

Brewing & Distilling Yeast



BRIEF INTRODUCTION



Angel Yeast Co., Ltd, founded in 1986, is a high-tech listed company dedicated to the research & development and mass production of yeast products and its derivatives. Upholding the motto of “Natural, Nutrient and Healthy”, the company commits itself to becoming a “large international and specialized yeast company”.

The company supplies bakery yeast, brewing yeast, yeast extract, healthy products, biological feeding additives, biological culture media and pharmaceutical material.

BREWING & DISTILLING YEAST



Angel provides its natural, safe and high quality brewing yeast and technical services for the global market. The products undergo the strict control on the material and processing. The company provides the appropriate products and services for fuel ethanol, alcohol, wine, beer, and other distilling and brewing liquor, and develop the products or technical support to satisfy the unique requirements of customers.

Angel brewing and distilling products include: super alcohol active dry yeast, thermal-tolerant alcohol active dry yeast, active dry wine yeast, active dry brewer yeast, and sugar leaven.

Angel super alcohol yeast has been successfully used for high-concentration fermentation process ($>18\%v/v$), which has achieved significant results in fuel ethanol production. Angel has established good relationship with China's fuel ethanol manufacturers. Now the company supplies the products for the manufactures using the starch and molasses as the fermentation material, and is making large efforts in developing the yeast product used for cellulosic alcohol fermentation.

We have collected variety of natural wine strains which are suitable for fermenting production of red wines, sparkling wines and brandies with the ability to stabilize the wine colors and improve the quality. The products have won approval from the brewers and experts in France, Spain and Italy.

QUALITY ASSURANCE



Technology and Equipment

The Company possesses advanced equipment and automatic control systems, and process technology mainly introduced from Europe. These ensure stable and reliable quality of the products.

Technical Supports

Through the closed cooperation among R&D, production and application service teams, we can supply in-time, individualized product and services for customers.



NO.L0660



HACCP



ISO9001



STAR-K Kosher

Angel Super Alcohol Active Dry Yeast



Product introduction

The product is made of specifically selected high-quality alcohol yeast strains with compound nutrient agents, and is applicable when adopt corn, wheat and cassava as raw materials for alcohol high gravity fermentation. This product is suitable for alcohol and fuel ethanol production in the method of fermentation with the characteristics of strong reproductive ability, high fermentation speed, high tolerance to high ethanol concentration, etc. The product can shorten the fermentation time, and realize the fermentation of alcohol with high concentration.

Applicable raw materials: corn, cassava, wheat and other starch bearing materials.

Product characteristics:

1. Ethanol tolerance: $\leq 23\%$ (v/v)
2. Temperature tolerance: 80°F-108°F (28-42°C), the optimal fermentation temperature is 90°F-93°F (32-34°C)
3. pH tolerance: 3.5-5.5, the optimal fermentation pH is 4.5-5.5
4. The cycle of alcohol fermentation is appropriately shortened: 60-65 hours for batch fermentation, 55-60 hours for continuous fermentation

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| Moisture % \leq | 6.5 |
| The rate of living yeast cell % \geq | 80.0 |
| Total yeast Count (10^8 /g) \geq | 200 |
| Salmonella | Negative |



Advantages of high gravity fermentation

- 1.Reduce energy consumption. Upon the verification, the alcohol content is increased by 10%, and the steam consumption is reduced by about 300kg
2. Reduce process water consumption, reduce 1-2 tons for each ton of alcohol, and reduce waste water treatment cost.
3. Improve equipment efficiency

Application:

Direct add yeast in fermentation tank (batch fermentation):

Each liter of mash is added with 0.25-0.3g of dry yeast, and the initial cell count of fermentation mash reaches 5 million /ml.

Characteristics:

Simple operation, simplified flow.

Favorable for stable control.

The probability of bacterial infection is reduced.

Propagation in culture tank:

When the equipment and process allow, on the basis of strictly controlling bacterial infection and providing the yeast with the required nutrition, inoculate to ferment after culturing for 8-10 hours, so as to relatively reduce the yeast consumption. In consideration of the aging and degeneration of yeast in the culture process, the optimal inoculation replacement cycle shall be 72 hours.

Specification: 5kg*2/carton

Storage condition and shelf life:

Vacuum aluminum foil packaging, store in low temperature and dry place, with the shelf life of 24 months.

Angel Super Alcohol Active Dry Yeast

(saccharine base)



Product introduction

The product is made of specifically selected high-quality alcohol yeast strains with compound nutrient agents, and is applicable to the ethanol production that adopts molasses, sugar cane juice, beet juice, sweet sorghum and other saccharine materials, as well as the separation and purification of oligosaccharide products as oligoisomaltose, etc.; the product will immediately resume the normal cell status after rehydration, with the characteristics of being osmophilic, ethanol tolerance (15% v/v), acid tolerance (PH3.5), fast fermentation, etc.

