SYNTAL 123 Moulding Resin

SYNTAL
Polyester Series

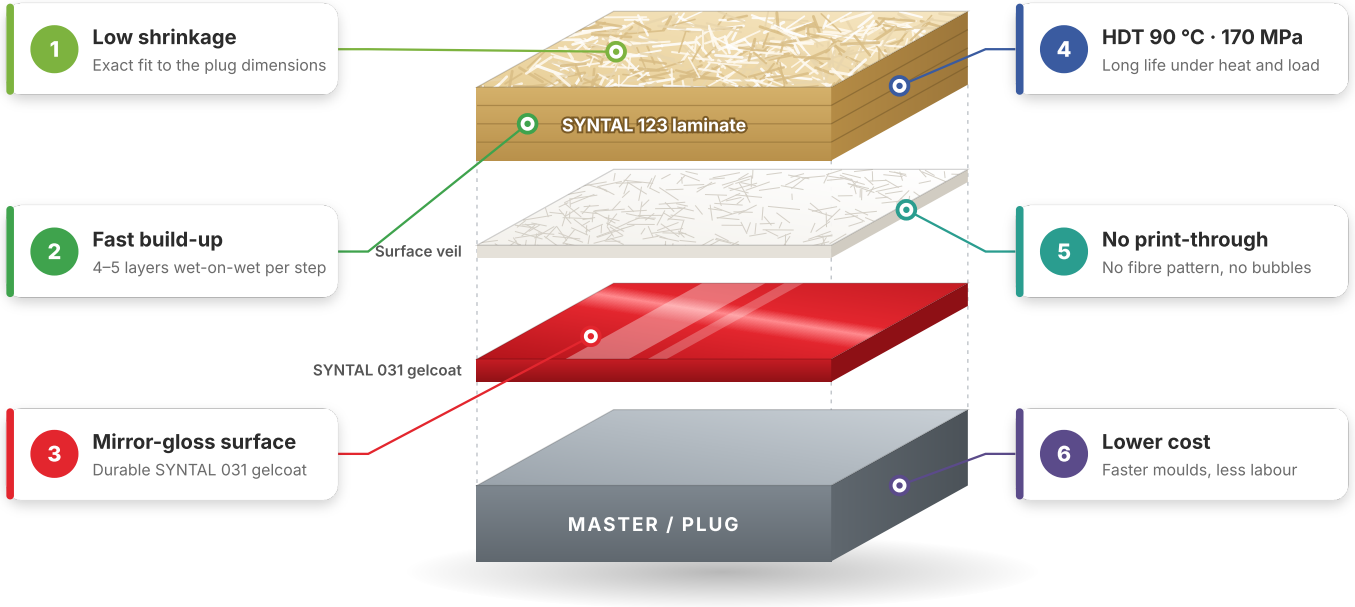
Description and Basic Properties

SYNTAL 123 is a low-shrink, thixotropic, pre-accelerated unsaturated polyester resin containing mineral filler, developed for fast mould making. It prevents fibre print-through behind the gelcoat and produces glossy, mirror-like mould surfaces. A tailored accelerator system gives rapid Barcol hardness development and fast cure, while low shrinkage keeps moulds dimensionally stable and true to the master.

- Low shrinkage gives an accurate fit to the plug dimensions.
- Designed for rapid mould building, with substantial savings in labour and cycle time.
- Reduced monomer content and LSE additive lower styrene emission.
- Excellent, mirror-like surface quality.
- High mechanical and thermal properties for long mould service life.
- Suitable for hand lay-up and spray-up.

Inside a SYNTAL 123 mould

Exploded view of a typical rapid-tooling build-up



Application Steps and Alternative Choices in the Rapid Tooling System

Standard Mould Application

1. Step: SYNTAL 031 tooling gelcoat

600–800 µm in at least 2 layers (4 layers recommended); 1–2 % MEKP

2. Step: Surface veil with SYNTAL 123

3. Step: Lamination layers

- 5–6 layers of 300 g/m² or 4–5 layers of 450 g/m² with SYNTAL 123
  Wait for the laminate to cure (temperature rises and falls).
- Repeat 4–5 layers of 300 g/m² or 450 g/m² with SYNTAL 123
  Wait for the laminate to cure (temperature rises and falls).
- Continue the same procedure up to the required thickness.

High Performance Mould Application (RTM moulds etc.)

1. Step: SYNTAL 031 tooling gelcoat

600–800 µm in at least 2 layers (4 layers recommended); 2 % MEKP or 2 % CHP

2. Step: Surface veil with vinyl ester skin resin or barrier coat

3. Step: Skin coat

300 g/m² glass fibre with vinyl ester resin

4. Step: Lamination layers with SYNTAL 123, as in the standard mould application

Important note: Low shrinkage is achieved only when at least 3–4 layers of 450 g/m² or 4–5 layers of 300 g/m² are applied wet-on-wet in one step. Divide large moulds into sections suitable for multi-layer application. SYNTAL 123 is formulated for MEKP hardeners; other hardeners change gel and cure time. Do not laminate below 15 °C.

