

Technical Data Sheet

INTRODUCTION

Crestapol® 1250 is a low viscosity resin designed for maximum wet out for pultruding fibreglass, carbon fibre and other fibres. Crestapol 1250 efficiently produces fast curing, very tough, high strength composites with superior water and hydrolysis resistance. Run times and formulation will depend on the geometry and complexity of the die. Crestapol 1250 will run very fast making for very efficient pultruded parts.

TECHNICAL SUPPORT

A non-exclusive list of factors to consider when optimising a pultrusion manufacturing process are:

- ▶ Reinforcement type
- ▶ Resin type
- ▶ Resin/reinforcement ratio
- ▶ Resin temperature
- ▶ Profile shape
- ▶ Profile thickness
- ▶ Die length
- ▶ Die heating method (oil, electric, water)
- ▶ Peroxide package
- ▶ Die temperature set points

This is an example start point formulation/set up, however, for the factors listed above, there will be some local optimising required to maximise productivity. Fibre volume fraction of >70% is achievable with this resin.

TYPICAL RESIN MIX

| Component | Parts |
|-----------------------------|-------------|
| Crestapol 1250 | 100.00 |
| Internal Release Agent | 1.25 - 1.50 |
| Trigonox HM (or equivalent) | 1.25 |
| Trigonox C (or equivalent) | 1.25 |
| Calcium Carbonate | 5.00 |

TYPICAL STARTING SET POINT TEMPERATURES (BASED ON 500mm DIE WITH 5 EQUAL ZONE LENGTHS)

| Component | Temp (°C) | Temp (°F) |
|-----------------------|-----------|-----------|
| Zone 1 | 145 | 293 |
| Zone 2 | 165 | 329 |
| Zone 3 | 195 | 383 |
| Zone 4 | 210 | 410 |
| Zone 5 (cooling zone) | 10 | 50 |

PHYSICAL DATA - UNCURED

| Property | Unit | Crestapol 1250 |
|--|-------------------|-----------------------------|
| Appearance | - | Clear yellowish brown resin |
| Viscosity at 25°C/ 77°F 4500 sec ⁻¹ | Poise | 2.25 |
| Density at 25°C/ 77°F | gcm ⁻³ | 1.038 - 1.042 |
| Stability in the dark at 20°C/ 68°F | Months | 12 |

PHYSICAL DATA - CURED: PURE CAST RESIN SHEET

| Property | Unit | Crestapol 1250 |
|----------------------|------------------------|--|
| Barcoal hardness | - | 55 |
| HDT | °C/ °F | 109/228 |
| Tensile strength* | MPa | 76 |
| Tensile modulus* | GPa | 3.6 |
| Elongation at break* | % | 2.7 |
| CTE - Alpha 1** | ppm (°C) ⁻¹ | 65 |
| CTE - Alpha 2** | ppm (°C) ⁻¹ | 200 |
| Tg - TMA | °C °F | 100 (onset), 112 (Tg) and 125 (exit) 212 (onset), 234 (Tg) and 257 (exit) |

