

# Natunase TAA 4S

## An efficient solution for Brewery Adjunct liquification

In brewery industry usage of adjuncts is a widespread practice and due to high gelatinisation temperature of adjuncts, usage of thermostable enzyme in separate liquefaction to provide consistent extract yield. Natunase TAA 4S consists of a thermostable  $\alpha$ -amylase that offers better extract yields and enables the possibility of using various adjuncts, especially rice, in beer industry at high dissolved solids to increased brew house recovery.

### BENEFITS:

- Thermostable formulation
- Liquefaction at elevated temperature
- Viscosity reduction
- Consistent extract yield.
- Perform on High solids ( $\geq 30$ )
- Low recommended dosage

### PRODUCT APPLICATION:

NATUNASE TAA 4S to be applied in liquefaction tank as per recommended dosage and optimum pH & temperature conditions.

### PRODUCT FEATURES:

Natunase TAA 4S is a thermostable endo-amylase enzyme. The uniqueness of product involves liquefaction variety of adjuncts, especially rice, at elevated temperature (80-90°C). It is also suitable for high DS liquefaction with lower usage of water there by increasing the brew house capacity utilisation.

- Occurrence                                  Liquid
- Appearance                                    Dark brown

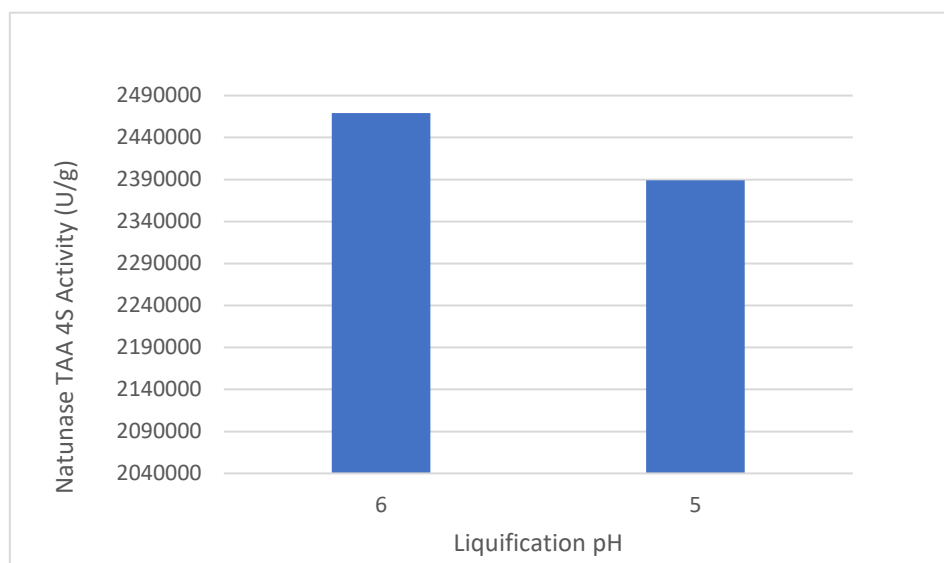
Product Name	Natunase TAA 4S
pH range	5.0-6.0
Temperature range	80-90°C
Dosage range (Kg/ton of rice)	0.2-0.3
Formulation	Food grade

### PACKAGING:

Natunase TAA 4S enzyme solution is available in packing of 25 kg HDPE drums.

### **PERFORMANCE:**

Natunase TAA 4S product comprises of thermostable  $\alpha$ -amylase able to liquefaction at higher temperature. This product is suitable for liquefaction of variable adjunct feedstock used in brewery industry. It shows excellent performance at temperature 85°C and pH 5.6 during adjunct cooking used in most plants. Breakdown of starch molecules into smaller dextrin's at elevated temperature also leads to consistent extract yield. It is highly concentrated product, suitable at lower dosage make it cost effective and sustainable.



**\*Enzyme activity at liquefaction pH (5-6) at 85°C**

\*Study shown above is to depict beneficial information about the novelty of the product and the actual results may differ depending on the conditions specific to plant.

### **STORAGE:**

Natunase TAA 4S should be stored below 20-25°C in closed containers protected from sunlight. Product has been designed with optimum stability and have a minimum shelf life of 12 months when stored at suggested conditions. Adverse conditions and prolonged storage may lead to decreased enzyme activity and demands for higher dosage.

### **PRODUCT HANDLING:**

- Inhalation of enzyme dust may induce sensitization and may cause allergic reactions in sensitized individuals.
- Some enzymes may irritate the skin, eyes, and mucous membranes upon prolonged exposure.
- The product may easily create aerosols if splashed or vigorously stirred and inhaling such aerosols may create allergic reactions in certain individuals
- Spilled product may dry out and create dust.
- Spilled material should be flushed away with water.
- Avoid splashing.
- Wear suitable protective clothing, gloves, and eye/face protection.
- Contaminated cloths should be properly washed.
- MSDS is supplied with the product. Follow MSDS safety instructions for more details.