requirements of Rule 144. As a result, these shares can be freely sold in the public market upon issuance, subject to restrictions under the securities laws.

If you purchase shares of our common stock in this offering, you may incur immediate and substantial dilution.

The shares of common stock sold in this offering, if any, will be sold from time to time at various prices. The price per share of our common stock in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Therefore, if you purchase shares of our common stock in this offering, you may pay a price per share that substantially exceeds our pro forma as-adjusted net tangible book value per share after this offering. Assuming that an aggregate of 9,451,795 shares of our common stock are sold at an assumed offering price of \$5.29 per share, which was the last reported sale price of our common stock on The Nasdaq Capital Market on August 4, 2026, for net proceeds to us of \$48.2 million after deducting commissions and estimated offering expenses payable by us, you would incur immediate dilution in the amount of \$2.17 per share, representing the difference between our pro forma as-adjusted net tangible book value per share as of March 31, 2026 after giving effect to this offering and the assumed offering price.

In addition, the vesting of restricted stock units, the exercise of any outstanding options to purchase shares of our common stock or warrants, the conversion of outstanding non-voting common stock or Series B Cumulative Convertible Preferred Stock, and issuances of our equity in future equity offerings would result in additional dilution. As a result of the dilution to investors purchasing shares in this offering, investors may receive significantly less than the purchase price paid in this offering, if anything, in the event of our liquidation. See “Dilution” for additional information.

If you purchase shares of our common stock in this offering, you may experience future dilution as a result of future equity offerings.

In order to raise additional capital, we may, in the future, offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to those of existing stockholders. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

It is not possible to predict the actual number of shares we will sell under the Sales Agreement, or the actual gross proceeds resulting from those sales.

Subject to certain limitations in the Sales Agreement and compliance with applicable law, we have the discretion to deliver placement notices to the Designated Agent at any time throughout the term of the Sales Agreement. The number of shares that are sold through the Designated Agent after delivering a placement notice will fluctuate based on a number of factors, including the market price of the common stock during the sales period, the limits we set with the Designated Agent in any applicable placement notice, and the demand for our common stock during the sales period. Actual gross proceeds may be less than \$50.0 million, which may impact our future liquidity. Because the price per share of each share sold will fluctuate during the sales period, it is not currently possible to predict the number of shares that will be sold or the actual gross proceeds to be raised in connection with those sales.

The common stock offered hereby will be sold in “at the market offerings,” and investors who buy shares at different times will likely pay different prices.

Investors who purchase shares in this offering at different times will likely pay different prices, and so may experience different levels of dilution and different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices, and numbers of shares sold in this offering. In addition, there is no minimum sales price above par value or maximum sales price for shares to be sold in this offering, unless we specify as such in a placement notice. Investors may experience a decline in the value of the shares they purchase in this offering as a result of sales made at prices lower than the prices they paid.

Because we do not intend to declare cash dividends on our shares of common stock in the foreseeable future, stockholders must rely on appreciation of the value of our common stock for any return on their investment.

We have never paid any cash dividends and we do not anticipate paying any cash dividends for the foreseeable future. Any future determination to pay dividends will be at the discretion of our board of directors, subject to compliance with applicable law and any contractual provisions, including under any existing or future agreements for indebtedness we may incur, that restrict or limit our ability to pay dividends, and will depend upon, our results of operations, financial condition, earnings, capital requirements and other factors that our board of directors deems relevant. Accordingly, we expect that realization of a gain on your investment will depend on the appreciation of the price of the shares of common stock, which may never occur.

USE OF PROCEEDS

We may issue and sell shares of our common stock having an aggregate offering price of up to \$50.0 million from time to time. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. There can be no assurance that we will sell any shares under or fully utilize the Sales Agreement as a source of financing.

We intend to use the net proceeds from this offering for general corporate purposes, including working capital and capital expenditures.

Our management retains broad discretion regarding the use of the net proceeds from this offering, including discretion over the amounts and timing of any actual expenditures. Pending our use of the net proceeds from this offering, we intend to invest the net proceeds in marketable securities that may include investment-grade interest-bearing securities, money market accounts, certificates of deposit, commercial paper and guaranteed obligations of the U.S. government in accordance with our investment policy.

DIVIDEND POLICY

We have never paid cash dividends on our common stock and do not intend to pay cash dividends on our common stock in the foreseeable future. We anticipate that we will retain any earnings for use in the continued development of our business.

Our current and future debt financing arrangements may limit or prevent cash distributions from our subsidiaries to us, depending upon the achievement of certain financial and other operating conditions and our ability to properly service our debt, thereby limiting or preventing us from paying cash dividends on our common stock. In addition, the holders of our outstanding Series B Cumulative Convertible Preferred Stock are entitled to dividends of 7% per annum, payable quarterly.

DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted to the extent of the difference between the price per share you pay in this offering and the as-adjusted net tangible book value per share of our common stock immediately after giving effect to this offering.

Our net tangible book value as of March 31, 2026 was approximately \$224.4 million, or approximately \$2.88 per share of common stock. Our net tangible book value is the amount of our total tangible assets less our liabilities. Net tangible book value per share is our net tangible book value divided by the number of shares of common stock outstanding as of March 31, 2026. Dilution with respect to net tangible book value per share represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the net tangible book value per share of our common stock immediately after this offering. Because shares of our common stock in this offering may be sold from time to time at various prices, we cannot predict what the actual net tangible book value per share will be at any given time following a particular sale, and the actual dilution, if any, experienced by any purchaser in this offering may be higher or lower than the dilution set forth below, depending on the actual price at which such purchaser's shares are acquired.

After giving effect to the sale of our common stock in an aggregate amount of \$50.0 million in this offering at an assumed offering price of \$5.29 per share, the last reported sale price of our common stock on The Nasdaq Capital Market on August 4, 2026, and after deducting sales commissions and estimated offering expenses payable by us, our as-adjusted net tangible book value as of March 31, 2026 would have been approximately \$272.6 million, or approximately \$3.12 per share of common stock. This amount represents an immediate increase in as-adjusted net tangible book value of \$0.24 per share to our existing stockholders and an immediate dilution of \$2.17 per share to investors participating in this offering, as illustrated by the following table:

Assumed offering price per share		\$	5.29
Net tangible book value per share as of March 31, 2026	\$	2.88	
Increase in net tangible book value per share attributable to this offering	\$	0.24	
As adjusted net tangible book value per share after giving effect to this offering	\$	3.12	
Dilution per share to new investors in this offering	\$	2.17	

The number of shares of common stock to be outstanding after the offering is based on shares of common stock outstanding as of March 31, 2026, and excludes, as of that date, the following:

- 830,940 shares of common stock issuable upon the vesting and settlement of outstanding performance share grants at the “target” level of performance achievement;
- 896 shares of common stock issuable upon the conversion of our non-voting common stock; and
- 980,712 shares of common stock issuable upon the conversion of our Series B Cumulative Convertible Preferred Stock.

To the extent that then outstanding exercisable options or warrants are exercised, or outstanding non-voting common stock or Series B Cumulative Convertible Preferred Stock is converted, you may experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital by issuing equity or convertible debt securities, your ownership will be further diluted.

The as-adjusted information is illustrative only and will adjust based on the actual price to the public, the actual number of shares sold and other terms of the offering determined at the time common stock is sold pursuant to this prospectus supplement and the accompanying prospectus. The pro forma as-adjusted information assumes that all of our common stock in the aggregate amount of \$50.0 million is sold at the assumed offering price of \$5.29 per share, the last reported sale price of our common stock on The Nasdaq Capital Market on August 4, 2026. The shares sold in this offering, if any, will be sold from time to time at various prices through the Designated Agent under the Sales Agreement, and we cannot predict when, whether, or at what prices we will sell any such shares.

PLAN OF DISTRIBUTION

We have entered into the Sales Agreement with Craig-Hallum, Benchmark and Wainwright. Pursuant to this prospectus supplement and the accompanying prospectus, we may offer and sell shares of our common stock having an aggregate gross sales price of up to \$50.0 million from time to time to or through the Designated Agent and/or to any Agent selected by us, acting as principal. A copy of the Sales Agreement will be filed as an exhibit to a Current Report on Form 8-K and will be incorporated by reference into this prospectus supplement.

Upon delivery of a placement notice to the Designated Agent and subject to the terms and conditions of the Sales Agreement, the Designated Agent may sell shares of our common stock by any method permitted by law deemed to be an “at the market offering” as defined in Rule 415(a)(4) promulgated under the Securities Act, including by means of ordinary brokers’ transactions, to or through a market maker, on or through The Nasdaq Capital Market or any other existing trading market for shares of our common stock. Subject to the terms of the placement notice, the Designated Agent may sell shares of our common stock in any other method permitted by law, including but not limited to negotiated transactions or block transactions. We may instruct the Designated Agent not to sell shares of our common stock if the sales cannot be effected at or above the price designated by us from time to time. We or the Designated Agent may suspend the offering of shares of our common stock upon notice and subject to other conditions.

We will pay the Agents’ commissions, in cash, for their services in acting as agents in the sale of our common stock. The Agents will be entitled to compensation at a commission rate of 3.0% of the gross proceeds of any shares of common stock sold under the Sales Agreement. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. We have also agreed to reimburse the Agents for certain reasonable and documented expenses, including the fees and disbursements of their legal counsel in an amount not to exceed \$100,000 in connection with the execution of the Sales Agreement, and an amount not to exceed \$10,000 per quarter in connection with standard due diligence performed by the Agents. In accordance with Financial Industry Regulatory Authority, Inc. Rule 5110, these reimbursed fees and expenses are deemed underwriting compensation in connection with this offering. We estimate that the total expenses for the offering, excluding compensation and reimbursements payable to the Agents under the terms of the Sales Agreement, will be approximately \$1.8 million.

Settlement for sales of shares of our common stock will occur on the first trading day following the date on which any sales are made, or on some other date that is agreed upon by us and the Designated Agent in connection with a particular transaction, in return for payment of the net proceeds to us. Sales of our common stock as contemplated in this prospectus supplement will be settled through the facilities of The Depository Trust Company or by such other means as we and the Designated Agent may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

The Designated Agent will use its commercially reasonable efforts, consistent with its sales and trading practices, to solicit offers to purchase shares of our common stock under the terms and subject to the conditions set forth in the Sales Agreement. In connection with the sale of our shares of common stock on our behalf, each of the Agents will be deemed to be an “underwriter” within the meaning of the Securities Act and the compensation of the Agents will be deemed to be underwriting commissions or discounts. We have agreed to provide indemnification and contribution to each Agent against certain civil liabilities, including liabilities under the Securities Act.

The offering of shares of our common stock pursuant to the Sales Agreement will terminate upon the termination of the Sales Agreement as permitted therein. We and each Agent, with respect to such Agent, may terminate the Sales Agreement at any time upon ten business days’ and ten calendar days’ prior notice, respectively.

Our common stock is listed on The Nasdaq Capital Market under the symbol “ALTO.” The transfer agent for our common stock is Equiniti Trust Company, LLC.

The Agents and their respective affiliates have in the past and may in the future provide various investment banking, commercial banking and other financial services to us and our affiliates, for which services they have received and may in the future receive customary fees.

To the extent required by Regulation M under the Exchange Act, the Agents will not engage in any market making activities involving our common stock while the offering is ongoing under this prospectus supplement.

This prospectus supplement and the accompanying prospectus may be made available in electronic format on a website maintained by each of the Agents, and each of the Agents may distribute this prospectus supplement and the accompanying prospectus electronically.

LEGAL MATTERS

Certain legal matters with respect to the validity of the shares of common stock offered by this prospectus supplement have been passed upon for us by Troutman Pepper Locke LLP, Irvine, California. The Agents are being represented in connection with this offering by Faegre Drinker Biddle & Reath LLP.

EXPERTS

The consolidated financial statements of Alto Ingredients, Inc. as of December 31, 2025 and 2024 and for each of the years in the three-year period ended December 31, 2025, and the effectiveness of internal control over financial reporting as of December 31, 2025, have been audited by RSM US LLP, an independent registered public accounting firm, as stated in their reports thereon, incorporated herein by reference, and have been incorporated in this prospectus supplement, the accompanying prospectus and the registration statement of which they form a part in reliance upon such reports and upon the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act, and the rules and regulations promulgated under the Securities Act, with respect to the securities offered under this prospectus supplement. This prospectus supplement, which constitutes a part of the registration statement, does not contain all of the information contained in the registration statement and the exhibits and schedules to the registration statement. Many of the contracts and documents described in this prospectus supplement are filed as exhibits to the registration statements and you may review the full text of these contracts and documents by referring to these exhibits.

For further information with respect to us and the securities offered under this prospectus supplement, reference is made to the registration statement and its exhibits and schedules. We file reports, including annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K with the SEC.

The SEC maintains an Internet web site that contains reports, proxy and information statements and other information regarding issuers, including Alto Ingredients, Inc., that file electronically with the SEC. The SEC's Internet website address is <http://www.sec.gov>. Our Internet website address is <http://www.altoingredients.com>.

We do not anticipate that we will send an annual report to our stockholders until and unless we are required to do so by the rules of the SEC.

