



# PATHFINDER

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# TY-48

TURBO YEAST

A high alcohol, osmotolerant active dried yeast formulated with complete nutrient complex designed for refined sugar wash fermentations up to 20% ABV.

## PRODUCT DESCRIPTION & FUNCTION

TY-48<sup>®</sup> is based on a non-diastatic, active dried yeast strain with very high alcohol and osmotic pressure tolerances – formulated with a complete, chemically-defined nutrient complex, TY-48<sup>®</sup> is optimised for sugar wash fermentations up to approx. 20 % ABV.

Although designed for use with highly refined sugar substrates such as glucose, sucrose, and invert sugar syrup, TY-48<sup>®</sup> can be used with any fermentable sugar substrate for production of very high alcohol wash up to ~20 % ABV, or for rapid fermentation of lower alcohol levels up to ~14 % ABV.

The nutrient complex in TY-48<sup>®</sup> contains all essential macro and micro-nutrients required for healthy fermentation, including nitrogen (urea source), phosphate, magnesium, B vitamins and trace minerals. TY-48<sup>®</sup> does not contain yeast extract or other

non-chemically defined materials which can taint the quality of alcohol used for clean flavour applications.

### Recommended For

Fermentation of very high alcohol base for use in FMB/CMB hard soda production; fermentation of very high alcohol wash for spirit alcohol distillation.

**Note:** TY-48<sup>®</sup> is not recommended for applications where very low flavour is required (unless post-fermentation treatments such as carbon filtration and/or ion exchange can be applied).

### Organoleptic Qualities

Wash fermented with TY-48<sup>®</sup> is typically high in sulfidic notes along with moderate levels of yeast, wine, and pome fruit notes.

# TECHNICAL CHARACTERISTICS

<b>Yeast Classification</b>	Saccharomyces cerevisiae
<b>Temperature Tolerance</b>	Max. 27°C for 20% ABV Max. 36°C for 14% ABV
<b>Killer Factor</b>	Neutral
<b>Alcohol Tolerance</b>	≥ 20 % ABV
<b>SO<sub>2</sub> production</b>	High
<b>Viable Yeast Cells</b>	> 6 x 10 <sup>9</sup> cfu/g
<b>Total bacteria</b>	< 3 x 10 <sup>3</sup> cfu/g
<b>Wild Yeast</b>	< 1 x 10 <sup>3</sup> cfu/g
<b>Mould</b>	< 5 x 10 <sup>2</sup> cfu/g
<b>Coliforms</b>	< 10 cfu/g
<b>Pathogens</b> (Salmonella, E. coli etc)	Absent in 25 g
<b>Lead</b>	< 3 mg/kg
<b>Arsenic</b>	< 1 mg/kg
<b>Heavy Metals</b> (as Pb)	< 10 mg/kg
<b>GMO Status</b>	GMO Free

## DOSAGE & APPLICATION

**Pitch rates:** suggested rates are as follows (optimisation through bench trials is recommended):

<b>Target ABV for fermentation:</b>	5%	8%	10%	12%	14%	20%
<b>TY-48 Turbo Yeast dosage:</b>	1.2 g/L	1.6 g/L	1.9 g/L	2.3 g/L	2.7 g/L	5.4 g/L

## Pitching Method

TY-48® requires agitation to dissolve nutrient salts so cannot be pitched directly without mixing facility. For indirect pitching, pre-mix with 10x times its weight of water at 25-30°C (77- 86°F) and mix for 5 minutes before pitching.

This product contains granular materials of different particle sizes that can settle out during transportation. To ensure an even distribution, it is recommended that a full pack is used for your fermentation. If a part bag is used, product consistency can be improved by thorough agitation of the pack prior to use.

An even distribution of ingredients cannot be guaranteed if part bags are used.

**Note:** TY-48® is not suitable for propagation or post-fermentation recovery for re-use due to nutrient depletion during fermentation. Rehydration is only required for pre-dissolving nutrients rather than yeast activation. It is important to minimise contact-time (ideally < 15 minutes) to avoid high nutrient concentrations harming the yeast. Trials may be required to determine impacts of longer contact periods on yeast viability and fermentation kinetics.

## Fermentation Temperature

TY-48® can tolerate up to 38°C (100°F) but alcohol tolerance is impeded at this temperature. For optimum performance and quality, it is recommended to ferment at 20-25°C (68-77°F), although washes up to 14% ABV can be fermented at 30-32°C (86-90°F) if rapid fermentation is required.

**Note:** TY48® may generate unexpected quantities of heat during fermentation; if temperature is not controlled and exceeds the maximum tolerance at any time the ethanol tolerance will be impeded.

## Oxygenation

Oxygenation will help to minimise SO<sub>2</sub> production; as a guide we suggest oxygenation rates starting from 15-20 ppm for ABVs from approx. 5%, up to 40-45 ppm for very high ABVs of up to 14-20%. Oxygenation rates can be optimised through trials to meet the specific requirements of the application.

## pH Tolerance

TY-48® ferments optimally at pH 4-6 but can still operate outside of this range (e.g. pH 3-7). It is best practice to monitor pH as it is likely to drop as fermentation progresses. If possible, avoid levels below pH 3.5 to avoid prolonged fermentation times.

## Clarification & Filtration

TY-48® has a very high cell density so will result in high cell loading in the fermentation media. The strain is also a very low flocculating so use of high rates of finings agents and/or centrifugation plus filtration will be required to achieve a clear base. The average cell diameter of the yeast is ~5 micron – however, due to presence of smaller daughter cells a filter pore size of < 2 micron (absolute rated) may be required for fine filtration.

## PACK SIZES

1000g bags and 25kg poly-lined paper sacks.

## SAFETY

This material is non-hazardous when used as directed. SDS available on request.

## STORAGE

25kg sacks: Store in original, sealed packaging away from direct sunlight. If stored below 10°C / 50°F this product will have a shelf life of up to 24 months. At 20°C / 68°F storage temperature, shelf life will be reduced to 12 months. After opening, re-seal tightly and keep refrigerated below 10°C for 6 weeks.

1000g bags: Store in a cool, dry place away from direct sunlight for a shelf life of 18 months. After opening re-seal tightly and keep refrigerated below 10°C for 2 weeks.