

# Titanium Supergrade HT

An alloy-reinforced epoxy paste for repairs on stress-bearing equipment and repairs exposed to high temperatures up to 200°C (or 250°C with 50% properties). Titanium Supergrade HT is ideal for the maintenance and repair of pumps, valves, metals castings, worn shafts, damaged keyways, low pressure pipes and tanks, and automotive bodywork. It can be used on metal, wood and most plastics and provides excellent protection against corrosion and chemical attack.

## Description

Titanium Supergrade HT is reinforced with corrosion-resistant metal platelets, giving a smoother finish than regular repair pastes when machined. The light consistency makes it easier to mix than stiff and heavy traditional epoxy pastes and it is thixotropic, meaning it will not sag. In addition, Titanium Supergrade HT is virtually odourless, with no unpleasant smell compared to other products.

## Applications

- Used to repair holes, cracks and pitting in pipes, pipe fittings, tanks and equipment
- Used to reline worn areas in pumps, valves and associated equipment and to repair pump impellers
- Rebuild worn shafts and damaged keyways
- Restore bearing housings
- Level equipment
- Industrial equipment repair, maintenance and construction
- Gives protection against corrosion & chemical attack

## Advantages

- High temperature resistance
- Very high compressive strength
- Can be machined
- Easy to apply
- Long working time

## Directions for Use

### Surface Preparation

- Surfaces must be prepared prior to application.
- All surfaces must be dry and free from grease. Clean and roughen surface for optimum adhesion.
- Remove all paint, rust and grime from the surface by abrasive blasting or with sandpaper.
- Aluminium: remove oxidation from surface for optimal adhesion.
- Roughen the surface first, ideally by grit blasting (8-40 mesh grit), or through grinding with a coarse wheel or abrasive disc pad. An abrasive disc may be used provided white metal is revealed. Do not 'feather edge' – this epoxy must be 'locked in' by defined edges and a good 3 – 5mm profile.
- Metal which has been in contact with seawater or other salt solutions should be grit blasted and high pressure water blasted, and then left overnight to allow salts in the metal to 'sweat' to the surface. Repeat this process if necessary to 'sweat out' all of the soluble salts.
  - Test for chloride contamination before application.
  - The maximum soluble salts left on the substrate should be no more than 40 ppm.
- Use a solvent cleaner to remove all traces of sandblasting, grit, oil, grease, dust or other foreign substances.
- In cold working conditions, it is recommended that the repair area is heated to 37°C - 43° C prior to application. This will dry off any moisture, contamination or solvents for maximum adhesion.
- Apply as soon as possible after preparation of the substrate to avoid oxidation or rusting.

## Application Method

- Titanium Supergrade HT should be kept and applied at room temperature. It can be applied when temperatures are between 13°C and 52°C.
- Spread Titanium Supergrade HT over prepared surface with a putty knife. Press firmly to ensure maximum surface contact and avoid trapping air.
- To bridge large gaps or holes use fibreglass, sheet metal or wire mesh.

## TECHNICAL DATA SHEET

### Technical Data

MINIMUM SHELF LIFE (months @ 24°C,)	24
MIX RATIO (WEIGHT)	3:1
MIX RATIO (VOLUME)	3:1
WORKING TIME (minutes)	180
RECOAT TIME (hours)	4-6
FUNCTIONAL CURE (hours)	16
FULL CURE (hours at room temperature)	24
COVERAGE (cm <sup>2</sup> /kg @ 5mm thickness)	1212
HARDNESS, SHORE D (full cure)	90
LAP SHEAR TENSILE STRENGTH (MPa)	
On Steel	14
TENSILE STRENGTH (MPa)	35
COMPRESSIVE STRENGTH (MPa)	130
FLEXURAL STRENGTH (MPa)	100
DENSITY (gm/cm <sup>3</sup> )	1.6
SHRINKAGE (%)	<1
NON-VOLATILE CONTENT (%)	100
MAXIMUM SERVICE TEMPERATURE (°C)	
Continuous - room temperature cured	80
Continuous - post cured	200
Intermittant - post cured	250 (if continuous tensile strength reduced by approx.50%, hardness 70 Shore D)
Heat resistant, no load - post cured	300 (non-structural or pressurised repairs, hardness reduced to 57 Shore D. Once at room temperature hardness fully returns)

