LALLEMAND
BAKING UPDATE
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Cream Yeast

Practical technology from Lallemand Inc., parent of American Yeast Sales, producers and distributors of Eagle® yeast, fresh and instant.

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Cream Yeast Calculations

The main difference between compressed yeast and cream yeast is the solids content. Compressed yeast solids vary between 28 and 35 percent yeast solids, including residual salt and starch left over from the filtration (dewatering) process. Cream yeast solids typically vary between 15 and 20 percent yeast solids and do not contain residual salt and starch. On an equal solids basis, cream yeast tends to perform better than compressed yeast because of higher specific activity, greater consistency, and more-accurate dosing. The performance advantage is not taken into account here, so the following factors should be used as a starting point for optimization in the bakery.

Conversion ratios. The gassing power of cream yeast is standardized by taking into account the conversion ratio (w/w), which is typically set at a value between 1.59 and 1.76. The lower conversion ratio of, for example, 1.59 to 1 allows the bakery to receive more compressed yeast equivalent pounds per truck load, allowing them to hold more inventory per tank, thus reduc-

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How to Evaluate a Cream Yeast System

CREAM YEAST is a liquid form of the compressed bakers yeast that's supplied in cakes and bags. The use of cream yeast by the larger bakeries in North America is a recent development, and it is expected that it will continue to grow.

A number of factors are involved in the switch from compressed yeast to cream.

WORKING WITH CREAM YEAST

Cream yeast is usually shipped directly from the yeast plant to the bakery once a week. It is delivered cold in insulated tank trucks and has a shelf life of about fourteen days.

The new yeast is unloaded into one of two storage tanks while the other tank supplies yeast to the bakery. The two tanks alternate so that when one is emptied it's cleaned and ready for the next delivery. The storage tanks are refrigerated to about 36°F and gently agitated to keep the yeast homogeneous.

Cream yeast is continuously circulated from the storage tank through a loop to the dosing stations and back to the storage tank. The quantity is metered into each mixer. Each mixer has a control valve on the control panel.

A clean-in-place (CIP) system is used to keep the cream yeast equipment sanitary. The cleaning solutions are prepared in their own small tank, then circulated through the lines and storage tanks. The receiving line and storage tanks are cleaned after each use without affecting the yeast distribution system, which is cleaned separately in conjunction with the mixers.

A flow panel on the storage unit connects the different parts of the system to receive, store, dispense, and clean. A control panel operates the electrical components and monitors their status.

COMPARING CREAM AND COMPRESSED

Size and investment. Cream yeast systems range in cost from less than $300,000 to more than $600,000, depending on tank size, number of dosing stations, and amount of site preparation. Economies of scale

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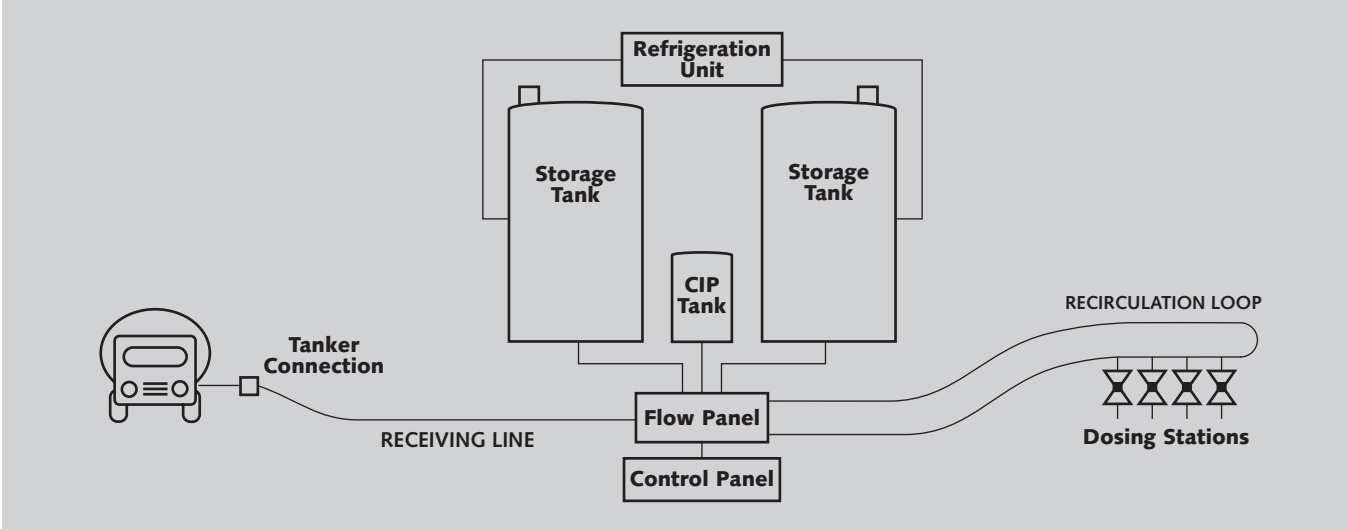
SIMPLIFIED CREAM YEAST SYSTEM



CREAM YEAST CONVERSION RATIO HISTORY

Different conversion ratios exist because when yeast producers began offering cream yeast, they independently chose different "simple" ratios to facilitate conversions.

