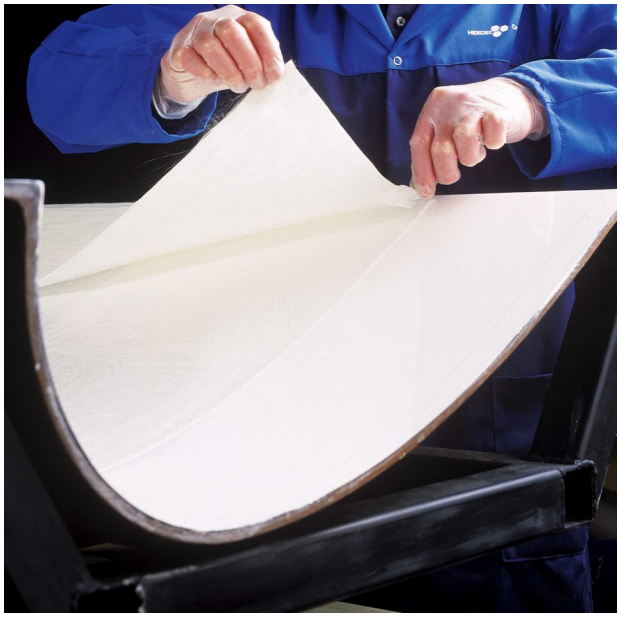
INFORMATION SHEET

How to run a good prepreg trial



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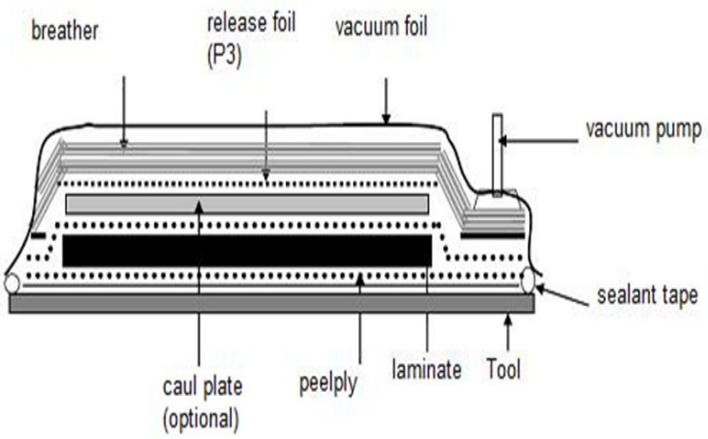
Material and Equipment (please contact Hexcel for detailed recommendations)

- A climate controlled room with temperature fixed at 23°C
- Regulated heating table (or mould) able to reach 100°C
- 3 (calibrated) thermocouples
- 1 heating insulation blanket (temperature regulation linked with mould)
- Vacuum ancillaries resisting over 100°C
  - Tubes
  - Vacuum bag
  - Perforated film (small holes) ideally P3
  - Bleeder
  - Breather
  - Peel ply
  - Sealant tape
- Software to store temperature information of mould, blanket, thermocouples
- 2 cm wide profile to be used as flanges (as high as the thickest dimension of the sample)
- Release agent and Sealer adapted to 100°C

Process for thick laminates

- Apply release agent on mould surface and profile flanges
- Apply the first peel ply layer
- Cut peel prepreg to shape
- Stack the prepreg layers (veil or grid side up) using one of the profiles as a reference for positioning
- Insert one thermocouple after the first layer
- Insert the second in the middle of the stack (in the thickest area)
- Insert the third thermocouple on top of the stack
- Place the profiles all around the sample
- Apply the second peel ply layer
- Cut perforated film to shape and place it above the peel ply
- Place the breather on top of the stack
- Place sealant tape around the sample
- Position the vacuum bag and apply vacuum
- Place insulation blanket on top



Curing thick laminates

- Heat up from room temperature to 40°C
- Stay # 30mn @ 40°C (mould temperature)
- Heat up from 40°C to 85°C (heating rate between 0.5°C/min and 2°C/min)
- Stay @ 85°C as long as the exothermic peak is not reached
- Once exothermic peak reached, heat up to desired cure temperature and maintain long enough to reach full cure
- Cool down and de-mould

This first trial is needed to determine precisely when the exotherm peak will occur.

Once you know when the exotherm peak occurs it's easy to determine when to start up again with heating to reach cure temperature.

For the same material, same thickness, in the same mould you can repeat this cure cycle and get always the same behaviour of the prepreg.

Curing of thin laminates

Some changes compared to above but basically similar

- No need for flanges because of thin laminates
- Cowl plate needed to achieve a sample with two flat and parallel surfaces
- Cure cycle can be simplified because there is no risk of exotherm in a thin laminate and after the dwell @ 40°C we can heat up directly to the desired cure temp.

How to determine the exotherm peak

- Follow on the monitor the temperature evolution of mould and mid thermocouple versus time
- Between 23°C and 85°C the temperature of mid thermocouple will follow (with a slight delay) the evolution of mould temperature
- After some time @ 85°C the reaction will start and mid thermocouple temperature will start to climb quicker (and above) mould temperature (regulated @ 85°C) and reach a maximum before decreasing once the exo-thermic reaction is over.
- This is the exothermic peak
- Some minutes after the peak it is possible to ramp up again to reach the desired cure temperature without any risk.

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Precautions for Use

The usual precautions when handling uncured synthetic resins and fine fibrous materials should be observed. A Safety Data Sheet is available for this product. The use of clean disposable inert gloves provides protection for the operator and avoids contamination of material and components.

Important

All information is believed to be accurate but is given without acceptance of liability. All users should make their own assessment of the suitability of any product for the purposes required. All sales are made subject to our standard terms of sale which include limitations on liability and other terms.