(values are typical and should only be used as a guideline)

### Chemical Immersion (120 days)

25% Acetic Acid	Good
10% Nitric Acid	Good
30% Sulphuric Acid	Excellent
Acetone	Good
Toluene	Excellent
Methanol	Good
Ethanol	Excellent
10% Ammonium Hydroxide	Excellent
10% Sodium Hydroxide	Excellent
Deionized Water	Excellent

#### Weight Change:

Excellent = +/- 1%	Good = +/- 10%
Fair = +/- 10-20%	Poor > 20%

### Post Curing

Heat resistance can be as high as 250°C. Like all high temperature epoxy systems, in order to achieve maximum temperature resistance, it should be post-cured to enable secondary cross-linking.

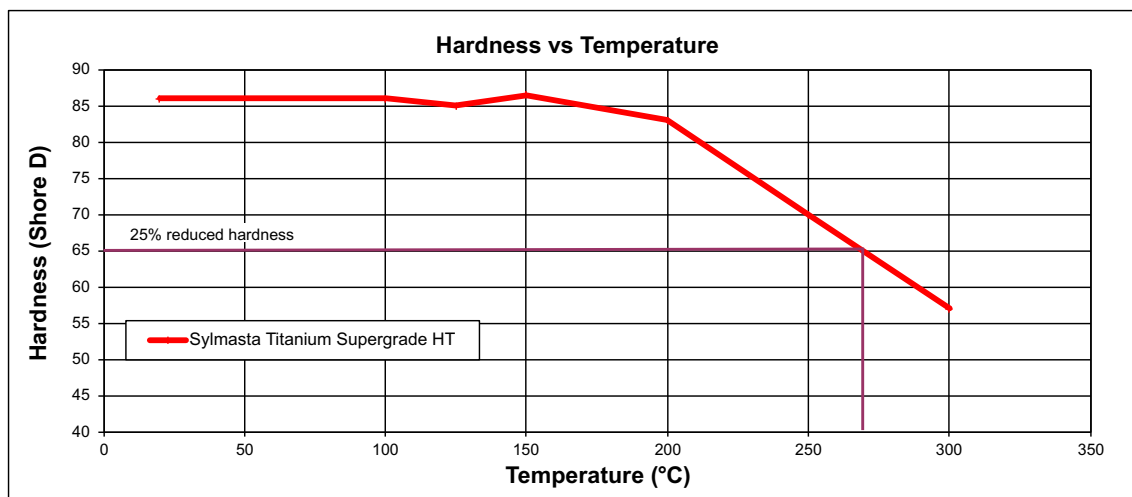
#### Post-Cure Instructions:

1. Heat at 80°C for 2 hours
2. Heat at 150°C for 3 hours
3. Allow to cool.

**NOTE:** The effect of post-cure can also be realised during the normal ageing of the epoxy system in service, especially if operating at elevated temperatures but it is not generally encouraged to rely on the service environment for completion of the cure reaction and establishing optimum adhesive strength as these are not controlled conditions.

### Hardness vs Temperature

Sylmasta Titanium Supergrade HT retains full hardness past 200°C. Hardness begins to drop off after 200°C and is reduced by 25% past 270°C.



# TECHNICAL DATA SHEET

## Packaging

Code	Name	Size
PHT/500g	Titanium Supergrade HT	500g
PHT/4x500g	Titanium Supergrade HT	4x500g
PHT/2kg	Titanium Supergrade HT	2kg
PHT/5kg	Titanium Supergrade HT	5kg
PHT/33.33kg	Titanium Supergrade HT	33.33kg

## Storage

Sylmasta Epoxy Pastes should be stored out of direct sunlight in dry, frost free conditions at temperatures between 15° and 25°C. Under such conditions shelf life will be 3 years from the date of manufacture.

## Health & Safety

Sylmasta Epoxy Paste consists of epoxy resins and hardener systems, please consult the individual Material Safety Data Sheet for hazard information. Wear eye protection and rubber or plastic coated gloves, and wash hands with soap and water immediately after use.