Gel Time vs. Temperature of SYNTAL 123 at Different MEKP Levels

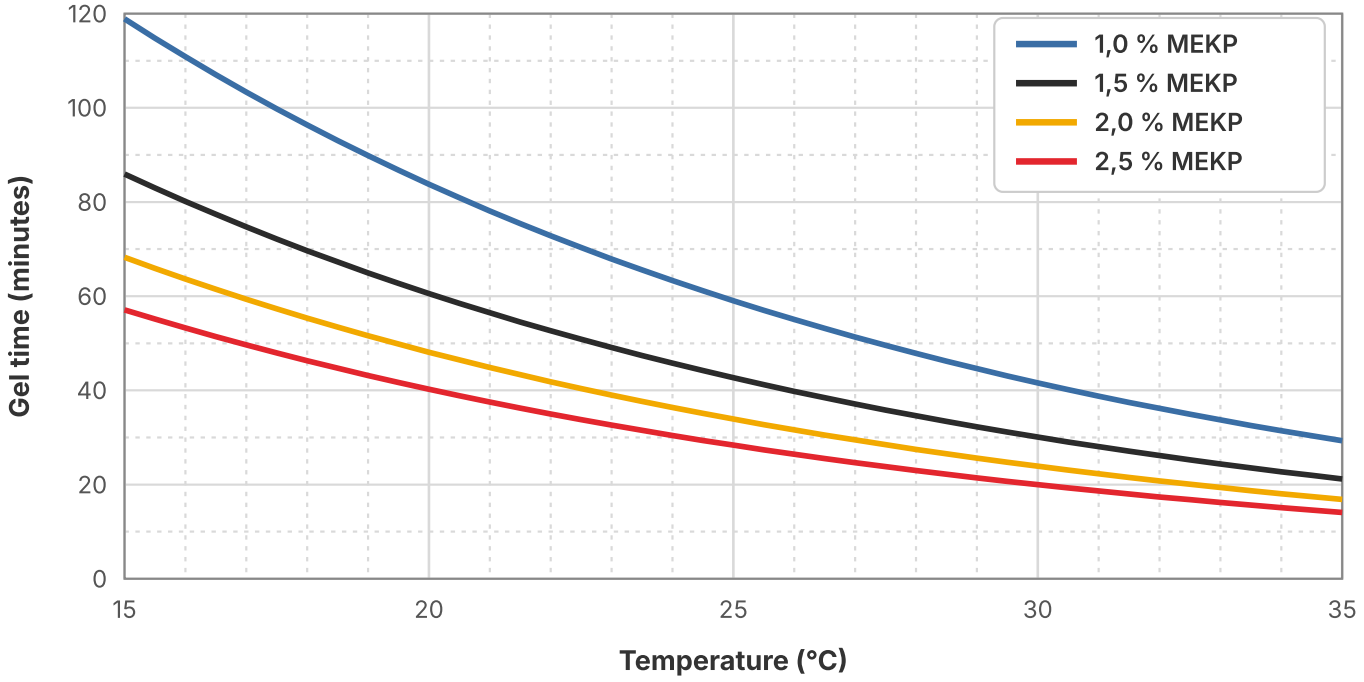


Figure 1. Indicative gel time of SYNTAL 123 vs. temperature at 1.0–2.5 % MEKP (Butanox M-50). Contact our sales department for special gel times.

Properties of Liquid Phase

Test	Method	Range	Value – Result
Density	ISO 1675	±5 %	1.38 g/cm³
Viscosity[1] Brookfield	ISO 2555	±20 %	850 mPa·s
Thixotropy	–	–	Thixotropic
Gel Time[2]	ISO 2535	±40 %	39 min
Monomer Content	ISO 3251	±10 %	32 %
Shelf Life	–	–	6 months

[1] 23 °C, spindle 4, 100/10 rpm [2] 23 °C, 2 ml MEKP (Butanox M-50) per 100 g resin

Properties of Cured Resin

Test	Method	Range	Value – Result
HDT	ISO 75-A ISO 75-B	±10 %	80 °C 90 °C
Barcol Hardness (Barcol 934-1)	ASTM D 2583	±10 %	47

Mechanical Properties of FRP Laminates of SYNTAL 123

Test	Method	Range	Value – Result
Flexural Strength	ISO 178	±10 %	170 MPa
Flexural Modulus	ISO 178	±10 %	8000 MPa
Elongation at Break (flexural)	ISO 178	±10 %	6 %
Tensile Strength	ISO 527	±10 %	102 MPa
Modulus of Elasticity in Tension	ISO 527	±10 %	6200 MPa
Elongation at Break (tensile)	ISO 527	±10 %	3.6 %
Izod Impact Strength	ISO 180	±10 %	22 kJ/m²

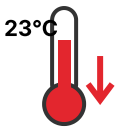
Tests carried out on FRP samples of **5 layers of 450 g/m² glass fibre**; samples post-cured before testing.

Package Types



Pail 20 kg
Other pack sizes on request

Storage Guidelines



1 Store in a dark, dry place at 5–23 °C. Higher temperatures and exposure to light significantly reduce the shelf life of styrene-containing polyesters. Keep only in 100 % light-tight containers, away from ignition sources (flames, pilot lights, sparks, sparking tools). No smoking. Store separately from oxidising materials, peroxides and metal salts.

2 Keep inventory to a reasonable minimum and rotate stock first-in, first-out (FIFO).

3 Keep the container lid closed.

Safety Information



Read the Safety Data Sheet (SDS) before shipping, handling, storage or use. The SDS is available on request.

For More Information

For technical support and further information, visit **www.cpccomposites.com**.

Important Notes

The information in this data sheet is subject to change without notice. It is based on laboratory tests and practical experience and is given in good faith as a guide, not as a specification. CPC Composites accepts no liability for damage arising from the use of this information, from user error or from unsuitable storage conditions.

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