In Canada, the metric system influenced the choice of a simple ratio of 1.5 liters to each 1 kilogram of compressed yeast which, with a typical density of 1.06, equates to a (w/w) conversion ratio of 1.59. In the U.S., depending on the yeast producer, other simple ratios were chosen, such as 1 U.S. gallon equal to 5 pounds of compressed (or 0.20 gallons for 1 pound) which, with a typical density of 8.8 pounds/gallon, equates to a (w/w) conversion ratio of 1.76.

The cream yeast from the yeast plant's separators can vary in both solids content and activity per solids, depending on various factors. After testing the gassing activity of the separated cream "as is" in a standard dough test, the yeast producer adjusts the activity of a "pound" of compressed yeast to a competitive standard by varying the speed of the filtration process. This results in compressed yeast solids varying between 28% and 35% (including residual salt and starch solids). In the case of liquid cream yeast preparation, this adjustment to a standard activity is made according to the chosen ratio and taking into account the gassing activity of the "as is" separated cream by adding more or less water. This results in liquid cream yeast solids varying between 15% and 20%.

In all cases, the objective is a standard uniform activity per pound of yeast, whether per liquid pound or compressed pound.

Cream Yeast Calculations *(Continued)*

ing the frequency of deliveries and CIP cycles. Both of these factors improve the economics. Such lower conversion ratios do place more pressure on the yeast producer to maintain a higher performance quality and to maintain tighter controls during the separation stages of the yeast.

System size and delivery frequency. Both the conversion ratio and the density (typically 8.8 pounds/gallon) of the cream yeast have to be taken into account when converting pounds of compressed yeast into gallons of cream yeast. To convert pounds of compressed yeast into gallons of cream yeast, multiply by 0.18 for a 1.59 conversion ratio and 0.20 for a 1.76 conversion ratio. A bakery using 25,000 pounds of compressed yeast would use 4,500 gallons of cream yeast with a 1.59 conversion ratio. This means that given a delivery of 6,000 U.S. gallons of cream yeast, this bakery would need delivery every 9.3 days.

Formula adjustments. To switch from compressed yeast to cream yeast (with a 1.59 conversion ratio) the baker would replace 1 pound of compressed yeast with 1.59 pounds of cream yeast and deduct 0.59 pounds of water from the dough formula.

Lallemand Cream Yeast Systems

LALLEMAND was the pioneer beginning in 1980 for liquid cream yeast systems for the North American baking industry, and remains a leader in this segment with more than forty systems currently operating in North America. American Yeast, Lallemand, and Eagle® bulk liquid yeast systems are supplied from one of the yeast plants, whether it be Bakersfield, California, Baltimore, Maryland, or Montréal, Canada.

Introducing a liquid cream yeast system starts with a site survey at the bakery and a complete analysis of the mechanical, electrical, civil, operational, and general requirements. This survey is used to prepare a proposal that includes a design of the installation. While the proposal is being prepared, a portable unit can be used at the bakery to confirm performance and cost calculations.

The liquid cream yeast system uses a fail-safe design for both the control and flow panel to prevent mistakes that could cause contamination or loss of yeast. It includes backup systems for critical elements such as the refrigeration unit. And, it uses bakery-proven components at the mixing stations.

The liquid cream yeast is standardized by volume using computerized gassing tests and density measurements to give consistent baking performance.

Lallemand/American Yeast provides complete engineering, contracting, and start-up for a turnkey operation. This includes operating and maintenance manuals and training for the bakery production, maintenance, and sanitation personnel. Local engineering support and technical service are on-call at all times.

How to Evaluate a Cream Yeast System *(Continued)*

mean larger systems cost less per pound of yeast, and most systems have been installed in bakeries using 25,000 pounds or more of compressed yeast per week.

Space and location. Cream yeast storage units can be installed inside or outside but should be close to mixers, utilities, and the tanker connection. This is easier to accommodate in new bakeries, which also benefit from reducing or eliminating refrigerated storage.

Performance and quality. Cream yeast has a performance advantage because of more consistent activity and more accurate dosing. It has a sanitation advantage because it's handled in a closed system with better temperature control and a lower risk of contamination.

Operating costs. Cream yeast avoids the labor, maintenance, and electrical cost of refrigerated storage for compressed yeast. But the system requires trained labor, maintenance, and electrical cost of its own.

Health, safety, and environment. Cream yeast systems eliminate worker injuries from box and bag handling but require precautions with cleaning materials and confined space entry. They avoid the solid waste disposal problem of compressed yeast but use water and generate wastewater.

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Lallemand Baking Update is produced by Lallemand Inc. to provide bakers with a source of practical technology for solving problems. If you would like to be on our mailing list to receive future copies, or if you have questions or comments, please contact us at:

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