All trademarks or trade names referred to in this prospectus supplement are the property of their respective owners.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” the information we file with the SEC. This means that we can disclose important information to you by referring you to another filed document. Any information referred to in this way is considered part of this prospectus supplement from the date we file that document. Any reports filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus supplement and before the date that the offering of the securities by means of this prospectus supplement is terminated will automatically update and, where applicable, supersede any information contained in this prospectus supplement or incorporated by reference in this prospectus supplement (other than any filings or portions of such reports that are not deemed “filed” under the Exchange Act in accordance with the Exchange Act and applicable SEC rules, including current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary). Accordingly, we incorporate by reference the following documents or information filed with the SEC:

- our Current Report on Form 8-K, which we filed with the SEC on [June 23, 2026](#);
- our Quarterly Report on [Form 10-Q](#) for the quarterly period ended March 31, 2026, which we filed with the SEC on May 8, 2026;
- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2025, which we filed with the SEC on March 13, 2026;
- our Definitive Proxy Statement on [Schedule 14A](#), which we filed with the SEC on April 30, 2026;
- our Definitive Additional Materials on [Schedule 14A](#), which we filed with the SEC on April 30, 2026;
- the description of our Securities Registered Pursuant to Section 12 of the Exchange Act contained in [Exhibit 4.1](#) to our Annual Report on [Form 10-K](#), which we filed with the SEC on March 30, 2020, which description updates our Form 8-A description of securities; and
- all documents filed by us in accordance with Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act on or after the date of this prospectus supplement and before the termination of an offering under this prospectus supplement, other than documents or information deemed furnished and not filed in accordance with SEC rules.

We will provide a copy of the documents we incorporate by reference, at no cost, to any person who received this prospectus supplement. To request a copy of any or all of these documents, you should write or telephone us at: Investor Relations, Alto Ingredients, Inc., 1300 South Second Street, Pekin, Illinois 61554, (833) 710-2586. In addition, each document incorporated by reference is readily accessible on our website at www.altoingredients.com.

PROSPECTUS



ALTO INGREDIENTS, INC.

\$150,000,000

**Common Stock
Preferred Stock
Debt Securities
Warrants
Units**

This prospectus relates to the sale from time to time in one or more offerings of up to \$150,000,000 of securities comprised of the following:

- shares of our common stock;
- shares of our preferred stock;
- warrants to purchase shares of our common stock, preferred stock and/or debt securities;
- debt securities consisting of debentures, notes or other evidences of indebtedness (which may be issued as convertible or exchangeable debt securities);
- units consisting of a combination of the foregoing securities; or
- any combination of these securities.

This prospectus provides a general description of the securities that we may offer. Each time that we offer securities under this prospectus, we will provide the specific terms of the securities offered, including the public offering price, in a supplement to this prospectus. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings. The prospectus supplement and any related free writing prospectus may also add, update or change information contained in this prospectus. You should carefully read this prospectus, the applicable prospectus supplement and any related free writing prospectus, as well as any documents incorporated by reference together with additional information described under the heading "Where You Can Find More Information", before you invest in any of the securities being offered.

This prospectus may not be used to consummate a sale of any securities unless accompanied by a prospectus supplement.

Our common stock is listed on The Nasdaq Capital Market under the symbol "ALTO." On May 7, 2026, the last reported sale price of our common stock on The Nasdaq Capital Market was \$4.46. The applicable prospectus supplement will contain information, where applicable, as to any other listing on The Nasdaq Capital Market or any securities market or other exchange of the securities, if any, covered by the applicable prospectus supplement.

We may sell these securities directly to investors, through agents designated from time to time or to or through underwriters or dealers, on a continuous or delayed basis. For additional information on the methods of sale, you should refer to the section titled "Plan of Distribution" in this prospectus. If any agents or underwriters are involved in the sale of any securities with respect to which this prospectus is being delivered, the names of such agents or underwriters and any applicable fees, commissions, discounts or options to purchase additional securities will be set forth in a prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading "Risk Factors" on page 3 of this prospectus as well as those contained in the applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of 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 May 22, 2026.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the U.S. Securities and Exchange Commission, or the SEC, under the Securities Act of 1933, as amended, or the Securities Act, using a “shelf” registration process. By using a shelf registration statement, we may sell securities from time to time and in one or more offerings up to a total dollar amount of \$150,000,000 as described in this prospectus.

Each time that we offer and sell securities, we will provide a prospectus supplement to this prospectus that contains specific information about the securities being offered and sold and the specific terms of that offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. The prospectus supplement or free writing prospectus may also add, update or change information contained in this prospectus with respect to that offering. If there is any inconsistency between the information in this prospectus and the applicable prospectus supplement or free writing prospectus, you should rely on the prospectus supplement or free writing prospectus, as applicable. Before purchasing any securities, you should carefully read both this prospectus and the applicable prospectus supplement (and any applicable free writing prospectuses), together with the additional information described under the headings “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

We have not authorized anyone to provide you with any information or to make any representations other than those contained in this prospectus, any applicable prospectus supplement or any free writing prospectuses 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 will not make an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus and the applicable prospectus supplement or free writing prospectus to this prospectus is accurate only as of the date on its respective cover, that the information appearing in any applicable free writing prospectus is accurate only as of the date of that free writing prospectus, and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, unless we indicate otherwise. Our business, financial condition, results of operations and prospects may have changed since those dates. This prospectus incorporates by reference, and any prospectus supplement or free writing prospectus may contain and incorporate by reference, market data and industry statistics and forecasts that are based on independent industry publications and other publicly available information. Although we believe these sources are reliable, we do not guarantee the accuracy or completeness of this information and we have not independently verified this information. In addition, the market and industry data and forecasts that may be included or incorporated by reference in this prospectus, any prospectus supplement or any applicable free writing prospectus may involve estimates, assumptions and other risks and uncertainties and are subject to change based on various factors, including those discussed under the heading “Risk Factors” contained in this prospectus, the applicable prospectus supplement and any applicable free writing prospectus, and under similar headings in other documents that are incorporated by reference into this prospectus. Accordingly, investors should not place undue reliance on this information.

When used in this prospectus, the terms “Alto Ingredients,” “we,” “our,” “us” and the “Company” refer to Alto Ingredients, Inc. and its consolidated subsidiaries, unless otherwise specified. Unless otherwise stated or indicated by context, the phrase “this prospectus” refers to the prospectus and any applicable prospectus supplement.

THE COMPANY

Overview

Business Overview

We are a leading producer and distributor of specialty alcohols, renewable fuels and essential ingredients in the United States.

We operate five alcohol production facilities. Three of our production facilities are located in Illinois, one is located in Oregon, and another is located in Idaho. We have an annual alcohol production capacity of 330 million gallons, including both renewable fuels and specialty alcohols ranging from industrial-, pharmaceutical-, and high-quality food- and beverage-grade alcohols. Of this amount, we can produce up to 110 million gallons annually of specialty alcohols, depending on our product mix among high-quality beverage-grade alcohol and other quality specification alcohols. We market and distribute all of the alcohols produced at our facilities as well as alcohols produced by third parties. In 2025, we marketed and distributed approximately 350 million gallons combined of our own produced alcohols as well as fuel-grade ethanol produced by third parties, and over 1.2 million tons of essential ingredients.

We also own and operate a liquid carbon dioxide, or CO₂, production facility adjacent to our plant in Oregon for the offtake of CO₂ gas from the plant for conversion to liquid CO₂ and subsequent sale. In addition, we break bulk and distribute specialty alcohols, produced by us and third parties.

We report our financial and operating performance in three distinct segments:

- ***Pekin production***, which includes the production and sale of alcohols and other products we refer to as “essential ingredients” described below, produced at our three production facilities located in Pekin, Illinois, which we refer to as our Pekin Campus;
- ***Marketing and distribution***, which includes marketing and merchant trading for company-produced alcohols and essential ingredients on an aggregated basis, and sales of fuel-grade ethanol sourced from third parties; and
- ***Western production***, which includes the production and sale of renewable fuels and essential ingredients produced at our production facilities located in Burley, Idaho and Boardman, Oregon, including our liquid CO₂ plant, on an aggregated basis, none of which are individually so significant as to be considered a separately reportable segment.

Our mission is to produce the highest quality, sustainable ingredients that make everyday products better. We intend to accomplish this goal in part by investing in our specialized and higher value specialty alcohol production and distribution infrastructure, expanding production in high-demand essential ingredients, expanding and extending the sale of our products into new regional and international markets, building efficiencies and economies of scale and by capturing a greater portion of the value stream.

Production Segments

We produce specialty alcohols, renewable fuels and essential ingredients, focusing on five key markets: Health, Home & Beauty; Food & Beverage; Industry & Agriculture; Essential Ingredients; and Renewable Fuels. Products for Health, Home & Beauty markets include specialty alcohols used in mouthwash, cosmetics, pharmaceuticals, hand sanitizers, disinfectants and cleaners. Products for Food & Beverage markets include grain neutral spirits used in alcoholic beverages and vinegar, as well as corn germ used for corn oils. Products for Industry & Agriculture markets include alcohols and other products for paint applications, inks, vehicle fluids and fertilizers. Products for Essential Ingredients markets include dried yeast, corn protein meal, corn protein feed, corn germ, distillers grains, gas and liquid CO₂ and liquid feed used in commercial animal feed and pet foods. We also sell yeast and gas and liquid CO₂ for human consumption. Our products for the Renewable Fuels markets include fuel-grade ethanol and distillers corn oil used as a feedstock for renewable diesel and biodiesel fuels. Our specialty alcohols for the Industry & Agriculture, Food & Beverage and Health, Home & Beauty markets represented approximately 11%, 6% and 2%, respectively, of our sales in 2025 to customers in these three markets.

We produce our alcohols and essential ingredients at our facilities described above. Our production facilities located in Illinois are in the heart of the Corn Belt, benefit from relatively low-cost and abundant feedstock and enjoy logistical advantages that enable us to provide our products to both domestic and international markets via truck, rail or barge. Our production facilities located in Oregon and Idaho are near their respective fuel and feed customers, offering significant timing, product transportation cost and logistical advantages.

All of our production facilities, other than our Magic Valley plant, were operating for all of 2025, other than for scheduled and unscheduled downtimes to address facility repair and maintenance.

Our Magic Valley facility remained cold-idled for all of 2025, the first quarter of 2026 and through the filing of this prospectus to minimize financial losses. We continue to provide ethanol terminaling services at the plant and may resume operations at the facility if the economic environment in the region sustainably improves.

Marketing and Distribution Segment

We market and distribute all the alcohols and essential ingredients we produce at our facilities. We also market and distribute alcohols produced by third parties.

We have extensive and long-standing customer relationships, both domestic and international, for our specialty alcohols, renewable fuels and essential ingredients. These customers include producers and distributors of ingredients for cosmetics, sanitizers and related products, distilled spirits producers, food products manufacturers, producers of personal health/consumer health and personal care hygiene products, and global trading firms.

Our renewable fuel customers are located throughout the Western and Midwestern United States and consist of integrated oil companies and gasoline marketers who blend fuel-grade ethanol into gasoline. Our customers depend on us to provide a reliable supply of fuel-grade ethanol and manage the logistics and timing of delivery. Our customers collectively require fuel-grade ethanol volumes in excess of the supplies we produce at our facilities. We secure additional fuel-grade ethanol supplies from third-party ethanol producers. We arrange for transportation, storage and delivery of fuel-grade ethanol purchased by our customers through our agreements with third-party service providers in the Western United States as well as in the Midwest from a variety of sources.

We market food-grade essential ingredients to human and pet food markets, our feed products (such as distillers grains) primarily to export markets from our Pekin Campus, and other feed products to dairies and feedlots, in many cases located near our production facilities. These customers use our feed products for livestock as a substitute for corn and other sources of starch and protein. We sell our corn oil to poultry, renewable diesel and biodiesel customers.

Corporate Information

We are a Delaware corporation formed in February 2005. Our principal executive offices are located at 1300 Second Street, Pekin, Illinois 61554. Our telephone number is (833) 710-2586 and our Internet website is www.altoingredients.com. The content of our Internet website does not constitute a part of this prospectus.

RISK FACTORS

Investing in our securities involves a high degree of risk. Before deciding whether to invest in our securities, you should carefully consider the risks and uncertainties described under the heading “Risk Factors” contained in the applicable prospectus supplement and any related free writing prospectus, and discussed under the heading “Risk Factors” contained in our most recent Annual Report on Form 10-K, our most recent Quarterly Report on Form 10-Q and in our subsequent Quarterly Reports on Form 10-Q, as well as any amendments thereto reflected in subsequent filings with the SEC, which are incorporated by reference into this prospectus in their entirety, together with other information in this prospectus, the documents incorporated by reference and any free writing prospectus that we may authorize for use in connection with a specific offering. The risks described in these documents are not the only ones we face, but those that we consider to be material factors that make an investment in our common stock speculative or risky. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors 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 these risks actually occurs, 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 carefully read the section below titled “Special Note Regarding Forward-Looking Statements.”

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, each prospectus supplement and the information incorporated by reference in this prospectus and each prospectus supplement contain certain statements that constitute “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. The words “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “intend,” “expect,” “could,” “would,” “project,” “plan,” “potentially,” “likely,” and similar expressions and variations thereof are intended to identify forward-looking statements, but are not the exclusive means of identifying such statements. Those statements appear in this prospectus, any accompanying prospectus supplement and the documents incorporated herein and therein by reference, particularly in the sections captioned “Business,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and include statements regarding the intent, belief or current expectations of our management that are subject to known and unknown risks, uncertainties and assumptions. You are cautioned that any such forward-looking statements are not guarantees of future performance and involve risks and uncertainties, and that actual results may differ materially from those projected in the forward-looking statements as a result of various factors.

There are a number of important factors that could cause the actual results to differ materially from those expressed in any forward-looking statement made by us, including known and unknown risks, uncertainties and assumptions. These factors are described in the section titled “Risk Factors” and elsewhere in this Prospectus, and include, but are not limited to:

- general business and economic conditions;
- fluctuations in the market prices of alcohols and essential ingredients;
- fluctuations in the costs of key production input commodities such as corn and natural gas;
- our ability to fund, and the costs, timing and effects of, our plant improvement initiatives and other capital projects;
- regulatory developments relating to our initiatives and projects or to our business;
- our ability to qualify for and receive Section 45Z clean fuel production tax credits under the Internal Revenue Code, as added by the Inflation Reduction Act of 2022, including in anticipated amounts and at the expected times;
- our ability to obtain any necessary financing;
- our ability to maintain contracts that are critical to our operations;
- environmental, product or other liabilities we may incur;
- difficulties or delays in identifying, negotiating and completing acquisitions and integrating acquired companies;
- the inability to realize anticipated synergies and expansion possibilities;
- political, economic, and health (including pandemics) instabilities; and
- other factors affecting our operations, markets, products, services, and prices that are set forth in our Annual Report on Form 10-K for the fiscal year ended December 31, 2025 and our most recent Quarterly Report on Form 10-Q.

