

LTF318B surfacing film employs ZPREG® selective impregnation technology to achieve a high quality surface finish on composite mould tools manufactured by a vacuum-bag process. LTF318B surface ply used in combination with ACG's LTM®217 and LTM®318-1B long out-life, vacuum-process tooling prepreg the film offers new possibilities for the manufacture of affordable, glass fibre composite tooling capable of withstanding the temperature cycles required for the processing of Vetrotex TWINTEx thermoplastic composite.

PLEASE NOTE: LTF/LTM® TOOLING MUST NOT BE USED ABOVE 200°C

This tip sheet should be read in conjunction with the following ACG Data Sheets and process manuals:

PDS1081 - ACG LTM210 Series Tooling Prepregs
PDS1187 - ACG LTF318B and LTM318-1B ZPREG Technology, 180°C Tooling Systems
TDS1001 - Manufacturing Procedure for LTM Mould Tools
TDS1005 - Tip sheet for the Manufacture of High Quality LTM Tools.
TDS1013 - LTF318B ZPREG Technology Surfacing Film for Tooling Vacuum Bag Recommendations

Using the LTF318B surface ply

1. The surface ply designation: VTF318B GF1200/GF1100
2. Allow the **Roll of surface Prepreg** to reach room temperature before opening the protective bag. **Cut sufficient material to complete the tool, re seal the roll of prepreg and place in back in the freezer, logging outlife used.**
3. Always support the roll or stand it on end vertically when it is not in use.
4. Remember to template such that the tacky (glass scrim) side is applied to the pattern.
5. Cut 45° strips for use in all corners.
6. The surface ply should be laid up such that it will extend beyond the bulk plies by at least 10mm around the full perimeter of the tool. This is essential to ensure that air paths are maintained from the surface ply into the breather pack during the curing process.
7. A 5-minute de-bulk, using a perforated P3 release film, is recommended before starting to lay-up the bulk plies. **Check laminate for any bridging in female corners, and rectify where necessary.**

Completing the Lay-up

1. The surface ply should be backed up with fully impregnated bulk plies in accordance with TDS 1001
2. The bulk ply designation: LTM217 GF0700 Rw 34% (offering low tack for easy lay up) or LTM318-1B GF0700 Rw 34% (offering an extended outlife of 30 days).
3. Allow the prepreg to reach room temperature before opening the protective bag.
4. A complete tooling laminate will typically consist of a LTF318B surface ply, (tacky glass scrim side to the pattern), five to eight bulk plies of LTM217 GF0700 or LTM318-1B GF0700 orientated at 0/90° and +/-45° to achieve a balanced laminate, then a final LTF318B surface ply (with the tacky glass scrim side uppermost) to give a balanced construction.
5. De-bulks are recommended after the first and fifth bulk plies and finally on completion of the lay-up.
6. **A perforated P3 release film must be applied to the lay-up to ensure continuity of the air paths into the breather layer during the cure process.**
7. Position the vacuum bag stack and apply full vacuum at room temperature, a minimum of 28 ins Hg vacuum pressure is required. A vacuum leak test should be performed to ensure there are no leaks in the bagging membrane.

Curing the Job

1. Transfer the bagged assembly to a cold oven and commence heating, at a maximum rate of 2°C (36°F) per minute, to 65°C (149°F).
2. Maintain 65+/-3°C for 16 hours. (For advice on alternative cure cycles please contact ACG Technical department.)
3. **If using syntactic master models cool slowly to avoid the risk of thermal cracking**

Post-cure

1. For TWINTEX processing the maximum post cure is required.
2. Post cure can be carried out free standing. **For large or planar tools we suggest supporting the tool skin in its backing structure unattached to avoid the risk of self weight distortion**
3. The temperature should be increased from room temperature at a rate of 20°C (68°F) per hour to 200°C (392°F) and held for at least two hours before cooling at a rate of 3°C (37°F) per minute.

Release

1. Remove all traces of release agent and other contaminants from the tool surface. Chlorinated solvents may be used only after the tool has undergone its final postcure.
2. Apply either one coat of release primer such as Frekote™ B15 or 3 coats of release agent such as Frekote™ 44 in accordance with manufacturer's instructions. Bake at 80°C (176°F) for 15 minutes.
3. Apply a second coat of release primer or 3 further coats of release agent. Bake for 15 minutes at 10°C above the end use temperature of the tool to a maximum of 200°C (392°F). Apply the standard component release procedure in addition to the above.

4. In the event of a build-up of release agent, resin or other surface contamination developing on the tool surface, this may be carefully removed using a fine rubbing compound.

Caution:

High tack vacuum bag sealant tape has the potential to cause damage to mould tool flange areas during its removal. Therefore, customers are advised to check the adhesion characteristics of their sealant tape prior to use and determine if removal of the tape is likely to lead to delamination. Where the potential for damage exists, a less aggressive, lower tack sealant tape should be sourced or steps taken, such as using a mould sealer or applying a flash breaker tape, to minimise the risk of damage.

