Technical Datasheet

Polycraft

OPTICAST 2000

Optically Clear Polyurethane Resin

Revision Date: 19/08/24

100 : 120	23-27 Min	2-4 Hrs	Water Clear	75D	25°c	1kg in weight equals approximately 840ml in volume
Mix Ratio By Weight	Pot Life*	Demould Time‡	Cured Colour	Hardness	Working Temperature	Density

Overview

Polycraft Opticast 1000 is a mercury free optically clear UV stable polyurethane resin system for castings that require high clarity. This system has a good potlife, is high in strength, pigmentable and highly polishable. May be used for applications such as embedding / encapsulation, jewellery making, light lenses and other general rapid prototyping applications.

Key Properties

- Water Clear
- Good Potlife
- Fast Demould
- Tough / High Strength
- Pigmentable
- Polishable

Preparation

- Ensure Parts A & B are in the correct temperature range (25°c)
- Parts A & B must be shaken or stirred seperately prior to use.
- Mould or item to be filled must be clean and dry
- Determine if release agent is required
- Ensure Mould compatibility (Tin Cure RTV not recommended).
- Pressure chamber recommened for bubble free results

Mixing

All mixing and curing should be done in room temperature conditions. Polyurethanes are moisture sensitive; Ideally use plastic mixing containers and plastic mixing sticks to help avoid the introduction of moisture (paper or wood tools may introduce moisture). Take care to weigh out correct amounts of A and B into a mixing container. Reseal material containers immediately to protect against atmospheric moisture contamination. Mix Parts A & B, scraping sides and bottom of mixing container to ensure both components are thoroughly mixed, then pour the mixture into the mould as quickly as possible.

Curing

Castings should be allowed to remain in the mould until thoroughly cured. Demoulding early may lead to deformation of the casting. The use of pre-heated moulds will speed up the demould time. Lower temperatures will slow the cure and extend demould times. Thin castings will take longer to cure than thick castings. Mould material type, shape & size and use of fillers are just some of the other variables that may affect curing times. No two moulds are the same so testing is recommended. Post curing after gellation will result in higher glass transistion properties.

Additives

Colour pigments and fillers may be added to this resin system to change appearance, reduce costs (lightweight fillers), add density, and adjust properties. Testing recommended to ensure compatibility.

Material	A B	Polyol Isocyanate
Colour	A B	Clear Clear
Viscosity	Polyol Isocyanate Mixed	300 - 500 100 - 150 100 - 350
Density @25°c (g/cm3)	Polyol Isocyanate Mixed	1.25 - 1.30 1.08 - 1.13 1.16 - 1.21
Mix Ratio	By Weight	100 : Polyol 120 : Isocyanate
*Potlife (200g @25°c)	mins	23 - 27
Recommended Casting Dept	mm	5- 30
‡ Demould Time (@25°c)	hours	2 - 4

Hardness	Shore D	75 - 85
Tensile Strength	MPa	60- 64
Elongation at break	%	4.5 - 5.5
Flexural Strength	MPa	95 - 100
Flexural Modulus	MPa	2150 - 2450
Linear Shrinkage	%	<0.4
Tensile Modulus	MPa	1500 - 1800

Glass Transistion Temperatures (Tg)

7 Day @ Room Temp	DMA	°C	46 - 50
3 hrs @ 80°C	DMA	°C	58 - 62
16 hrs @ 100°C	DMA	°C	86 - 90

Storage / Shelflife

These materials have a limited shelflife and should be used as soon as possible. Keep containers tightly sealed when not in use. Consider the use of a dry gas product, which can be sprayed into opened containers to displace moist air before resealing containers to help extend shelf life. Materials should be kept in dark storage between 18°c and 25°c. Under these conditions, shelf-life in the original unopened containers is six months from the date of purchase.

Health & Safety

Before use please read product labels, technical sheets and safety data sheets and ensure you have adequate understanding of the safety precautions and directions before using the materials.