The foregoing does not represent an exhaustive list of matters that may be covered by the forward-looking statements contained herein or risk factors that we are faced with that may cause our actual results to differ from those anticipated in such forward-looking statements. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. We discuss in greater detail, and incorporate by reference into the registration statement of which this prospectus is a part in their entirety, many of these risks and uncertainties under the heading “Risk Factors” contained in the applicable prospectus supplement, in any free writing prospectus we may authorize for use in connection with a specific offering, and in our most recent Annual Report on Form 10-K, our most recent Quarterly Report on Form 10-Q and in our subsequent Quarterly Reports on Form 10-Q, as well as any amendments thereto reflected in subsequent filings with the SEC.

Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified, you should not rely upon forward-looking statements as predictions of future events. The events and circumstances reflected in the forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. Except as required by applicable law, including the securities laws of the United States and the rules and regulations of the SEC, we do not plan to publicly update or revise any forward-looking statements contained herein after we distribute this prospectus, whether as a result of any new information, future events or otherwise.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information known to us as of the date of this prospectus, and although we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted a thorough inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

This prospectus and the documents incorporated by reference in this prospectus may contain market data that we obtain from industry sources. These sources do not guarantee the accuracy or completeness of the information. Although we believe that our industry sources are reliable, we do not independently verify the information. The market data may include projections that are based on a number of other projections. While we believe these assumptions to be reasonable and sound as of the date of this prospectus, actual results may differ from the projections.

USE OF PROCEEDS

We will retain broad discretion over the use of the net proceeds from the sale of the securities offered hereby. Except as described in any prospectus supplement or any related free writing prospectus that we may authorize to be provided to you, we currently intend to use the net proceeds from the sale of the securities offered hereby for general corporate purposes, including working capital, repayment or redemption of existing indebtedness, capital expenditures and other general corporate purposes. We may also use a portion of the net proceeds to acquire or invest in businesses, products and technologies that are complementary to our own, although we have no current plans, commitments or agreements with respect to any acquisitions as of the date of this prospectus. We will set forth in the applicable prospectus supplement or free writing prospectus our intended use for the net proceeds received from the sale of any securities sold pursuant to the prospectus supplement or free writing prospectus. Pending these uses, we intend to invest the net proceeds primarily in money market mutual funds, obligations of the U.S. government and its agencies, money market instruments including commercial paper and negotiable certificates of deposit and corporate bonds.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock, certain provisions of our amended and restated certificate of incorporation, or the Certificate of Incorporation, our amended and restated bylaws, or the Bylaws, our Certificate of Designations, Powers, Preferences and Rights of the Series A Preferred Stock, or the Series A Certificate of Designations, our Certificate of Designations, Powers, Preferences and Rights of the Series B Preferred Stock, or the Series B Certificate of Designations, which are filed as exhibits to the registration statement of which this prospectus is a part, as well as the relevant provisions of the General Corporation Law of the State of Delaware.

Authorized and Outstanding Capital Stock

Our authorized capital stock consists of 300,000,000 shares of common stock, \$0.001 par value per share, 3,553,000 shares of non-voting common stock, \$0.001 par value per share, and 10,000,000 shares of preferred stock, \$0.001 par value per share, of which 1,684,375 shares are designated as Series A Cumulative Redeemable Convertible Preferred Stock, or Series A Preferred Stock, and 1,580,790 shares are designated as Series B Cumulative Convertible Preferred Stock, or Series B Preferred Stock. As of May 7, 2026, there were 77,485,153 shares of common stock, 896 shares of non-voting common stock, no shares of Series A Preferred Stock and 926,942 shares of Series B Preferred Stock issued and outstanding. See “Where You Can Find More Information.”

Common Stock

All outstanding shares of our common stock are fully paid and nonassessable. The following summarizes the rights of holders of our common stock:

- a holder of common stock is entitled to one vote per share on all matters to be voted upon generally by the stockholders;
- subject to preferences that may apply to shares of preferred stock outstanding, the holders of common stock are entitled to receive lawful dividends as may be declared by our Board of Directors, or the Board;
- upon our liquidation, dissolution or winding up, the holders of shares of common stock are entitled to receive a pro rata portion of all our assets remaining for distribution after satisfaction of all our liabilities and the payment of any liquidation preference of any outstanding preferred stock;
- there are no redemption or sinking fund provisions applicable to our common stock; and
- there are no preemptive or conversion rights applicable to our common stock.

Non-Voting Common Stock

The rights and preferences of shares of our non-voting common are substantially the same in all respects to the rights and preferences of shares of our common stock, except that (i) the holders of shares of non-voting common stock are not be entitled to vote, (ii) shares of non-voting common stock are convertible into shares of common stock, and (iii) shares of non-voting common stock are not listed on any stock exchange, including The Nasdaq Capital Market.

The following summarizes the rights of holders of our non-voting common stock:

- a holder of non-voting common stock is not entitled to vote on any matter submitted to a vote of the stockholders, however such holders are entitled to prior notice of, and to attend and observe, all meetings of the stockholders;
- subject to preferences that may apply to shares of preferred stock issued and outstanding, the holders of non-voting common stock are entitled to receive lawful dividends as may be declared by the Board on parity in all respects with the holders of common stock, provided that if the holders of common stock become entitled to receive a dividend or distribution of shares of common stock, holders of non-voting common stock shall receive, in lieu of the shares of common stock, an equal number of shares of non-voting common stock;

- upon liquidation, dissolution or winding up of Alto Ingredients, the holders of shares of common stock and non-voting common stock will be entitled to receive a pro rata portion of all of our assets remaining for distribution after satisfaction of all our liabilities and the payment of any liquidation preference of any outstanding preferred stock;
- there are no redemption or sinking fund provisions applicable to our non-voting common stock; and
- there are no preemptive rights applicable to our non-voting common stock.

Conversion

Each share of non-voting common stock is convertible at the option of the holder into one share of our common stock at any time. The conversion price is subject to customary adjustment for stock splits, stock combinations, stock dividends, mergers, consolidations, reorganizations, share exchanges, reclassifications, distributions of assets and issuances of convertible securities, and the like.

No shares of non-voting common stock may be converted into common stock if the holder of such shares or any of its affiliates would, after such conversion, beneficially own in excess of 9.99% of our outstanding shares of common stock, which we refer to in this prospectus as the Blocker. The Blocker applicable to the conversion of shares of non-voting common stock may be raised or lowered at the option of the holder to any percentage not in excess of 9.99%, except that any increase will only be effective upon 61-days' prior notice to us.

When shares of non-voting common stock cease to be held by the initial holder or an affiliate of an initial holder of such shares, such shares shall automatically convert into one share of our common stock.

Preferred Stock

Our Board is authorized to issue from time to time, in one or more designated series, any or all of our authorized but unissued shares of preferred stock with dividend, redemption, conversion, exchange, voting and other provisions as may be provided in that particular series. The issuance need not be approved by our common stockholders and need only be approved by holders, if any, of our Series A Preferred Stock and Series B Preferred Stock if, as described below, the shares of preferred stock to be issued have preferences that are senior to or on parity with those of our Series A Preferred Stock and Series B Preferred Stock.

The rights of the holders of our common stock, Series A Preferred Stock and Series B Preferred Stock will be subject to, and may be adversely affected by, the rights of the holders of any preferred stock that may be issued in the future. Issuance of a new series of preferred stock, while providing desirable flexibility in connection with possible acquisitions and other corporate purposes, could have the effect of entrenching our Board and making it more difficult for a third-party to acquire, or discourage a third-party from acquiring, a majority of our outstanding voting stock. The following is a summary of the terms of the Series A Preferred Stock and the Series B Preferred Stock.

Series B Preferred Stock

As of May 7, 2026, 926,942 shares of Series B Preferred Stock were issued and outstanding. A balance of 653,848 shares of Series B Preferred Stock remain authorized for issuance.

Rank and Liquidation Preference

Shares of Series B Preferred Stock rank prior to our common stock as to distribution of assets upon liquidation events, which include a liquidation, dissolution or winding up of Alto Ingredients, whether voluntary or involuntary. The liquidation preference of each share of Series B Preferred Stock is equal to \$19.50, or the Series B Issue Price, plus any accrued but unpaid dividends on the Series B Preferred Stock. If assets remain after the amounts are distributed to the holders of Series B Preferred Stock, the assets shall be distributed pro rata, on an as-converted to common stock basis, to the holders of our common stock and Series B Preferred Stock. The written consent of a majority of the outstanding shares of Series B Preferred Stock is required before we can authorize the issuance of any class or series of capital stock that ranks senior to or on parity with shares of Series B Preferred Stock.

Dividend Rights

As long as shares of Series B Preferred Stock remain outstanding, each holder of shares of Series B Preferred Stock are entitled to receive, and shall be paid quarterly in arrears, in cash out of funds legally available therefor, cumulative dividends, in an amount equal to 7.0% of the Series B Issue Price per share per annum with respect to each share of Series B Preferred Stock. The dividends may, at our option, be paid in shares of Series B Preferred Stock valued at the Series B Issue Price. In the event we declare, order, pay or make a dividend or other distribution on our common stock, other than a dividend or distribution made in common stock, the holders of the Series B Preferred Stock shall be entitled to receive with respect to each share of Series B Preferred Stock held, any dividend or distribution that would be received by a holder of the number of shares of our common stock into which the Series B Preferred Stock is convertible on the record date for the dividend or distribution.

The Series B Preferred Stock ranks *pari passu* with respect to dividends and liquidation rights with the Series A Preferred Stock and *pari passu* with respect to any class or series of capital stock specifically ranking on parity with the Series B Preferred Stock.

Optional Conversion Rights

Each share of Series B Preferred Stock is convertible at the option of the holder into shares of our common stock at any time. Each share of Series B Preferred Stock is convertible into the number of shares of common stock as calculated by multiplying the number of shares of Series B Preferred Stock to be converted by the Series B Issue Price, and dividing the result thereof by the conversion price. The conversion price was initially \$682.50 per share of Series B Preferred Stock, subject to adjustment; therefore, each share of Series B Preferred Stock was initially convertible into 0.03 shares of common stock, which number is equal to the quotient of the Series B Issue Price of \$19.50 divided by the initial conversion price of \$682.50 per share of Series B Preferred Stock. Accrued and unpaid dividends are to be paid in cash upon any conversion.

Mandatory Conversion Rights

In the event of a Transaction which will result in an internal rate of return to holders of Series B Preferred Stock of 25% or more, each share of Series B Preferred Stock shall, concurrently with the closing of the Transaction, be converted into shares of common stock. A "Transaction" is defined as a sale, lease, conveyance or disposition of all or substantially all of our capital stock or assets or a merger, consolidation, share exchange, reorganization or other transaction or series of related transactions (whether involving us or a subsidiary) in which the stockholders immediately prior to the transaction do not retain a majority of the voting power in the surviving entity. Any mandatory conversion will be made into the number of shares of common stock determined on the same basis as the optional conversion rights above. Accrued and unpaid dividends are to be paid in cash upon any conversion.

No shares of Series B Preferred Stock will be converted into common stock on a mandatory basis unless at the time of the proposed conversion we have on file with the SEC an effective registration statement with respect to the shares of common stock issued or issuable to the holders on conversion of the Series B Preferred Stock then issued or issuable to the holders and the shares of common stock are eligible for trading on The Nasdaq Stock Market (or approved by and listed on a stock exchange approved by the holders of 66 2/3% of the then outstanding shares of Series B Preferred Stock).

Conversion Price Adjustments

The conversion price is subject to customary adjustment for stock splits, stock combinations, stock dividends, mergers, consolidations, reorganizations, share exchanges, reclassifications, distributions of assets and issuances of convertible securities, and the like. The conversion price is also subject to downward adjustments if we issue shares of common stock or securities convertible into or exercisable for shares of common stock, other than specified excluded securities, at per share prices less than the then effective conversion price. In this event, the conversion price shall be reduced to the price determined by dividing (i) an amount equal to the sum of (a) the number of shares of common stock outstanding immediately prior to the issue or sale multiplied by the then existing conversion price, and (b) the consideration, if any, received by us upon such issue or sale, by (ii) the total number of shares of common stock outstanding immediately after the issue or sale. For purposes of determining the number of shares of common stock outstanding as provided in clauses (i) and (ii) above, the number of shares of common stock issuable upon conversion of all outstanding shares of Series B Preferred Stock, and the exercise of all outstanding securities convertible into or exercisable for shares of common stock, will be deemed to be outstanding.

The conversion price will not be adjusted in the case of the issuance or sale of the following: (i) securities issued to our employees, officers or directors or options to purchase common stock granted by us to our employees, officers or directors under any option plan, agreement or other arrangement duly adopted by us and the grant of which is approved by the compensation committee of our Board; (ii) the Series B Preferred Stock and any common stock issued upon conversion of the Series B Preferred Stock; (iii) securities issued on the conversion of any convertible securities, in each case, outstanding on the date of the filing of the Series B Certificate of Designations; and (iv) securities issued in connection with a stock split, stock dividend, combination, reorganization, recapitalization or other similar event for which adjustment is made in accordance with the foregoing.

Voting Rights and Protective Provisions

The Series B Preferred Stock votes together with all other classes and series of our voting stock as a single class on all actions to be taken by our stockholders. Each share of Series B Preferred Stock entitles the holder thereof to the number of votes equal to the number of shares of common stock into which each share of Series B Preferred Stock is convertible on all matters to be voted on by our stockholders, however, the number of votes for each share of Series B Preferred Stock may not exceed the number of shares of common stock into which each share of Series B Preferred Stock would be convertible if the applicable conversion price were \$682.50 (subject to appropriate adjustment for stock splits, stock dividends, combinations and other similar recapitalizations affecting the shares).