Product characteristics:

1. Multi-strain improve the fermentation ability;
2. High invertase; fast transforming from cane sugar to monosaccharide;
3. Strong zymase activity, fast and complete fermentation, strong fermentation ability, less residual sugar and high alcohol productivity. The speed of sugar reduction and ethanol production is obviously higher than general alcohol yeast.
4. High osmotic pressure tolerance.
5. Ethanol tolerance $\geq 15\%$ (v/v).
6. Temperature tolerance: the optimal fermentation temperature is 93°F-97°F (34-36°C), normal fermentation can be realized at 100°F(38°C)
7. pH tolerance. the appropriate fermentation PH value is 4.2-4.5; normal fermentation can be realized when PH value is 3.5-6.5, the fermentation will be basically stopped when PH value is below 3.

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| Moisture % \leq | 6.5 |
| The rate of living yeast cell % \geq | 70.0 |
| Total yeast Count (10^8 /g) \geq | 220 |
| Salmonella | Negative |



Application:

Rehydration activation

Add 1kg of dry yeast in 20 liters of 100°F (38°C) sugar water with the sugar content of 5%, mix and dissolve. Cool to 82°F-86°F (28-30°C) after 15-30 minutes.

Direct add yeast in fermentation tank

Each liter of mash is added with 0.25-0.3g of dry yeast, and the initial yeast cell count of fermentation mash reaches 5million /ml.

Propagation in culture tank

When the equipment and process allow, on the basis of strictly controlling bacterial infection and providing the yeast with the required nutrition, inoculate to ferment after culturing for 8-10 hours, so as to relatively reduce the dry yeast consumption. In consideration of the aging and degeneration of yeast in the culture process, the optimal inoculation replacement cycle shall be 72 hours.

Specification: 5kg*2/carton

Storage condition and shelf life:

Vacuum aluminum foil packaging, store in low temperature and dry place, with the shelf life of 24 months.

Angel Thermal Tolerance Alcohol Active Dry Yeast



Product introduction

This product is specifically selected high-quality alcohol yeast resistant to high temperature, alcohol and acid, and can be widely applied in the alcohol, potable spirit brewing that adopts starch bearing materials as dry sweet potato, maize, rice, cassava, sorghum, etc. and saccharine materials as molasses, etc.

Product characteristics:

1. Temperature tolerance 108°F(42°C). The fermentation can be realized at 82°F-108°F(28-42°C).
2. Ethanol tolerance $\leq 17\%$ (v/v)
3. Acid tolerance. high resistance to acid, produce gas when PH is 2.5, which is favorable for controlling prevent bacteria contamination and improving alcohol productivity.
4. High osmotic pressure tolerance. 60% glucose max.
5. Strong reproductive ability, small consumption.

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| Moisture % \leq | 6.5 |
| The rate of living yeast cell % \geq | 75.0 |
| Total yeast Count (10^8 /g) \geq | 250 |
| Total bacteria count \leq | 100000 |
| Salmonella | Negative |



Application:

Direct add yeast in fermentation tank

Each liter of mash is added with 0.25-0.3g of dry yeast, and the initial cell count of fermentation mash reaches 5 million /ml.

Characteristics:

Simple operation, simplified flow.

Favorable for stable control.

The probability of bacterial infection is reduced.

Propagation in culture tank

When the equipment and process allow, on the basis of strictly controlling bacterial infection and providing the yeast with the required nutrition, inoculate to ferment after culturing for 8-10 hours, so as to relatively reduce the yeast consumption. In consideration of the aging and degeneration of yeast in the culture process, the optimal inoculation replacement cycle shall be 72 hours.

Nutrition required by yeast culture:

Nitrogen source, phosphor source, magnesium ion, zinc ion, etc.

Specification: 5kg*2/carton ; 10kg*1/carton

Storage condition and shelf life:

Vacuum aluminum foil packaging, store in low temperature and dry place, with the shelf life of 24 months.

Angel Leaven



Product introduction

Angel leaven is a specially selected strain and complex nutrients for alcohol beverage fermentation under cooking and non-cooking process.

Product characteristics:

1. Bio-compound technology, simplified brewing operation, convenient use.
2. Wide application scope, well complete various distilled spirit process brewing
3. Improve the alcohol productivity of grain.
4. Strictly execute process formula, the product quality is stable.

