

MTM[®] 248S

MTM[®]248S is a 125°C (257°F) curing, fire retardant, epoxy matrix prepreg system offering a high level of adhesion to a number of substrates and honeycomb cores.

MTM248S, which is available on a wide range of reinforcements, can be processed using vacuum bag, autoclave or press moulding methods.

MTM248S offers fire retardancy and a high level of adhesion and can be used in applications such as honeycomb cored sandwich panels and the support of ceramic plates in ballistic armour.

Features and Benefits

- 30 days out life at 21°C (70°F)
- 12 months storage at -18°C (0°F)
- Honeycomb bondable
- Self-extinguishing to FAR25.853
- Versatile processing via autoclave, oven vacuum bag and press moulding

PRODUCT VARIANTS

- MTM248SB: black pigmented version of MTM248S

RELATED DOCUMENTS

- De-bulking guidelines (TDS1036)
- Oven vacuum bag processing – lay-up and bagging guidelines (TDS1041)
- Autoclave processing – lay-up and bagging guidelines (TDS1037)

CURE CYCLE

Oven vacuum bag cure

| | |
|------------------------|---|
| Vacuum bag pressure | Minimum of 980mbar (29"Hg)* |
| Ramp rate | 1 to 3°C (1.8 to 5.4°F)/minute |
| Recommended cure cycle | 1 hour at 125°C, +5/-0°C (257°F, +9/-0°F) |
| Cool down | Maximum of 3°C (5.4°F)/minute to 60°C (140°F) |

*This is the ideal vacuum level, however, it is recognised that it is not always possible to attain. If in doubt, please contact our technical support staff for advice.

MTM[®] 248S PREPREG



Autoclave cure

| | |
|------------------------|---|
| Vacuum bag pressure | Minimum of 980mbar (29"Hg)* † |
| Autoclave pressure | 6.2 bar (90 psi)** |
| Ramp rate | 1 to 3°C (1.8 to 5.4°F)/minute |
| Recommended cure cycle | 1 hours at 125°C, +5/-0°C (257°F, +9/-0°F) |
| Cool down | Maximum of 3°C (5.4°F)/minute to 60°C (140°F) |

*This is the ideal vacuum level, however, it is recognised that it is not always possible to attain. If in doubt, please contact our technical support staff for advice.

†If manufacturing complex shapes, the vacuum can be vented when the pressure reaches 2 bar (30psi) if there is a perceived risk of a bag burst and hence the need to avoid pressurised air going down the vacuum line.

**If producing sandwich panels, apply the maximum pressure allowable for the honeycomb type.

Press cure

Mould tools should restrain the flow sufficiently under moulding conditions to avoid fabric or fibre distortion.

| | |
|------------------------|--|
| Press pressure | Minimum of 2.1 bar (30 psi) |
| Ramp rate | A suitable rate (dependant on mould tooling) |
| Recommended cure cycle | 1 hour at 125°C, +5/-0°C (257°F, +9/-0°F) |
| Cool down | A suitable rate (dependant on mould tooling) to 60°C (140°F) |

Note:

- Demoulding at the cure temperature may be possible if the tooling is suitably designed. A specific trial is recommended.
- Alternative cures cycles may be employed. Please consult our technical support staff for more information.

PHYSICAL PROPERTIES

| Test | Sample conditions | Results |
|---------------------|-------------------------|------------------------|
| Cured resin density | - | 1.25 g/cm ³ |
| DMA E' onset Tg | 1 hour at 125°C (257°F) | Dry – 100°C (212°F) |
| | | Wet* – 85°C (185°F) |

* Wet - 2 weeks immersion in water at 70°C (158°F).

MTM[®] 248S PREPREG



MECHANICAL PROPERTIES

Material: MTM248S - 7781 style glass – 42% Rw

Cure cycle: 1 hour at 125°C (257°F), 3bar (45 psi)

Test conditions: Room temperature, dry

| Property | Test Method | Units | Result |
|---------------------------------------|-------------|-----------------|---|
| 0° Flexural strength | CRAG 200 | MPa (ksi) | 626 (90.8) |
| 0° Flexural modulus | | GPa (msi) | 19.0 (2.76) |
| 0° Interlaminar shear strength (ILSS) | ASTM D2344 | MPa (ksi) | 56.0 (8.12) |
| Self adhesive properties | | | |
| Climbing drum peel* | ASTM D1781 | Nm/m (inlb/3in) | Top skin - 90.0 (60.5) Bottom skin - 85.0 (57.2) |
| Climbing drum peel** | | | Top skin - 58.0 (39.0) Bottom skin - 58.0 (39.0) |

Flexural data normalised to 42% Rw.

* Core – AL 5052T, 126Kg/m³, 6.35mm cell, 12.7mm thick

** Core - Nomex, 48Kg/m³, 3.2mm cell, 12.7mm thick

FIRE, SMOKE AND TOXICITY DATA

Material: MTM248S - 7781 style glass – 42% Rw

Cure cycle: 1 hours at 125°C (257°F), 3bar (45 psi)

| Property | Test Method | Burn time | Result |
|-------------------------|--------------|----------------------|--------|
| 60 second vertical burn | FAR25.853(a) | Burn time (seconds) | 0 |
| | | Burn length (inches) | 3 |
| Smoke density | FAR25.853(d) | Ds | 80 |

Testing carried out of single ply laminates.

AVAILABILITY

MTM248S prepregs are available with a wide variety of reinforcements.

MTM[®] 248S PREPREG



STORAGE

| | |
|--------------------------|------------------------------------|
| Out life* at 21°C (70°F) | 30 days |
| Storage at -18°C (0°F) | 12 months from date of manufacture |

*Out life refers to accumulated time out of the freezer before the part is cured.

Note:

The actual freezer storage life and out life are dependent on a number of factors, including; fibre type, format and application. For certain formats, it may be possible for the storage life and out life to be longer than stated. Please contact our technical support staff for advice.

EXOTHERM

MTM[®] 248S prepregs are reactive formulations which can undergo severe exothermic heat up during the initial curing process if incorrect curing procedures are followed.

Great care must be taken to ensure that safe heating rates, dwell temperatures and lay-up/bagging procedures are adhered to, especially when moulding solid laminates in excess of 10mm (0.4in) thickness. The risk of exotherm increases with lay-up thickness and increasing cure temperature. It is strongly recommended that trials, representative of all the relevant circumstances, are carried out by the user to allow a safe cure cycle to be specified. It is also important to recognise that the model or tool material and its thermal mass, combined with the insulating effect of breather/bagging materials can affect the risk of exotherm in particular cases.

HEALTH & SAFETY

Please refer to the product MSDS for safe handling, personal protective equipment recommendations and disposal considerations.

