

# Injectable Grade of Trehalose

## General

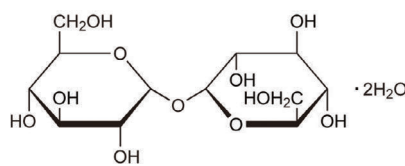
Trehalose is a dihydrous crystalline and non-reducing disaccharide consisting of two glucose molecules linked by an  $\alpha, \alpha$ -1,1 bond.

TREHALOSE SG is monographed as being low endotoxin and is intended mainly for injection. Because of its stability it can be autoclave or filter sterilized.

Chemical formula:  $C_{12}H_{22}O_{11} \cdot 2H_2O$

Molecular weight: 378.33

CAS RN® : 6138-23-4

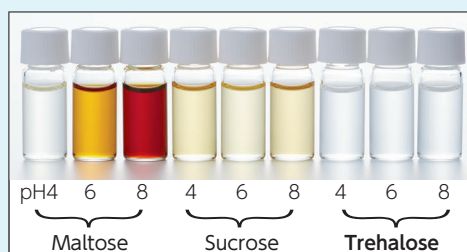


## Properties

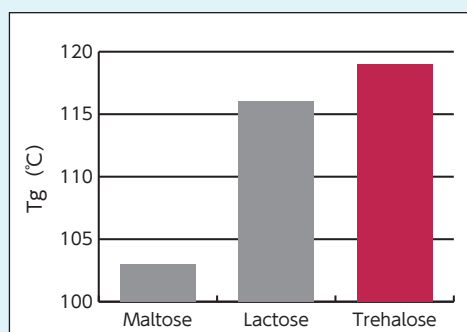
- Protects the quality of products during processing due to its non-reactivity. TREHALOSE SG does not participate in the Maillard reaction, preventing the development of undesired colors, odors and flavors.
- Heat and acid resistant (pH 2 and 100°C for 24 hours)
- Stable amorphous phase under high temperature due to its high glass-transition temperature ( $T_g$ : approximately 120°C). TREHALOSE SG can be used as a stabilizer for biomaterials due to its protective effect against environmental temperature variations.

### Reaction of glycine with saccharide solutions

Saccharides (12.5%) with glycine (0.5%) at 120°C for 1 hour



### Glass-transition temperature of disaccharides



## Stabilization of biomaterials

- Proteins can be denatured by stressors such as heat, shear, and phase change during processing or storage. TREHALOSE SG can replace the water molecules that is closely associated with proteins, stabilizing the higher-order structure to prevent denaturation, especially during heating, freezing or lyophilization.
- TREHALOSE SG modifies ice crystal development to reduce damage to cells and proteins during freezing.