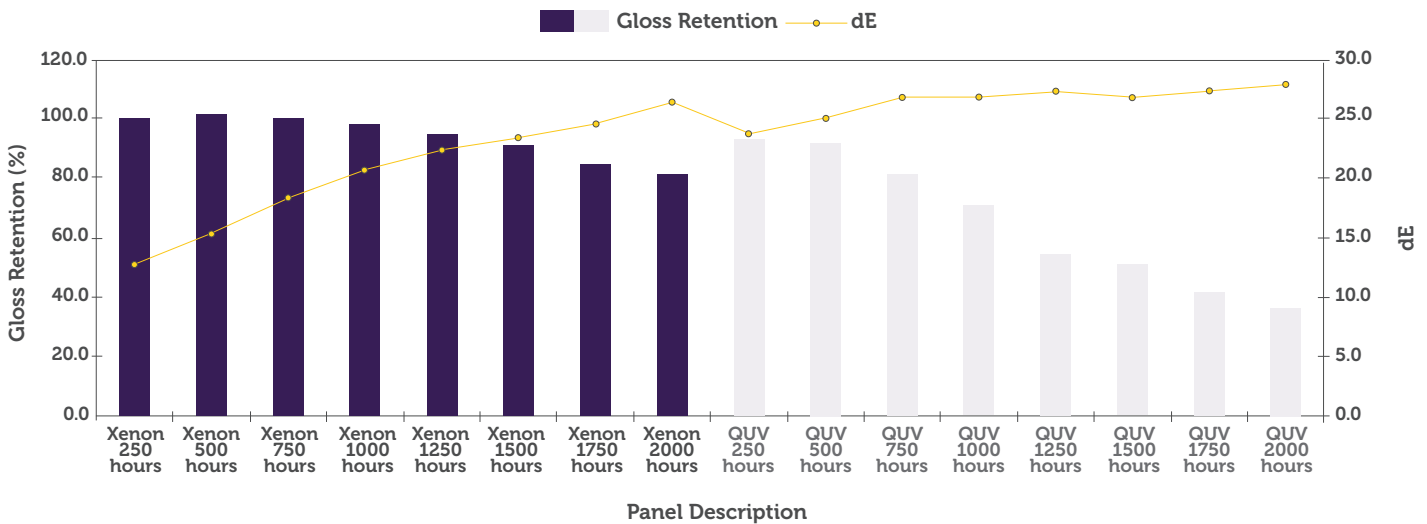
*Curing schedule - 24 hours at 20°C/ 68°F, 5 hours at 80°C/ 176°F

**CTE as measured by TMA, ASTM E 831

UV WEATHERING DATA

Results: Crestapol 1250 & 1260

The resin colour-shifted but no fibre bloom detected, meaning the resin did not degrade.



Laminate lay up as follows:

- ▶ 9" x 9" square
- ▶ 2 x glass tissue on tool side
- ▶ 2 x 450gsm powder pound CSM
- ▶ Peel ply and infusion flow media on bag side only

WATER ABSORPTION DATA

| | Avg Gain/ mg | Avg Gain/ % |
|----------|--------------|-------------|
| 24 hours | 6.5 | 0.08 |
| 1 week | 17.1 | 0.20 |
| 4 weeks | 20.8 | 0.24 |

BS EN ISO 62:1999.

50x50x3mm sample size.

Water bath 23°C/ 73°F.

Cast resin, cure: 2% of 1% solution cobalt in styrene, + 2%LPT-IN.

Post Cure: 16 hours @ 40°C/ 104°F (Lloyd's).

ABRASION DATA

Accelerated wear testing was performed by doing a Taber Abrasion test to ASTM D4060.