We are not permitted, without first obtaining the written consent of the holders of at least a majority of the then outstanding shares of Series B Preferred Stock voting as a separate class, to:

- increase or decrease the total number of authorized shares of Series B Preferred Stock or the authorized shares of our common stock reserved for issuance upon conversion of the Series B Preferred Stock (except as otherwise required by our Certificate of Incorporation or the Series B Certificate of Designations);
- increase or decrease the number of authorized shares of preferred stock or common stock (except as otherwise required by our Certificate of Incorporation or the Series B Certificate of Designations);
- alter, amend, repeal, substitute or waive any provision of our Certificate of Incorporation or our Bylaws, so as to affect adversely the voting powers, preferences or other rights, including the liquidation preferences, dividend rights, conversion rights, redemption rights or any reduction in the stated value of the Series B Preferred Stock, whether by merger, consolidation or otherwise;
- authorize, create, issue or sell any securities senior to or on parity with the Series B Preferred Stock or securities that are convertible into securities senior to or on parity the Series B Preferred Stock with respect to voting, dividend, liquidation or redemption rights, including subordinated debt;
- authorize, create, issue or sell any securities junior to the Series B Preferred Stock other than common stock or securities that are convertible into securities junior to Series B Preferred Stock other than common stock with respect to voting, dividend, liquidation or redemption rights, including subordinated debt;
- authorize, create, issue or sell any additional shares of Series B Preferred Stock other than the Series B Preferred Stock initially authorized, created, issued and sold, Series B Preferred Stock issued as payment of dividends and Series B Preferred Stock issued in replacement or exchange therefore;
- engage in a Transaction that would result in an internal rate of return to holders of Series B Preferred Stock of less than 25%;

- declare or pay any dividends or distributions on our capital stock in a cumulative amount in excess of the dividends and distributions paid on the Series B Preferred Stock in accordance with the Series B Certificate of Designations;
- authorize or effect the voluntary liquidation, dissolution, recapitalization, reorganization or winding up of our business; or
- purchase, redeem or otherwise acquire any of our capital stock other than Series B Preferred Stock, or any warrants or other rights to subscribe for or to purchase, or any options for the purchase of, our capital stock or securities convertible into or exchangeable for our capital stock.

Reservation of Shares

We initially were required to reserve 3,000,000 shares of common stock for issuance upon conversion of shares of Series B Preferred Stock and are required to maintain a sufficient number of reserved shares of common stock to allow for the conversion of all shares of Series B Preferred Stock.

Series A Preferred Stock

As of May 7, 2026, no shares of Series A Preferred Stock were issued and outstanding and an aggregate of 5,315,625 shares of Series A Preferred Stock had been converted into shares of our common stock and returned to undesignated preferred stock. A balance of 1,684,375 shares of Series A Preferred Stock remain authorized for issuance. The rights and preferences of the Series A Preferred Stock are substantially the same as the Series B Preferred Stock, except as follows:

- the Series A Issue Price, on which the Series A Preferred Stock liquidation preference is based, is \$16.00 per share;
- dividends accrue and are payable at a rate per annum of 5.0% of the Series A Issue Price per share;
- each share of Series A Preferred Stock is convertible at a rate equal to the Series A Issue Price divided by an initial conversion price of \$840.00 per share;
- holders of the Series A Preferred Stock have a number of votes equal to the number of shares of common stock into which each share of Series A Preferred Stock is convertible on all matters to be voted on by our stockholders, voting together as a single class; provided, however, that the number of votes for each share of Series A Preferred Stock shall not exceed the number of shares of common stock into which each share of Series A Preferred Stock would be convertible if the applicable conversion price were \$943.95 (subject to appropriate adjustment for stock splits, stock dividends, combinations and other similar recapitalizations affecting the shares); and
- we are not permitted, without first obtaining the written consent of the holders of at least a majority of the then outstanding shares of Series A Preferred Stock voting as a separate class, to:
 - o change the number of members of our Board to be more than nine members or less than seven members;
 - o effect any material change in our industry focus or that of our subsidiaries, considered on a consolidated basis;
 - o authorize or engage in, or permit any subsidiary to authorize or engage in, any transaction or series of transactions with one of our or our subsidiaries' current or former officers, directors or members with value in excess of \$100,000, excluding compensation or the grant of options approved by our Board; or
 - o authorize or engage in, or permit any subsidiary to authorize or engage in, any transaction with any entity or person that is affiliated with any of our or our subsidiaries' current or former directors, officers or members, excluding any director nominated by the initial holder of the Series B Preferred Stock.

Preemptive Rights

Holders of our Series A Preferred Stock have preemptive rights to purchase a pro rata portion of all capital stock or securities convertible into capital stock that we issue, sell or exchange, or agree to issue, sell or exchange, or reserve or set aside for issuance, sale or exchange. We must deliver each holder of our Series A Preferred Stock a written notice of any proposed or intended issuance, sale or exchange of capital stock or securities convertible into capital stock which must include a description of the securities and the price and other terms upon which they are to be issued, sold or exchanged together with the identity of the persons or entities (if known) to which or with which the securities are to be issued, sold or exchanged, and an offer to issue and sell to or exchange with the holder of the Series A Preferred Stock the holder's pro rata portion of the securities, and any additional amount of the securities should the other holders of Series A Preferred Stock subscribe for less than the full amounts for which they are entitled to subscribe. In the case of a public offering of our common stock for a purchase price of at least \$12.00 per share and a total gross offering price of at least \$50 million, the preemptive rights of the holders of the Series A Preferred Stock shall be limited to 50% of the securities. Holders of our Series A Preferred Stock have a 30 day period during which to accept the offer. We will have 90 days from the expiration of this 30 day period to issue, sell or exchange all or any part of the securities as to which the offer has not been accepted by the holders of the Series A Preferred Stock, but only as to the offerees or purchasers described in the offer and only upon the terms and conditions that are not more favorable, in the aggregate, to the offerees or purchasers or less favorable to us than those contained in the offer.

The preemptive rights of the holders of the Series A Preferred Stock do not apply to any of the following securities: (i) securities issued to our employees, officers or directors or options to purchase common stock granted by us to our employees, officers or directors under any option plan, agreement or other arrangement duly adopted by us and the grant of which is approved by the compensation committee of our Board; (ii) the Series A Preferred Stock and any common stock issued upon conversion of the Series A Preferred Stock; (iii) securities issued on the conversion of any convertible securities, in each case, outstanding on the date of the filing of the Series A Certificate of Designations; (iv) securities issued in connection with a stock split, stock dividend, combination, reorganization, recapitalization or other similar event for which adjustment is made in accordance with the Series A Certificate of Designations; and (v) the issuance of our securities issued for consideration other than cash as a result of a merger, consolidation, acquisition or similar business combination by us approved by our Board.

Anti-Takeover Effects of Delaware Law and Our Certificate of Incorporation and Bylaws

A number of provisions of Delaware law, our Certificate of Incorporation and our Bylaws contain provisions that could have the effect of delaying, deferring and discouraging another party from acquiring control of Alto Ingredients. These provisions, which are summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of Alto Ingredients to first negotiate with our Board. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquiror outweigh the disadvantages of discouraging a proposal to acquire Alto Ingredients because negotiation of these proposals could result in an improvement of their terms. However, the existence of these provisions also could limit the price that investors might be willing to pay for our securities.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock makes it possible for our Board to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to acquire us. These and other provisions may have the effect of deferring hostile takeovers or delaying changes in control or management of Alto Ingredients.

Advance Notice Requirements for Stockholder Proposals and Director Nominations

Our Bylaws provide that a stockholder of record entitled to vote at an annual meeting of stockholders seeking to bring business before the annual meeting, or to nominate candidates for election as directors, must provide timely notice of such stockholder's intention in writing in accordance with our Bylaws and Regulation 14A under the Exchange Act. To be timely, a stockholder nominating individuals for election to the Board or proposing business must provide advanced notice to Alto Ingredients (a) not later than the close of business on the 90th day, nor earlier than the close of business on the 120th day in advance of the anniversary of the previous year's annual meeting if such meeting is to be held on a day which is not more than thirty (30) days in advance of the anniversary of the previous year's annual meeting or not later than seventy (70) days after the anniversary of the previous year's annual meeting, and (b) with respect to any other annual meeting of stockholders, the close of business on the 10th day following the date of public disclosure of the date of such meeting. An adjournment or postponement of an annual meeting or special meeting will not commence a new time period (or extend any time period) for the giving of such notice. In the event we call a special meeting of stockholders for the purpose of electing one or more directors to the Board, any stockholder entitled to vote in such election of directors may nominate a person or persons (as the case may be) for election to such position(s) as specified in our notice of meeting, if the stockholder's notice is delivered to us not later than the close of business on the 90th day prior to such special meeting and not earlier than the close of business on the later of the 120th day prior to such special meeting or the 10th day following the date of public disclosure of the date of the special meeting and of the nominees proposed by the Board to be elected at such meeting. In all cases, stockholders must include in their notice, and update and supplement, the information required by our Bylaws. Stockholders who intend to solicit proxies in support of director nominees other than the nominees of Alto Ingredients must comply with the additional notice, solicitation and certification requirements of Rule 14a-19 under the Exchange Act, including the requirement to solicit proxies from holders of at least 67% of the voting power entitled to vote in the election of directors, and we may disregard any proxies or votes solicited for such nominees if those requirements or our Bylaws are not satisfied.

We are subject to the provisions of Section 203 of the Delaware General Corporation Law, which we refer to in this prospectus as Section 203, regulating corporate takeovers. In general, Section 203 prohibits a publicly held Delaware corporation from engaging, under specified circumstances, in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the number of shares of voting stock outstanding (but not the outstanding voting stock owned by the stockholder) (1) shares owned by persons who are directors and also officers and (2) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to the date of the transaction, the business combination is approved by the board and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66-2/3% of the outstanding voting stock that is not owned by the interested stockholder.

Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. 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 outstanding voting securities. We expect the existence of this provision to have an anti-takeover effect with respect to transactions the Board does not approve in advance. We also anticipate that Section 203 may also discourage attempts that might result in a premium over the market price for the shares of our common stock held by stockholders.

The provisions of Delaware law, our Certificate of Incorporation and our Bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Choice of Forum

Our Bylaws provide that, to the fullest extent permitted by law and unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (a) any derivative action or proceeding brought on behalf of us, (b) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of us to us or our stockholders, (c) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, or (d) any action asserting a claim governed by the internal affairs doctrine. In addition, to the fullest extent permitted by law and unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States shall be the sole and exclusive forum for any complaint asserting a cause of action arising under the Securities Act. The exclusive forum provision described above does not apply to any claims arising under the Exchange Act, which are subject to the exclusive jurisdiction of the federal courts pursuant to Section 27 of the Exchange Act. Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder, and Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder, notwithstanding which our Bylaws provide, as described above, that such Securities Act claims must be brought in the federal district courts to the fullest extent permitted by law. Any person or entity purchasing or otherwise acquiring any interest in our securities is deemed to have notice of and consented to the exclusive forum provisions.

DESCRIPTION OF PREFERRED STOCK

We may issue up to 6,734,835 shares of preferred stock, par value \$0.001 per share, from time to time in one or more classes or series, with the exact terms of each series or class established by our Board. Without seeking stockholder approval, our Board may issue preferred stock with voting and other rights that are greater than the rights of our common stock and could adversely affect the voting power of the holders of our common stock.

The rights, preferences, privileges and restrictions of the preferred stock of each series or class will be determined by our Board and set forth in a certificate of designations relating to such series or class that will amend our Certificate of Incorporation. We will include each certificate of designations as an exhibit to the registration statement that includes this prospectus, or as an exhibit to a filing with the SEC that is incorporated by reference into this prospectus. The description of preferred stock in any prospectus supplement will not necessarily describe all of the terms of the preferred stock in detail. You should read the applicable certificate of designations for a complete description of all of the terms.

This section describes the general terms of the preferred stock that we may offer using this prospectus. Further terms of the preferred stock will be stated in the applicable prospectus supplement. The following description and any description of the preferred stock in a prospectus supplement may not be complete and is subject to and qualified in its entirety by reference to the terms of the certificate of designations.

Terms

You should refer to the applicable prospectus supplement relating to the offering of any series of preferred stock for specific terms of the shares, including the following terms:

- the maximum number of shares in the series or class and the distinctive designation;
- number of shares offered and initial offering price;
- the terms on which dividends, if any, will be paid;
- the terms of any preemptive rights;
- the terms on which the shares may be redeemed, if at all;
- the liquidation preference, if any;
- the terms of any retirement or sinking fund for the repurchase or redemption of the shares of the series;
- the terms and conditions, if any, on which the shares of the series shall be convertible into, or exchangeable for, shares of any other class or classes of capital stock, including the conversion price, rate or other manner of calculation, conversion period and anti-dilution provisions, if applicable;
- terms and conditions upon which shares will be exchangeable into debt securities or any other securities, including the exchange price, rate or other manner of calculation, exchange period and any anti-dilution provisions, if applicable;
- the relative ranking and preference as to dividend rights and rights upon liquidation, dissolution or the winding up of our affairs, including liquidation preference amount;
- any limitation on issuance of any series of preferred stock ranking senior to or on a parity with that series of preferred stock as to dividend rights and rights upon liquidation, dissolution or the winding up of our affairs;
- the voting rights, if any, on the shares of the series;
- any or all other preferences and relative, participating, operational or other special rights or qualifications, limitations or restrictions of the shares; and
- any material United States federal income tax consequences.

The issuance of preferred stock may delay, deter or prevent a change in control.