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| Moisture % \leq | 6.5 |
| Total yeast Count (10^8 /g) \geq | 60.0 |
| Total arsenic (calculated as As) mg/kg \leq | 2.0 |
| Lead (Pb) mg/kg \leq | 2.0 |
| Salmonella | Negative |



Application:

Application of cooked materials (calculated as 100kg of grain)

Solid fermentation:

After whole grain soaking→primary steaming→re-steaming→taking out of teamer-cooling to 82°F-108°F(24-28℃), dissolve 0.3-0.6kg of Angel leaven into 6kg of 90°F-95°F(32-35℃) warm water, soak for 10 minutes and reduce the temperature to 82°F-86°F(28-30℃), and then evenly douse on the grain mash, evenly mix and put into the tank, the tank temperature is 75°F-86°F(24-30℃), the fermentation temperature is controlled to be 82°F-97°F(28-36℃), and the fermentation cycle is 4-7 days.

Liquid fermentation:

Soak the cooked grain in water, directly add 0.3-0.5kg of Angel leaven after the temperature reaches 86°F-90°F(30-32?), mix for 10 minutes and seal and ferment for 4-8 days.

Application of raw materials (calculated as 100kg of flour grain)

Mix the material with 250-300kg of hot water, directly add 0.5-0.8kg of Angel leaven after the temperature is naturally cooled to about 90°F(32℃) (appropriately mix to prevent from sedimentation during this period), evenly mix, and ferment for 8-15 days. Mix twice every day in the first three days, control the temperature to be 82°F-97°F(28-36℃), the optimal fermentation temperature to be about 90°F(32℃), in the short period, the highest fermentation temperature shall not be over 100°F(38℃), and the heat insulation measure shall be taken when the temperature is below 79°F(26℃).

Caution:

1. The fermentation that adopts the raw material of rice can adopt granular grain or broken rice to directly ferment, however, the fermentation cycle shall be appropriately prolonged.
2. The fermentation cycle is related to raw material type, raw material reduction degree, distiller's yeast dosage and fermentation temperature. The fermentation cycle of general raw materials shall be short when the reduction degree is small, and the distiller's yeast consumption is high; contrarily, the fermentation cycle shall be long.

Specification: 500g*20/carton

Storage condition and shelf life:

Vacuum aluminum foil packaging, store in low temperature and dry place, with the shelf life of 24 months.

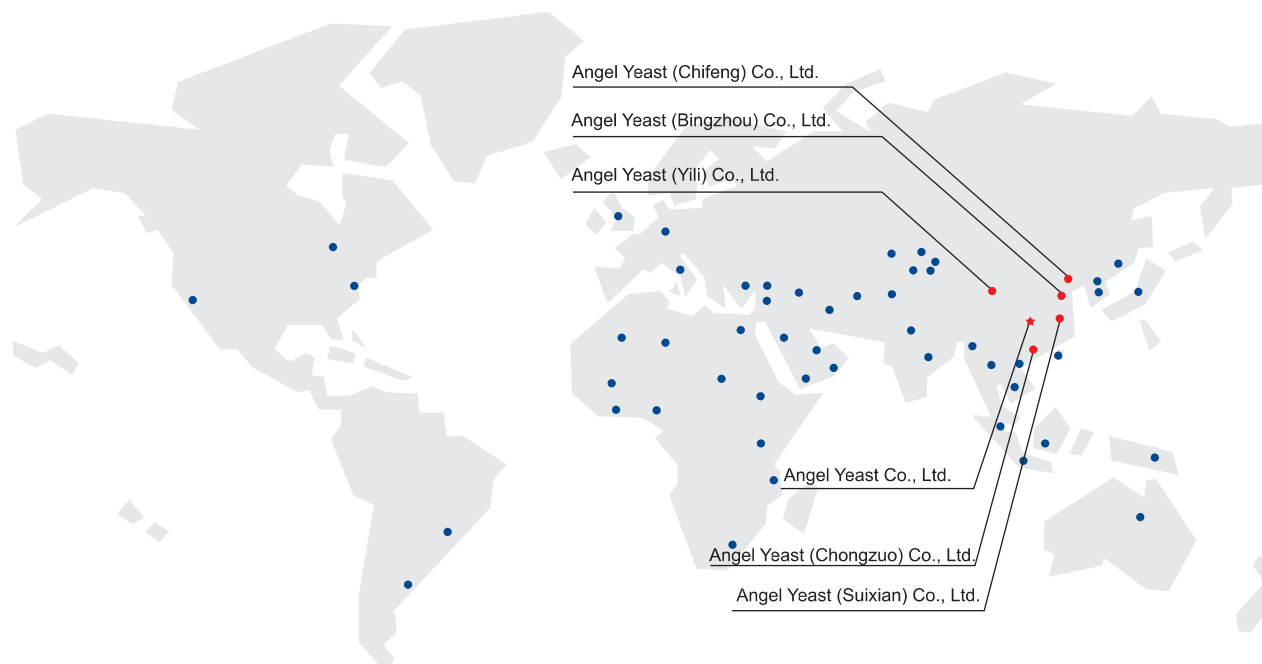
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