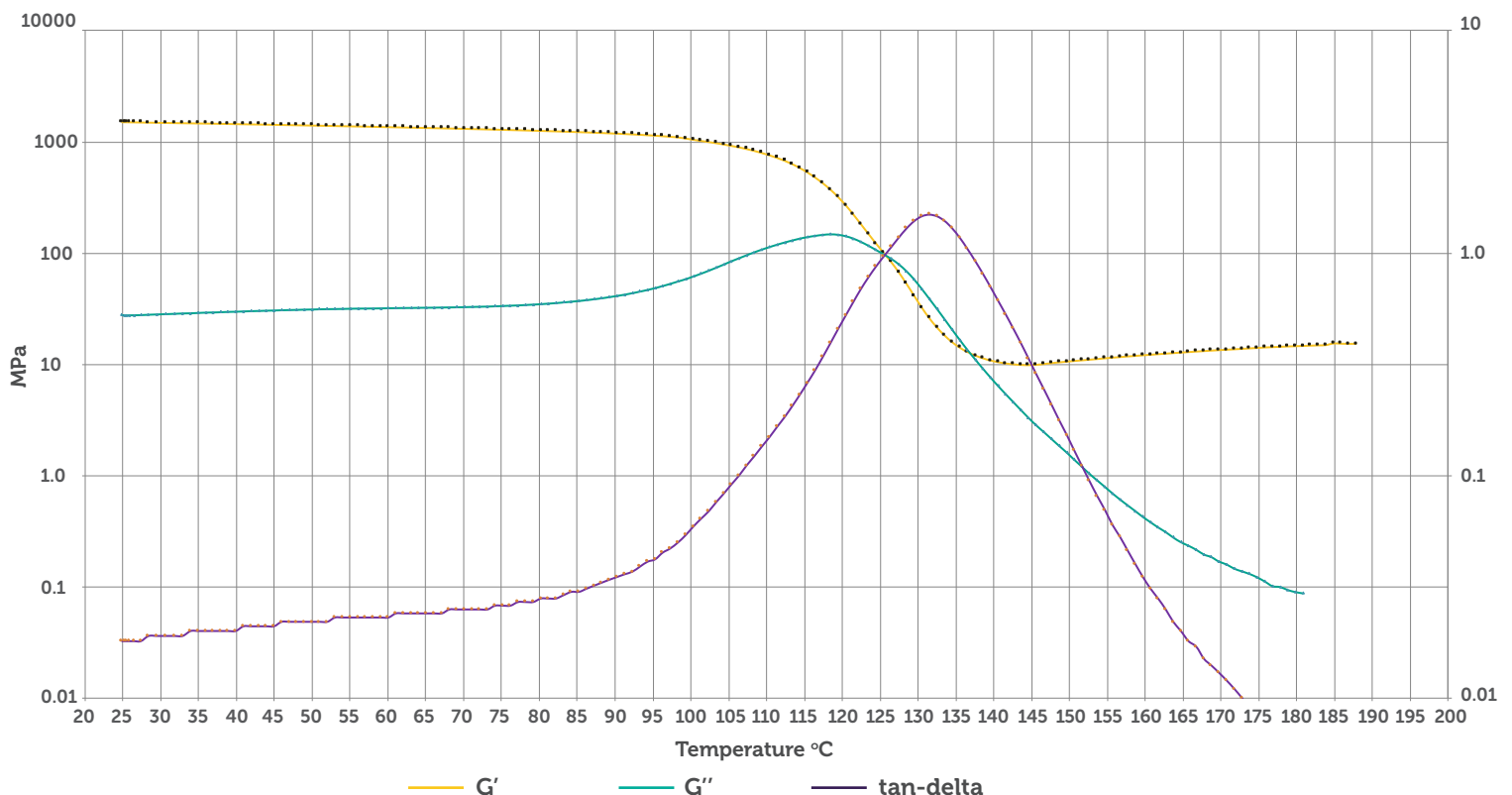
After 4000 abrasion cycles, Crestapol 1250 lost 190mg.

IMPACT RESISTANCE DATA

ASTM D 4226 Standard Test Method for Impact Resistance of rigid Poly Vinyl Chloride building products was conducted by Professional Engineering Inc. to determine what affect impact at extreme temperatures would have on the composite material. Tests to be conducted at -54°C/ -65°F, ambient, and 71°C/ 160°F, on thirty samples at each temperature. All samples were conditioned for at least 24 hours then immediately tested to maintain the temperature of the test specimen. An 8.4lb weight was dropped from various heights to determine if the fibres broke in the composite material. For purposes of customer testing, the failure criteria would be no permanent deformation or breakage of the skin material. There was no permanent deformation or breakage observed.

| Temperature | Failure Height | Damage Observed |
|--------------|----------------|-----------------|
| -54°C/ -65°F | 32cm - 38cm | Broken fibres |
| Ambient | 28cm - 34cm | Broken fibres |
| 71°C/ 160°F | 28cm - 32cm | Broken fibres |

TEMPERATURE EFFECTS ON MODULUS - TG ONSET G' 109 °C/ 227 °F



STORAGE

Crestapol 1250 should be stored at 25°C/ 77°F in the original, unopened container in a dry, well ventilated place. Protect from freezing and direct sunlight. Avoid contact with oxidising agents.

The shelflife is defined from date of manufacture when stored as recommended. The expiry date is indicated on product labels.

PACKAGING

Crestapol 1250 is supplied in 25kg/ 6.6 gallon, 200kg/ 53 gallon and 1000kg/ 264 gallon pack sizes.



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