Ranking

Unless we provide otherwise in an applicable prospectus supplement, the preferred stock offered through that supplement will, with respect to dividend rights and rights upon our liquidation, dissolution or winding up, rank:

- senior to all classes or series of our common stock, and to all other equity securities ranking junior to the offered preferred stock;
- on a parity with all of our equity securities ranking on a parity with the offered preferred stock; and
- junior to all of our equity securities ranking senior to the offered preferred stock.

As used in this prospectus, the term “equity securities” does not include convertible debt securities.

Voting Rights

Unless otherwise indicated in the applicable prospectus supplement, holders of our preferred stock will not have any voting rights, except as may be required by applicable law.

Dividends

Subject to any preferential rights of any outstanding shares or series of shares, our preferred stockholders are entitled to receive dividends, if any, when and as authorized by our Board, out of legally available funds, as specified in the applicable prospectus supplement.

Redemption

If we provide for a redemption right in a prospectus supplement, the preferred stock offered through that supplement will be subject to mandatory redemption or redemption at our option, in whole or in part, in each case upon the terms, at the times and at the redemption prices set forth in that prospectus supplement.

Liquidation Preference

In the event of our voluntary or involuntary dissolution, liquidation, or winding up, the holders of any series of our preferred stock will be entitled to receive, after distributions to holders of any series or class of our capital shares ranking senior, an amount equal to the stated or liquidation value of the series plus, if applicable, an amount equal to accrued and unpaid dividends. If the assets and funds to be distributed among the holders of our preferred stock will be insufficient to permit full payment to the holders, then the holders of our preferred stock will share ratably in any distribution of our assets in proportion to the amounts that they otherwise would receive on their own preferred stock if the shares were paid in full.

Conversion Rights

The terms and conditions, if any, upon which any series of preferred stock is convertible into common stock or other securities will be set forth in the prospectus supplement relating to the offering of those preferred stock. These terms typically will include number of shares of common stock or other securities into which the preferred stock is convertible; conversion price (or manner of calculation); conversion period; provisions as to whether conversion will be at the option of the holders of the preferred stock or at our option; events, if any, requiring an adjustment of the conversion price; and provisions affecting conversion in the event of the redemption of that series of preferred stock.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Equiniti Trust Company, LLC.

The Nasdaq Capital Market

Our common stock is listed on The Nasdaq Capital Market under the symbol “ALTO.”

DESCRIPTION OF WARRANTS

We may issue warrants to purchase shares of our common stock, preferred stock and/or debt securities in one or more series together with other securities or separately, as described in each applicable prospectus supplement. The complete terms of the warrants we may issue will be contained in the applicable warrant agreement and warrant. These documents will be included or incorporated by reference as exhibits to the registration statement of which this prospectus is a part. You should read the warrant and warrant agreement. You should also read the prospectus supplement, which will contain additional information and which may update or change some of the information below.

This section describes the general terms of the warrants to purchase common stock, preferred stock and/or debt securities that we may offer using this prospectus. Further terms of the warrants will be stated in the applicable prospectus supplement. The following description and any description of the rights in a prospectus supplement may not be complete and is subject to and qualified in its entirety by reference to the terms of the warrant and warrant agreement.

General

We may issue warrants for the purchase of common stock, preferred stock and/or debt securities in one or more series. If we offer warrants, we will describe the terms in a prospectus supplement. Warrants may be offered independently, together with other securities offered by any prospectus supplement, or through a dividend or other distribution to stockholders and may be attached to or separate from other securities. Warrants may be issued under a written warrant agreement to be entered into between us and the holder or beneficial owner, or under a written warrant agreement with a warrant agent specified in a prospectus supplement. A warrant agent would act solely as our agent in connection with the warrants of a particular series and would not assume any obligation or relationship of agency or trust for or with any holders or beneficial owners of those warrants.

The following are some of the terms relating to a series of warrants that could be described in a prospectus supplement:

- title of the warrants;
- aggregate number of warrants;
- price or prices at which the warrants will be issued;
- designation, number, aggregate principal amount, denominations and terms of the securities that may be purchased on exercise of the warrants;
- date, if any, on and after which the warrants and the debt securities offered with the warrants, if any, will be separately transferable;
- purchase price for each security purchasable on exercise of the warrants;
- the terms for changes to or adjustments in the exercise price, if any;
- dates on which the right to purchase certain securities upon exercise of the warrants will begin and end;
- minimum or maximum number of securities that may be purchased at any one time upon exercise of the warrants;
- anti-dilution provisions or other adjustments to the exercise price of the warrants;
- terms of any right that we may have to redeem the warrants;
- effect of any merger, consolidation, sale or other transfer of our business on the warrants and the applicable warrant agreement;
- name and address of the warrant agent, if any;
- information with respect to book-entry procedures;
- any material United States federal income tax considerations; and
- other material terms, including terms relating to transferability, exchange, exercise or amendments of the warrants.

Until any warrants to purchase our securities are exercised, holders of the warrants will not have any rights of holders of the underlying securities.

Outstanding Warrants

As of May 7, 2026, we had no outstanding warrants to purchase shares of our common stock.

DESCRIPTION OF DEBT SECURITIES

The complete terms of the debt securities will be contained in the indenture and supplemental indenture applicable to the debt securities unless we are not required under the Trust Indenture Act of 1939, as amended, or the Trust Indenture Act, to issue the debt securities pursuant to an indenture. These documents have been or will be included or incorporated by reference as exhibits to the registration statement of which this prospectus is a part. You should read the indenture and supplemental indenture. You should also read the prospectus supplement, which will contain additional information and which may update or change some of the information below.

This section describes the general terms of the debt securities that we may offer using this prospectus. Further terms of the debt securities will be stated in the applicable prospectus supplement. The following description and any description of the debt securities in a prospectus supplement may not be complete and is subject to and qualified in its entirety by reference to the terms of the applicable indenture and supplemental indenture (to the extent we are required to issue the debt securities pursuant to an indenture) and form of debt security.

General

We may issue debt securities, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible or exchangeable debt. The senior debt securities will rank equally with any other unsubordinated debt that we may have and may be secured or unsecured. The subordinated debt securities will be subordinate and junior in right of payment, to the extent and in the manner described in the instrument governing the debt, to all or some portion of our senior indebtedness. Any convertible debt securities that we may issue will be convertible into or exchangeable for common stock or other securities of Alto Ingredients. Conversion may be mandatory or at your option and would be at prescribed conversion rates.

If we are required pursuant to the provisions of the Trust Indenture Act, the debt securities will be issued under one or more indentures, which are contracts between us and an eligible banking institution or other eligible party, as trustee. While the terms we have summarized below will apply generally to any debt securities that we may offer under this prospectus, we will describe the particular terms of any debt securities that we may offer, including debt securities that are issued under an indenture, in more detail in a prospectus supplement.

If required, we will issue the senior debt securities under the senior indenture that we will enter into with the trustee named in the senior indenture. If required, we will issue the subordinated debt securities under the subordinated indenture that we will enter into with the trustee named in the subordinated indenture. We have filed forms of these documents as exhibits to the registration statement of which this prospectus is a part. We use the term “indentures” to refer to both the senior indenture and the subordinated indenture.

The following summaries of the material provisions of the senior debt securities, the subordinated debt securities and the indentures (to the extent applicable to a particular issuance of our debt securities) are not complete and are qualified in their entirety by reference to all of the provisions of the indenture applicable to a particular series of debt securities. You should read the applicable prospectus supplement that we may authorize to be provided to you related to the series of debt securities being offered and, to the extent applicable, the complete indentures that contain the terms of the debt securities. Forms of indentures have been filed as exhibits to the registration statement of which this prospectus is a part, and we will file supplemental indentures and forms of debt securities containing the terms of the debt securities being offered under indentures as exhibits to the registration statement of which this prospectus is a part or such supplemental indentures will be incorporated by reference to reports that we file with the SEC. Except as we may otherwise indicate, the terms of the senior indenture and the subordinated indenture are identical.

The indentures will be qualified under the Trust Indenture Act. We use the term “indenture trustee” to refer to either the senior trustee or the subordinated trustee, as applicable.

The indentures do not limit the amount of other debt that we may incur and do not contain financial or similar restrictive covenants. The indentures do not contain any provision to protect holders of debt securities against a sudden or dramatic decline in our ability to pay our debt.

The prospectus supplement will describe the debt securities offered and the price or prices at which we will offer the debt securities. The description will include:

- the title of the debt securities;
- whether the debt securities are senior debt securities or subordinated debt securities and, if subordinated debt securities, the related subordination terms;
- principal amount being offered, and, if a series, the total amount authorized and the total amount outstanding;
- any limit on the aggregate principal amount of the debt securities or the series of which they are a part;
- the date or dates on which we must pay the principal;
- whether the debt securities will be issued with any original issue discount;
- whether the debt securities are convertible into common stock or other securities or property and, if so, the terms and conditions upon which conversion will be effected, including the initial conversion price or conversion rate and any adjustments thereto and the conversion period;
- the rate or rates at which the debt securities will bear interest, if any, the date or dates from which interest will accrue, and the dates on which we must pay interest;
- whether and under what circumstances, if any, we will pay a premium or additional amounts on any debt securities;
- the place or places where we must pay the principal and any premium or interest on the debt securities;
- the terms and conditions on which we may redeem or retire any debt security, if at all;
- any obligation to redeem or repurchase any debt securities, and the terms and conditions on which we must do so;
- the denominations in which we may issue the debt securities if other than denominations of \$1,000 and any integral multiple thereof;
- the manner in which we will determine the amount of principal of or any premium or interest or additional amounts on the debt securities;
- the principal amount of the debt securities that we will pay upon declaration of acceleration of their maturity if other than 100%;
- the amount that will be deemed to be the principal amount for any purpose, including the principal amount that will be due and payable upon any maturity or that will be deemed to be outstanding as of any date;
- whether the debt securities will be secured or unsecured, and the terms of any secured debt;
- whether the debt securities are defeasible;
- if applicable, the terms of any right to convert debt securities into, or exchange debt securities for, shares of common stock or other securities or property;

- restrictions on transfer, sale or other assignment, if any;
- our right, if any, to defer payment of interest and the maximum length of any such deferral period;
- provisions for a sinking fund, purchase or other analogous fund, if any;
- whether we will issue the debt securities under indentures;
- whether we will issue the debt securities in the form of one or more global securities and, if so, the respective depositaries for the global securities and the terms of the global securities;
- any addition to or change in the events of default applicable to the debt securities and any change in the right of the trustee or the holders to declare the principal amount of any of the debt securities due and payable;
- any addition to or change in the covenants in the indentures, if any, including whether the indenture will restrict our ability or the ability of our subsidiaries to:
 - incur additional indebtedness;
 - issue additional securities;
 - create liens;
 - pay dividends or make distributions in respect of our capital shares or the capital shares of our subsidiaries;
 - redeem capital shares;
 - place restrictions on our subsidiaries' ability to pay dividends, make distributions or transfer assets;
 - make investments or other restricted payments;
 - sell or otherwise dispose of assets;
 - enter into sale-leaseback transactions;
 - engage in transactions with stockholders or affiliates;
 - issue or sell shares of our subsidiaries; or
 - effect a consolidation or merger;
- whether the indenture, if any, will require us to maintain any interest coverage, fixed charge, cash flow-based, asset-based or other financial ratios;
- a discussion of any material United States federal income tax considerations applicable to the debt securities;
- information describing any book-entry features;
- procedures for any auction or remarketing, if any; and

- any other specific terms, preferences, rights or limitations of, or restrictions on, the debt securities, including any events of default that are in addition to those described in this prospectus or any covenants provided with respect to the debt securities that are in addition to those described above, and any terms that may be required by us or advisable under applicable laws or regulations or advisable in connection with the marketing of the debt securities.

We may sell the debt securities at a substantial discount below their stated principal amount. We will describe United States federal income tax considerations, if any, applicable to debt securities sold at an original issue discount in the prospectus supplement. An “original issue discount security” is any debt security that provides for an amount less than the principal amount to be due and payable upon the declaration of acceleration of the maturity under the terms of the applicable indenture. The prospectus supplement relating to any original issue discount securities will describe the particular provisions relating to acceleration of the maturity upon the occurrence of an event of default. In addition, we will describe United States federal income tax or other considerations applicable to any debt securities that are denominated in a currency or unit other than United States dollars in the prospectus supplement.

Conversion and Exchange Rights

The applicable prospectus supplement will describe, if applicable, the terms on which you may convert debt securities into or exchange them for common stock or other securities or property. The conversion or exchange may be mandatory or may be at your option. The prospectus supplement will describe how the number of shares of common stock or other securities or property to be received upon conversion or exchange would be calculated.

Subordination of Subordinated Debt Securities

Unless the prospectus supplement indicates otherwise, the following provisions will apply to the subordinated debt securities. The indebtedness underlying the subordinated debt securities will be payable only if all payments due under our senior indebtedness, including any outstanding senior debt securities, have been made. If we distribute our assets to creditors upon any dissolution, winding-up, liquidation or reorganization or in bankruptcy, insolvency, receivership or similar proceedings, we must first pay all amounts due or to become due on all senior indebtedness before we pay the principal of, or any premium or interest on, the subordinated debt securities. In the event the subordinated debt securities are accelerated because of an event of default, we may not make any payment on the subordinated debt securities until we have paid all senior indebtedness or the acceleration is rescinded. If the payment of subordinated debt securities accelerates because of an event of default, we must promptly notify holders of senior indebtedness of the acceleration.

Unless otherwise indicated in a prospectus supplement, we may not make any payment on the subordinated debt securities if a default in the payment of the principal of, premium, if any, interest or other obligations, including a default under any repurchase or redemption obligation, in respect of senior indebtedness occurs and continues beyond any applicable grace period. We may not make any payment on the subordinated debt securities if any other default occurs and continues with respect to senior indebtedness that permits holders of the senior indebtedness to accelerate its maturity and the trustee receives a notice of such default from us, a holder of such senior indebtedness or other person permitted to give such notice. We may not resume payments on the subordinated debt securities until the defaults are cured or certain periods pass.

If we experience a bankruptcy, dissolution or reorganization, holders of senior indebtedness may receive more, ratably, and holders of subordinated debt securities may receive less, ratably, than our other creditors.

The indentures in the forms initially filed as exhibits to the registration statement of which this prospectus is a part do not limit the amount of indebtedness which we may incur, including senior indebtedness or subordinated indebtedness, and do not limit us from issuing any other debt, including secured debt or unsecured debt.

Form, Exchange and Transfer

We will issue debt securities only in fully registered form, without coupons, and, unless otherwise specified in the prospectus supplement, only in denominations of \$1,000 and any integral multiple thereof. The indentures provide that we may issue debt securities of a series in temporary or permanent global form and as book-entry securities that will be deposited with, or on behalf of, The Depository Trust Company, or DTC, or another depository named by us and identified in a prospectus supplement with respect to that series. We currently anticipate that the debt securities of each series offered and sold pursuant to this prospectus will be issued as global debt securities as described under the heading “Legal Ownership of Securities” and will trade in book-entry form only.

At the option of the holder, subject to the terms of the indentures and the limitations applicable to global securities described in the applicable prospectus supplement, the holder of the debt securities of any series can exchange the debt securities for other debt securities of the same series, in any authorized denomination and of like tenor and aggregate principal amount.

Subject to the terms of the indentures and the limitations applicable to global securities set forth in the applicable prospectus supplement, holders of the debt securities may present the debt securities for exchange or for registration of transfer, duly endorsed or with the form of transfer endorsed thereon duly executed if so required by us or the security registrar, at the office of the security registrar or at the office of any transfer agent designated by us for this purpose. Unless otherwise provided in the debt securities that the holder presents for transfer or exchange, we will make no service charge for any registration of transfer or exchange, but we may require payment of any taxes or other governmental charges.

We will name in the applicable prospectus supplement the security registrar, and any transfer agent in addition to the security registrar, that we initially designate for any debt securities. We may at any time designate additional transfer agents or rescind the designation of any transfer agent or approve a change in the office through which any transfer agent acts, except that we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

If we elect to redeem the debt securities of any series, we will not be required to:

- issue, register the transfer or exchange of any debt securities of any series being redeemed in part during a period beginning at the opening of business 15 days before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or
- register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

Consolidation, Merger and Sale of Assets

Unless otherwise specified in the prospectus supplement, we may not consolidate with or merge into, or sell, convey, transfer, lease or otherwise dispose of all or substantially all of our properties and assets to, any person, and shall not permit any other person to consolidate with or merge into us, unless:

- either: (i) we are the surviving corporation or (ii) the person formed by or surviving any consolidation, amalgamation or merger or resulting from such conversion (if other than Alto Ingredients) or to which such sale, assignment, transfer, conveyance or other disposition has been made, is a corporation, limited liability company or limited partnership organized and validly existing under the laws of the United States, any state of the United States or the District of Columbia and assumes our obligations under the debt securities and under the indentures pursuant to agreements reasonably satisfactory to the indenture trustee;
- immediately before and after giving pro forma effect to such transaction, no event of default, and no event which, after notice or lapse of time or both, would become an event of default, has occurred and is continuing; and
- several other conditions, including any additional conditions with respect to any particular debt securities specified in the applicable prospectus supplement, are met.

The terms of any securities that we may offer pursuant to this prospectus may limit our ability to merge or consolidate or otherwise sell, convey, transfer or otherwise dispose of all or substantially all of our assets, which terms would be set forth in the applicable prospectus supplement and supplemental indenture.

Events of Default

Unless otherwise specified in the applicable prospectus supplement, it is anticipated that each of the following will constitute an event of default under the applicable indenture with respect to debt securities of any series:

- failure to pay principal of or any premium on any debt security of that series when due, whether or not, in the case of subordinated debt securities, such payment is prohibited by the subordination provisions of the subordinated indenture;
- failure to pay any interest on any debt securities of that series when due, continued for 30 days, whether or not, in the case of subordinated debt securities, such payment is prohibited by the subordination provisions of the subordinated indenture;
- failure to deposit any sinking fund payment, when due, in respect of any debt security of that series, whether or not, in the case of subordinated debt securities, such deposit is prohibited by the subordination provisions of the subordinated indenture;
- failure to perform or comply with the provisions described under “—Consolidation, Merger and Sale of Assets” above;
- failure to perform any of our other covenants in such indenture (other than a covenant included in such indenture solely for the benefit of a series other than that series), continued for 60 days after written notice has been given to us by the applicable indenture trustee, or the holders of at least 25% in principal amount of the outstanding debt securities of that series, as provided in such indenture; and
- certain events of bankruptcy, insolvency or reorganization affecting us or any significant subsidiary.

If an event of default (other than an event of default with respect to Alto Ingredients described in the last item listed above) with respect to the debt securities of any series at the time outstanding occurs and is continuing, either the applicable trustee or the holders of at least 25% in principal amount of the outstanding debt securities of that series by notice as provided in the applicable indenture may declare the principal amount of the debt securities of that series (or, in the case of any debt security that is an original issue discount debt security, such portion of the principal amount of such debt security as may be specified in the terms of such debt security) to be due and payable immediately, together with any accrued and unpaid interest thereon. If an event of default with respect to Alto Ingredients described in the last item listed above with respect to the debt securities of any series at the time outstanding occurs, the principal amount of all the debt securities of that series (or, in the case of any such original issue discount security, such specified amount) will automatically, and without any action by the applicable trustee or any holder, become immediately due and payable, together with any accrued and unpaid interest thereon. After any such acceleration, but before a judgment or decree based on acceleration, the holders of a majority in principal amount of the outstanding debt securities of that series may, under certain circumstances, rescind and annul such acceleration if all events of default, other than the non-payment of accelerated principal (or other specified amount), have been cured or waived as provided in the applicable Indenture. For information as to waiver of defaults, see “—Modification and Waiver” below.

Subject to the provisions in the indentures relating to the duties of the trustees in case an event of default has occurred and is continuing, each trustee will be under no obligation to exercise any of its rights or powers under the applicable indenture at the request or direction of any of the holders, unless such holders have offered to such trustee reasonable security or indemnity. Subject to such provisions for the indemnification of the trustees, the holders of a majority in principal amount of the outstanding debt securities of any series will 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 debt securities of that series.

No holder of a debt security of any series will have any right to institute any proceeding with respect to the applicable indenture, or for the appointment of a receiver or a trustee, or for any other remedy thereunder, unless:

- such holder has previously given to the trustee under the applicable indenture written notice of a continuing event of default with respect to the debt securities of that series;
- the holders of not less than 25% in principal amount of the outstanding debt securities of that series have made written request, and such holder or holders have offered reasonable indemnity, to the trustee to institute such proceeding as trustee; and
- the trustee has failed to institute such proceeding, and has not received from the holders of a majority in principal amount of the outstanding debt securities of that series a direction inconsistent with such request, within 60 days after such notice, request and offer.

However, such limitations do not apply to a suit instituted by a holder of a debt security for the enforcement of payment of the principal of or any premium or interest on such debt security on or after the applicable due date specified in such debt security.

We will be required to furnish to each trustee annually, within 150 days after the end of each fiscal year, a certificate by certain of our officers as to whether or not we, to their knowledge, are in default in the performance or observance of any of the terms, provisions and conditions of the applicable indenture and, if so, specifying all such known defaults.

Modification and Waiver

Unless otherwise specified in the prospectus supplement, modifications and amendments of an indenture may be made by us and the applicable trustee with the consent of the holders of a majority in principal amount of the outstanding debt securities of each series affected by such modification or amendment. However, no such modification or amendment may, without the consent of the holder of each outstanding debt security affected thereby:

- change the stated maturity of the principal of, or time for payment of any installment of principal of or interest on, any debt security;
- reduce the principal amount of, or any premium or the rate of interest on, any debt security;
- reduce the amount of principal of an original issue discount security or any other debt security payable upon acceleration of the maturity thereof;
- change the place or the coin or currency of payment of principal of, or any premium or interest on, any debt security;
- impair the right to institute suit for the enforcement of any payment due on any debt security;
- modify the subordination provisions in the case of subordinated debt securities;
- reduce the percentage in principal amount of outstanding debt securities of any series, the consent of whose holders is required for modification or amendment of the indenture;
- reduce the percentage in principal amount of outstanding debt securities of any series necessary for waiver of compliance with certain provisions of the indenture or for waiver of certain defaults; or
- modify such provisions with respect to modification, amendment or waiver, except to increase any such percentage or to provide that certain other provisions of the indenture cannot be modified or waived without the consent of the holder of each outstanding debt security affected thereby.

The holders of a majority in principal amount of the outstanding debt securities of any series may waive compliance by us with certain restrictive provisions of the applicable indenture. The holders of a majority in principal amount of the outstanding debt securities of any series may waive any past default under the applicable indenture, except a default in the payment of principal, premium or interest and certain covenants and provisions of the indenture which cannot be amended without the consent of the holder of each outstanding debt security of such series.

Each of the indentures provides that in determining whether the holders of the requisite principal amount of the outstanding debt securities have given or taken any direction, notice, consent, waiver or other action under such indenture as of any date:

- the principal amount of an original issue discount security that will be deemed to be outstanding will be the amount of the principal that would be due and payable as of such date upon acceleration of maturity to such date;
- the principal amount of a debt security denominated in one or more foreign currencies or currency units that will be deemed to be outstanding will be the United States-dollar equivalent, determined as of such date in the manner prescribed for such debt security, of the principal amount of such debt security (or, in the case of an original issue discount security the United States dollar equivalent on the date of original issuance of such security of the amount determined as provided immediately above); and
- certain debt securities, including those owned by us or any of our other affiliates, will not be deemed to be outstanding.

Except in certain limited circumstances, we will be entitled to set any day as a record date for the purpose of determining the holders of outstanding debt securities of any series entitled to give or take any direction, notice, consent, waiver or other action under the applicable indenture, in the manner and subject to the limitations provided in the indenture. In certain limited circumstances, the trustee will be entitled to set a record date for action by holders. If a record date is set for any action to be taken by holders of a particular series, only persons who are holders of outstanding debt securities of that series on the record date may take such action.

Optional Redemption

If specified in the applicable prospectus supplement, we may elect to redeem all or part of the outstanding debt securities of a series from time to time before the maturity date of the debt securities of that series. Upon such election, we will notify the indenture trustee of the redemption date and the principal amount of debt securities of the series to be redeemed. If less than all the debt securities of the series are to be redeemed, the particular debt securities of that series to be redeemed will be selected by the depository in accordance with its procedures. The applicable prospectus supplement will specify the redemption price for the debt securities to be redeemed (or the method of calculating such price), in each case in accordance with the terms and conditions of those debt securities.

Notice of redemption will be given to each holder of the debt securities to be redeemed not less than 30 nor more than 60 days prior to the date set for such redemption. This notice will include the following information, as applicable: the redemption date; the redemption price (or the method of calculating such price); if less than all of the outstanding debt securities of such series are to be redeemed, the identification (and, in the case of partial redemption, the respective principal amounts) of the particular debt securities to be redeemed; that on the redemption date the redemption price will become due and payable upon each security to be redeemed and, if applicable, that interest thereon will cease to accrue after such date; the place or places where such debt securities are to be surrendered for payment of the redemption price; and that the redemption is for a sinking fund, if such is the case.

Prior to any redemption date, we will deposit or cause to be deposited with the indenture trustee or with a paying agent (or, if we are acting as our own paying agent with respect to the debt securities being redeemed, we will segregate and hold in trust as provided in the applicable indenture) an amount of money sufficient to pay the aggregate redemption price of, and (except if the redemption date shall be an interest payment date or the debt securities of such series provide otherwise) accrued interest on, all of the debt securities or the part thereof to be redeemed on that date. On the redemption date, the redemption price will become due and payable upon all of the debt securities to be redeemed, and interest, if any, on the debt securities to be redeemed will cease to accrue from and after that date. Upon surrender of any such debt securities for redemption, we will pay those debt securities surrendered at the redemption price together, if applicable, with accrued interest to the redemption date.

Any debt securities to be redeemed only in part must be surrendered at the office or agency established by us for such purpose, and we will execute, and the indenture trustee will authenticate and deliver to a holder without service charge, new debt securities of the same series and of like tenor, of any authorized denominations as requested by that holder, in a principal amount equal to and in exchange for the unredeemed portion of the debt securities that holder surrenders.

Satisfaction and Discharge

Each indenture will be discharged and will cease to be of further effect as to all outstanding debt securities of any series issued thereunder, when:

- either:
 - o all outstanding debt securities of that series that have been authenticated (except lost, stolen or destroyed debt securities that have been replaced or paid and debt securities for whose payment money has theretofore been deposited in trust and thereafter repaid to us or discharged from such trust) have been delivered to the trustee for cancellation; or
 - o all outstanding debt securities of that series that have not been delivered to the trustee for cancellation have become due and payable or will become due and payable at their stated maturity within one year or are to be called for redemption within one year under arrangements satisfactory to the trustee;

and in either case we have irrevocably deposited with the trustee as trust funds for such purpose money in an amount sufficient, without consideration of any reinvestment of interest, to pay and discharge the entire indebtedness of such debt securities not delivered to the trustee for cancellation, for principal, premium, if any, and accrued interest to the date of such deposit (in the case of debt securities that have become due and payable) or to the stated maturity or redemption date;

- we have paid or caused to be paid all other sums payable by us under the indenture with respect to the debt securities of that series; and
- we have delivered an officer's certificate and an opinion of counsel to the trustee stating that all conditions precedent to satisfaction and discharge of the indenture with respect to the debt securities of that series have been complied with.

Legal Defeasance and Covenant Defeasance

If and to the extent indicated in the applicable prospectus supplement, we may elect, at our option at any time, to have provisions of the indentures relating to defeasance and discharge of indebtedness, which we call "legal defeasance," relating to defeasance of certain restrictive covenants applied to the debt securities of any series, or to any specified part of a series, which we call "covenant defeasance."

Legal Defeasance. The indentures provide that, upon our exercise of our option (if any) to have the provisions relating to legal defeasance applied to any debt securities, we will be discharged from all our obligations, and, if such debt securities are subordinated debt securities, the provisions of the subordinated indenture relating to subordination will cease to be effective, with respect to such debt securities (except for certain obligations to convert, exchange or register the transfer of debt securities, to replace stolen, lost or mutilated debt securities, to maintain paying agencies and to hold moneys for payment in trust) upon the deposit in trust for the benefit of the holders of such debt securities of money or United States government obligations, or both, which, through the payment of principal and interest in respect thereof in accordance with their terms, will provide money in an amount sufficient to pay the principal of and any premium and interest on such debt securities on the respective stated maturities in accordance with the terms of the applicable indenture and such debt securities. Such defeasance or discharge may occur only if, among other things:

- we have delivered to the applicable trustee an opinion of counsel to the effect that we have received from, or there has been published by, the United States Internal Revenue Service a ruling, or there has been a change in tax law, in either case to the effect that holders of such debt securities will not recognize gain or loss for federal income tax purposes as a result of such deposit and legal defeasance and will be subject to federal income tax on the same amount, in the same manner and at the same times as would have been the case if such deposit and legal defeasance were not to occur;

- no event of default or event that with the passing of time or the giving of notice, or both, shall constitute an event of default shall have occurred and be continuing at the time of such deposit;
- such deposit and legal defeasance will not result in a breach or violation of, or constitute a default under, any agreement or instrument (other than the applicable indenture) to which we are a party or by which we are bound;
- we must deliver to the trustee an officer's certificate stating that the deposit was not made by us with the intent of preferring the holders of the debt securities over any of our other creditors or with the intent of defeating, hindering, delaying or defrauding any of our other creditors or others;
- we must deliver to the trustee an officer's certificate stating that all conditions precedent set forth in the items set forth immediately above and the item set forth immediately below, as applicable, have been complied with;
- in the case of subordinated debt securities, at the time of such deposit, no default in the payment of all or a portion of principal of (or premium, if any) or interest on any of our senior debt shall have occurred and be continuing, no event of default shall have resulted in the acceleration of any of our senior debt and no other event of default with respect to any of our senior debt shall have occurred and be continuing permitting after notice or the lapse of time, or both, the acceleration thereof; and
- we have delivered to the trustee an opinion of counsel to the effect that all conditions precedent set forth in first, third or fourth item above have been complied with.

Covenant Defeasance. The indentures provide that, upon our exercise of our option (if any) to have the covenant defeasance provisions applied to any debt securities, we may omit to comply with certain restrictive covenants (but not to conversion, if applicable), including those that may be described in the applicable prospectus supplement, the occurrence of certain events of default, which are described above in the fifth item listed under "Events of Default" above and any that may be described in the applicable prospectus supplement, will not be deemed to either be or result in an event of default and, if such debt securities are subordinated debt securities, the provisions of the subordinated indenture relating to subordination will cease to be effective, in each case with respect to such debt securities. In order to exercise such option, we must deposit, in trust for the benefit of the holders of such debt securities, money or United States government obligations, or both, which, through the payment of principal and interest in respect thereof in accordance with their terms, will provide money in an amount sufficient to pay the principal of and any premium and interest on such debt securities on the respective stated maturities in accordance with the terms of the applicable indenture and such debt securities. Such covenant defeasance may occur only if we have delivered to the applicable trustee an opinion of counsel that in effect says that holders of such debt securities will not recognize gain or loss for federal income tax purposes as a result of such deposit and covenant defeasance and will be subject to federal income tax on the same amount, in the same manner and at the same times as would have been the case if such deposit and covenant defeasance were not to occur, and the requirements set forth in the second, third, fourth, fifth, sixth and seventh items above are satisfied. If we exercise this option with respect to any debt securities and such debt securities were declared due and payable because of the occurrence of any event of default, the amount of money and United States government obligations so deposited in trust would be sufficient to pay amounts due on such debt securities at the time of their respective stated maturities but may not be sufficient to pay amounts due on such debt securities upon any acceleration resulting from such event of default. In such case, we would remain liable for such payments.

Notices

We will mail notices to holders of debt securities at the addresses that appear in the security register.

Title

We may treat the person in whose name a debt security is registered as the absolute owner, whether or not such debt security may be overdue, for the purpose of making payment and for all other purposes.

Information Concerning the Indenture Trustee

The indenture trustee undertakes to perform only those duties as are specifically set forth in the applicable indenture. The indenture trustee must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. The indenture trustee shall be under no obligation to exercise any of the rights or powers vested in it by an indenture at the request or direction of any of the applicable holders pursuant to such indenture unless such holders shall have offered to the indenture trustee security or indemnity satisfactory to the trustee against the costs, expenses and liabilities which might be incurred by it in compliance with such request or direction.

Payment and Paying Agents

Unless otherwise indicated in the applicable prospectus supplement, payment of interest on a debt security on any interest payment date will be made to the person in whose name such debt security (or one or more predecessor securities) is registered at the close of business on the regular record date for such interest.

Unless otherwise indicated in the applicable prospectus supplement, principal of and any premium and interest on the debt securities of a particular series will be payable at the office of such paying agent or paying agents as we may designate for such purpose from time to time, except that at our option payment of any interest on debt securities in certificated loan may be made by check mailed to the address of the person entitled thereto as such address appears in the security register. Unless otherwise indicated in the applicable prospectus supplement, the corporate trust office of the trustee under the senior indenture in The City of New York will be designated as sole paying agent for payments with respect to senior debt securities of each series, and the corporate trust office of the trustee under the subordinated indenture in The City of New York will be designated as the sole paying agent for payment with respect to subordinated debt securities of each series. Any other paying agents initially designated by us for the debt securities of a particular series will be named in the applicable prospectus supplement. We may at any time designate additional paying agents or rescind the designation of any paying agent or approve a change in the office through which any paying agent acts, except that we will be required to maintain a paying agent in each place of payment for the debt securities of a particular series.

All money paid by us to a paying agent for the payment of the principal of or any premium or interest on any debt security which remain unclaimed at the end of two years after such principal, premium or interest has become due and payable will be repaid to us, and the holder of such debt security thereafter may look only to us for payment.

Governing Law

The indentures and the debt securities will be governed by and construed in accordance with the laws of the state of New York.

DESCRIPTION OF UNITS

The following description, together with the additional information that we include in any applicable prospectus supplements, summarizes the material terms and provisions of the units that we may offer under this prospectus. While the terms we have summarized below will apply generally to any units that we may offer under this prospectus, we will describe the particular terms of any series of units in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below.

We will incorporate by reference from reports that we file with the SEC the form of unit agreement that describes the terms of the series of units we are offering, and any supplemental agreements, before the issuance of the related series of units. The following summary of material terms and provisions of the units are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement and any supplemental agreements applicable to a particular series of units. We urge you to read the applicable prospectus supplements related to the particular series of units that we may offer under this prospectus, and the complete unit agreement and any supplemental agreements that contain the terms of the units. To the extent that any particular terms of the units or unit agreement described in a prospectus supplement differ from any of the terms described below, then the terms described below will be deemed to have been superseded by that prospectus supplement.

General

We may issue units consisting of common stock, preferred stock, one or more debt securities and/or warrants for the purchase of common stock, preferred stock and/or debt securities in one or more series, in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each security included in the unit. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We will describe in the applicable prospectus supplement the terms of the series of units being offered, including:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement;
- the price or prices at which such units will be issued;
- the material U.S. federal income tax considerations relating to the units; and
- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those set forth in any prospectus supplement or as described under “Description of Capital Stock” “Description of Debt Securities,” and “Description of Warrants” will apply to each unit, as applicable, and to any common stock, preferred stock, debt security or warrant included in each unit, as applicable.

Unit Agent

The name and address of the unit agent for any units we offer will be set forth in the applicable prospectus supplement.

Issuance in Series

We may issue units in such amounts and in such numerous distinct series as we determine.

Enforceability of Rights by Holders of Units

Each unit agent, if any, will act solely as our agent under the applicable unit agreement and will not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent will have no duty or responsibility in case of any default by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

LEGAL OWNERSHIP OF SECURITIES

We can issue securities in registered form or in the form of one or more global securities. We describe global securities in greater detail below. We refer to those persons who have securities registered in their own names on the books that we or any applicable trustee or depositary maintain for this purpose as the “holders” of those securities. These persons are the legal holders of the securities. We refer to those persons who, indirectly through others, own beneficial interests in securities that are not registered in their own names, as “indirect holders” of those securities. As we discuss below, indirect holders are not legal holders, and investors in securities issued in book-entry form or in street name will be indirect holders.

Book-Entry Holders

We may issue securities in book-entry form only, as we will specify in the applicable prospectus supplement. This means securities may be represented by one or more global securities registered in the name of a financial institution that holds them as depositary on behalf of other financial institutions that participate in the depositary’s book-entry system. These participating institutions, which are referred to as participants, in turn, hold beneficial interests in the securities on behalf of themselves or their customers.

Only the person in whose name a security is registered is recognized as the holder of that security. Global securities will be registered in the name of the depositary or its participants. Consequently, for global securities, we will recognize only the depositary as the holder of the securities, and we will make all payments on the securities to the depositary. The depositary passes along the payments it receives to its participants, which in turn pass the payments along to their customers who are the beneficial owners. The depositary and its participants do so under agreements they have made with one another or with their customers; they are not obligated to do so under the terms of the securities.

As a result, investors in a global security will not own securities directly. Instead, they will own beneficial interests in a global security, through a bank, broker or other financial institution that participates in the depositary’s book-entry system or holds an interest through a participant. As long as the securities are issued in global form, investors will be indirect holders, and not legal holders, of the securities.

Street Name Holders

A global security may be terminated in certain situations as described under “-Special Situations When a Global Security Will Be Terminated,” or issue securities that are not issued in global form. In these cases, investors may choose to hold their securities in their own names or in “street name.” Securities held by an investor in street name would be registered in the name of a bank, broker or other financial institution that the investor chooses, and the investor would hold only a beneficial interest in those securities through an account he or she maintains at that institution.

For securities held in street name, we or any applicable trustee or depositary will recognize only the intermediary banks, brokers and other financial institutions in whose names the securities are registered as the holders of those securities, and we or any such trustee or depositary will make all payments on those securities to them. These institutions pass along the payments they receive to their customers who are the beneficial owners, but only because they agree to do so in their customer agreements or because they are legally required to do so. Investors who hold securities in street name will be indirect holders, not holders, of those securities.

Legal Holders

Our obligations, as well as the obligations of any applicable trustee or third party employed by us or a trustee, run only to the legal holders of the securities. We do not have obligations to investors who hold beneficial interests in global securities, in street name or by any other indirect means. This will be the case whether an investor chooses to be an indirect holder of a security or has no choice because we are issuing the securities only in global form.

For example, once we make a payment or give a notice to the legal holder, we have no further responsibility for the payment or notice even if that legal holder is required, under agreements with its participants or customers or by law, to pass it along to the indirect holders but does not do so. Similarly, we may want to obtain the approval of the holders to amend an indenture, to relieve us of the consequences of a default or of our obligation to comply with a particular provision of an indenture, or for other purposes. In such an event, we would seek approval only from the legal holders, and not the indirect holders, of the securities. Whether and how the legal holders contact the indirect holders is up to the legal holders.

Special Considerations for Indirect Holders

If you hold securities through a bank, broker or other financial institution, either in book-entry form because the securities are represented by one or more global securities or in street name, you should check with your own institution to find out:

- how it handles securities payments and notices;
- whether it imposes fees or charges;
- how it would handle a request for the holders' consent, if ever required;
- whether and how you can instruct it to send you securities registered in your own name so you can be a holder, if that is permitted in the future;
- how it would exercise rights under the securities if there were a default or other event triggering the need for holders to act to protect their interests; and
- if the securities are in book-entry form, how the depositary's rules and procedures will affect these matters.

Global Securities

A global security is a security that represents one or any other number of individual securities held by a depositary. Generally, all securities represented by the same global securities will have the same terms.

Each security issued in book-entry form will be represented by a global security that we issue to, deposit with and register in the name of a financial institution or its nominee that we select. The financial institution that we select for this purpose is called the depositary. Unless we specify otherwise in the applicable prospectus supplement, DTC will be the depositary for all securities issued in book-entry form.

A global security may not be transferred to or registered in the name of anyone other than the depositary, its nominee or a successor depositary, unless special termination situations arise. We describe those situations below under “-Special Situations When a Global Security Will Be Terminated.” As a result of these arrangements, the depositary, or its nominee, will be the sole registered owner and legal holder of all securities represented by a global security, and investors will be permitted to own only beneficial interests in a global security. Beneficial interests must be held by means of an account with a broker, bank or other financial institution that in turn has an account with the depositary or with another institution that does. Thus, an investor whose security is represented by a global security will not be a legal holder of the security, but only an indirect holder of a beneficial interest in the global security.

If the prospectus supplement for a particular security indicates that the security will be issued as a global security, then the security will be represented by a global security at all times unless and until the global security is terminated. If termination occurs, we may issue the securities through another book-entry clearing system or decide that the securities may no longer be held through any book-entry clearing system.

Special Considerations for Global Securities

As an indirect holder, an investor's rights relating to a global security will be governed by the account rules of the investor's financial institution and of the depositary, as well as general laws relating to securities transfers. We do not recognize an indirect holder as a holder of securities and instead deal only with the depositary that holds the global security.

If securities are issued only as global securities, an investor should be aware of the following:

- an investor cannot cause the securities to be registered in his or her name, and cannot obtain non-global certificates for his or her interest in the securities, except in the special situations we describe below;
- an investor will be an indirect holder and must look to his or her own bank or broker for payments on the securities and protection of his or her legal rights relating to the securities, as we describe above;
- an investor may not be able to sell interests in the securities to some insurance companies and to other institutions that are required by law to own their securities in non-book-entry form;
- an investor may not be able to pledge his or her interest in the global security in circumstances where certificates representing the securities must be delivered to the lender or other beneficiary of the pledge in order for the pledge to be effective;
- the depositary's policies, which may change from time to time, will govern payments, transfers, exchanges and other matters relating to an investor's interest in the global security;
- we and any applicable trustee have no responsibility for any aspect of the depositary's actions or for its records of ownership interests in the global security, nor will we or any applicable trustee supervise the depositary in any way;
- the depositary may, and we understand that DTC will, require that those who purchase and sell interests in the global security within its book-entry system use immediately available funds, and your broker or bank may require you to do so as well; and
- financial institutions that participate in the depositary's book-entry system, and through which an investor holds its interest in the global security, may also have their own policies affecting payments, notices and other matters relating to the securities.

There may be more than one financial intermediary in the chain of ownership for an investor. We do not monitor and are not responsible for the actions of any of those intermediaries.

Special Situations When a Global Security Will Be Terminated

In a few special situations described below, a global security will terminate and interests in it will be exchanged for physical certificates representing those interests. After that exchange, the choice of whether to hold securities directly or in street name will be up to the investor. Investors must consult their own banks or brokers to find out how to have their interests in securities transferred to their own names, so that they will be direct holders. We have described the rights of holders and street name investors above.

Unless we provide otherwise in the applicable prospectus supplement, the global security will terminate when the following special situations occur:

- if the depositary notifies us that it is unwilling, unable or no longer qualified to continue as depositary for that global security and we do not appoint another institution to act as depositary within 90 days;
- if we notify any applicable trustee that we wish to terminate that global security; or
- if an event of default has occurred with regard to securities represented by that global security and has not been cured or waived.

The applicable prospectus supplement may also list additional situations for terminating a global security that would apply only to the particular series of securities covered by the applicable prospectus supplement. When a global security terminates, the depositary, and neither we nor any applicable trustee, is responsible for deciding the names of the institutions that will be the initial direct holders.

PLAN OF DISTRIBUTION

We may offer and sell the securities covered by this prospectus in any one or more of the following ways:

- to or through underwriters, brokers or dealers;
- directly to one or more other purchasers;
- upon the exercise of rights distributed or issued to our security holders;
- through a block trade in which the broker or dealer engaged to handle the block trade will attempt to sell the securities as agent, but may position and resell a portion of the block as principal to facilitate the transaction;
- in payment of our and our subsidiaries' outstanding indebtedness;
- through agents on a best-efforts basis; or
- otherwise through a combination of any of the above methods of sale.

We may sell the securities being offered by this prospectus by any other method permitted by law, including sales deemed to be an "at the market" offering as defined in Rule 415(a)(4) of the Securities Act, including without limitation sales made directly on The Nasdaq Capital Market, on any other existing trading market for our securities or to or through a market maker.

In addition, we may enter into option, share lending or other types of transactions that require us to deliver shares of common stock to an underwriter, broker or dealer, who will then resell or transfer the shares of common stock under this prospectus. We may also enter into hedging transactions with respect to our securities. For example, we or the selling stockholders may:

- enter into transactions involving short sales of the shares of common stock by underwriters, brokers or dealers;
- sell shares of common stock short and deliver the shares to close out short positions;
- enter into option or other types of transactions that require us or the selling stockholders, as applicable, to deliver shares of common stock to an underwriter, broker or dealer, who will then resell or transfer the shares of common stock under this prospectus; or
- loan or pledge the shares of common stock to an underwriter, broker or dealer, who may sell the loaned shares or, in the event of default, sell the pledged shares.

We may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement or free writing prospectus indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement or free writing prospectus, including in short sale transactions. If so, the third party may use securities pledged by us or borrowed from us to settle those sales or to close out any related open borrowings of stock, and may use securities received from us or selling stockholders in settlement of those derivatives to close out any related open borrowings of stock. The third party in such sale transactions will be an underwriter identified in the applicable prospectus supplement or free writing prospectus. In addition, we may otherwise loan or pledge securities to a financial institution or other third party that in turn may sell the securities short using this prospectus. Such financial institution or other third party may transfer its economic short position to investors in our securities or in connection with a concurrent offering of other securities.

Each time we sell securities, we will provide a prospectus supplement that will name any underwriter, dealer or agent involved in the offer and sale of the securities. The prospectus supplement will also set forth the terms of the offering, including:

- the purchase price of the securities and the proceeds we will receive from the sale of the securities;
- any underwriting discounts and other items constituting underwriters' compensation;
- any public offering or purchase price and any discounts or commissions allowed or re-allowed or paid to dealers;
- any commissions allowed or paid to agents;
- any other offering expenses;
- any securities exchanges on which the securities may be listed;
- the method of distribution of the securities;
- the terms of any agreement, arrangement or understanding entered into with the underwriters, brokers or dealers; and
- any other information we think is important.

If underwriters or dealers are used in the sale, the securities will be acquired by the underwriters or dealers for their own account. The securities may be sold from time to time by us in one or more transactions:

- at a fixed price or prices, which may be changed;
- at market prices prevailing at the time of sale;
- at prices related to such prevailing market prices;
- at varying prices determined at the time of sale; or
- at negotiated prices.

Such sales may be effected:

- in transactions on any national securities exchange or quotation service on which the securities may be listed or quoted at the time of sale;
- in transactions in the over-the-counter market;
- in block transactions in which the broker or dealer so engaged will attempt to sell the securities as agent but may position and resell a portion of the block as principal to facilitate the transaction, or in crosses, in which the same broker acts as an agent on both sides of the trade;
- through the writing of options; or
- through other types of transactions.

The securities may be offered to the public either through underwriting syndicates represented by one or more managing underwriters or directly by one or more of such firms. Unless otherwise set forth in the prospectus supplement or free writing prospectus, the obligations of underwriters or dealers to purchase the securities offered will be subject to certain conditions precedent and the underwriters or dealers will be obligated to purchase all the offered securities if any are purchased. Any public offering price and any discount or concession allowed or reallocated or paid by underwriters or dealers to other dealers may be changed from time to time.

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 over-allot in connection with the offering, creating a short position for their own accounts. In addition, to cover over-allotments 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.

Under Rule 15c6-1 of the Exchange Act, trades in the secondary market generally are required to settle in two business days, unless the parties to any such trade expressly agree otherwise. The applicable prospectus supplement may provide that the original issue date for your securities may be more than two scheduled business days after the trade date for your securities. Accordingly, in such a case, if you wish to trade securities on any date prior to the third business day before the original issue date for your securities, you will be required, by virtue of the fact that your securities initially are expected to settle in more than three scheduled business days after the trade date for your securities, to make alternative settlement arrangements to prevent a failed settlement.

The securities may be new issues of securities and may have no established trading market. The securities may or may not be listed on a national securities exchange. We can make no assurance as to the liquidity of or the existence of trading markets for any of the securities. The securities may be sold directly by us or through agents designated by us from time to time. Any agent involved in the offer or sale of the securities in respect of which this prospectus is delivered will be named, and any commissions payable by us to such agent will be set forth in, the prospectus supplement. Unless otherwise indicated in the prospectus supplement, any such agent will be acting on a best-efforts basis for the period of its appointment.

Offers to purchase the securities offered by this prospectus may be solicited, and sales of the securities may be made by us directly to institutional investors or others, who may be deemed to be underwriters within the meaning of the Securities Act with respect to any resale of the securities. The terms of any offer made in this manner will be included in the prospectus supplement relating to the offer.

If indicated in the applicable prospectus supplement, underwriters, dealers or agents will be authorized to solicit offers by certain institutional investors to purchase securities from us pursuant to contracts providing for payment and delivery at a future date. Institutional investors with which these contracts may be made include, among others:

- commercial and savings banks;
- insurance companies;
- pension funds;
- investment companies; and
- educational and charitable institutions.

In all cases, these purchasers must be approved by us. Unless otherwise set forth in the applicable prospectus supplement, the obligations of any purchaser under any of these contracts will not be subject to any conditions except that (a) the purchase of the securities must not at the time of delivery be prohibited under the laws of any jurisdiction to which that purchaser is subject, and (b) if the securities are also being sold to underwriters, we must have sold to these underwriters the securities not subject to delayed delivery. Underwriters and other agents will not have any responsibility in respect of the validity or performance of these contracts.

Some of the underwriters, dealers or agents used by us in any offering of securities under this prospectus may be customers of, engage in transactions with, and perform services for us or affiliates of ours in the ordinary course of business. Underwriters, dealers, agents and other persons may be entitled under agreements which may be entered into with us to indemnification against and contribution toward certain civil liabilities, including liabilities under the Securities Act, and to be reimbursed by us for certain expenses.

Subject to any restrictions relating to debt securities in bearer form, any securities initially sold outside the United States may be resold in the United States through underwriters, dealers or otherwise.

Any underwriters to which offered securities are sold by us for public offering and sale may make a market in such securities, but those underwriters will not be obligated to do so and may discontinue any market making at any time.

The anticipated date of delivery of the securities offered by this prospectus will be described in the applicable prospectus supplement relating to the offering.

To comply with the securities laws of some states, if applicable, the securities may be sold in these jurisdictions only through registered or licensed brokers or dealers. In addition, in some states the securities may not be sold unless they have been registered or qualified for sale or an exemption from registration or qualification requirements is available and is complied with.

LEGAL MATTERS

Unless otherwise indicated in the applicable prospectus supplement or free writing prospectus, the validity of the securities being offered by this prospectus will be passed upon by Troutman Pepper Locke LLP, Irvine, California.

EXPERTS

The consolidated financial statements of Alto Ingredients, Inc. as of December 31, 2025 and 2024 and for each of the years in the three-year period ended December 31, 2025, and the effectiveness of internal control over financial reporting as of December 31, 2025, have been audited by RSM US LLP, an independent registered public accounting firm, as stated in their reports thereon, incorporated herein by reference, and have been incorporated in this Prospectus and Registration Statement in reliance upon such reports and upon the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-3 under the Securities Act, and the rules and regulations promulgated under the Securities Act, with respect to the securities offered under this prospectus. This prospectus, which constitutes a part of the registration statement, does not contain all of the information contained in the registration statement and the exhibits and schedules to the registration statement. Many of the contracts and documents described in this prospectus are filed as exhibits to the registration statements and you may review the full text of these contracts and documents by referring to these exhibits.

For further information with respect to us and the securities offered under this prospectus, reference is made to the registration statement and its exhibits and schedules. We file reports, including annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K with the SEC.

The SEC maintains an Internet web site that contains reports, proxy and information statements and other information regarding issuers, including Alto Ingredients, that file electronically with the SEC. The SEC's Internet website address is <http://www.sec.gov>. Our Internet website address is <http://www.altoingredients.com>. Our website and the information contained therein or connected thereto are not incorporated into this prospectus, and such information should not be considered part of this prospectus. You should not rely on any such information in making your decision whether to purchase our securities.

We do not anticipate that we will send an annual report to our stockholders until and unless we are required to do so by the rules of the SEC.

All trademarks or trade names referred to in this prospectus are the property of their respective owners.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” the information we file with the SEC. This means that we can disclose important information to you by referring you to another filed document. Any information referred to in this way is considered part of this prospectus from the date we file that document. Any reports filed by us with the SEC after the date of this prospectus and before the date that the offering of the securities by means of this prospectus is terminated will automatically update and, where applicable, supersede any information contained in this prospectus or incorporated by reference in this prospectus. Accordingly, we incorporate by reference the following documents or information filed with the SEC:

- our Quarterly Report on [Form 10-Q](#) for the quarterly period ended March 31, 2026, which we filed with the SEC on May 8, 2026;
- our Annual Report on [Form 10-K](#) for the fiscal year ended December 31, 2025, which we filed with the SEC on March 13, 2026; and
- the description of our Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1933, as amended, contained in [Exhibit 4.1](#) to our Annual Report on [Form 10-K](#), which we filed with the SEC on March 30, 2020, which description updates our Form 8-A description of securities.

We also incorporate by reference any future filings (except as specifically enumerated above, other than any filings or portions of such reports that are not deemed “filed” under the Exchange Act in accordance with the Exchange Act and applicable SEC rules, including current reports furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items unless such Form 8-K expressly provides to the contrary) made with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made after the date of the initial filing of the registration statement of which this prospectus is a part, until we file a post-effective amendment that indicates the termination of the offering of the securities made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. Information in such future filings updates and supplements the information provided in this prospectus. Any statements in any such future filings will automatically be deemed to modify and supersede any information in any document we previously filed with the SEC that is incorporated or deemed to be incorporated herein by reference to the extent that statements in the later filed document modify or replace such earlier statements.

Notwithstanding the statements in the preceding paragraphs, no document, report or exhibit (or portion of any of the foregoing) or any other information that we have “furnished” to the SEC pursuant to the Exchange Act shall be incorporated by reference into this prospectus.

We will provide a copy of the documents we incorporate by reference, at no cost, to any person who received this prospectus. To request a copy of any or all of these documents, you should write or telephone us at: Investor Relations, Alto Ingredients, Inc., 1300 South Second Street, Pekin, Illinois 61554, (833) 710-2586. In addition, each document incorporated by reference is readily accessible on our website at www.altoingredients.com.

\$50,000,000



ALTO INGREDIENTS, INC.

Common Stock

PROSPECTUS SUPPLEMENT

Craig-Hallum

Benchmark, a StoneX Company

H.C. Wainwright & Co.

The date of this prospectus supplement is August 5, 2026.
