



HexBond™ 340U(SP)

Modified epoxy film adhesive for bonding
metallic and composite components



Product Data Sheet

Description

HexBond™ 340U(SP) is a high temperature modified epoxy film adhesive curing at 175°C (350°F). It was developed as a low weight film adhesive for space applications. It is suitable for bonding metal to metal, where operating temperatures are experienced up to 200°C (392°F) for short periods, or 180°C (356°F) for continuous operation. HexBond™ 340U(SP) is a hot melt film which is free from solvents and consequently has a very low volatile content.

Features

- Cures in 1 hour at 175°C (350°F)
- Good hot lap shear performance up to 180°C (356°F)
- Excellent metal-metal peel properties
- Excellent drape and handleability
- Good reticulating characteristics
- Very low volatile content and low outgassing properties
- Only available unsupported.

Applications

- Metal to metal bonding
- Composite to composite bonding
- Space applications

Form

Product Description	Areal Weights g/m ² (psf)	Support	Roll Width mm (in)	Standard Roll m ² (ft ²)
HexBond™ 340U(SP)	50 (0.010)	No	1200 (47.2)	50 (538)
HexBond™ 340U(SP)	75 (0.015)	No	1000 (39.4)	50 (538)
HexBond™ 340U(SP)	150 (0.03)	No	1000 (39.4)	50 (538)

The film is protected on one side by polythene and on the other side by release paper.

Instructions For Use

Pretreatment

It is essential that all substrates to be used are free of contamination and are in as ideal a state for bonding as possible. As pretreatment varies significantly depending on the substrates used, please refer to Hexcel's publication HexBond™ Bonding Technology for optimum procedures.

If there is to be a delay between the pretreatment and bonding of aluminium, the pretreated surface should be protected with HexBond™ 122 surface pretreatment protection solution to conserve the optimum bonding surface. This will enable bonding to be delayed for up to 2 weeks without deterioration of the pretreated surface. The correct application of HexBond™ 122 should not alter the bonding performance of HexBond™ 122 (for full application details consult the relevant data sheet).



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Application

1. Allow sufficient time for the adhesive to warm to room temperature 19°C to 27°C (60°F to 80°F) before removing the protective polythene.
2. Cut the film to the shape and size required.
3. Remove the release paper and position the adhesive on the prepared bonding surface.
4. Remove the polythene backing sheet.
5. Complete the joint assembly and apply pressure, at 140 – 700kPa (20.3-101.5 psi). For sandwich structures the pressure application should be selected to suit the type of core used. After the adhesive has cured it is advisable to maintain pressure on the bonded assembly until it has cooled sufficiently to be handled without discomfort.

Curing

HexBond™ 340U(SP) should be cured at 175±5°C (350±10°F) for 60 minutes to obtain optimum properties. Enough time should be allowed for heat to penetrate through the assembled parts to ensure that the adhesive reaches that temperature before timing starts. Cure pressures of around 140 – 700 kPa (25 – 100 psi) and heat up rates of up to 5°C (10°F) per minute are recommended during cure. After curing it is recommended that components are cooled to below 70°C (160°F) before releasing the pressure.

Mechanical Properties

All the performance values given in this data sheet are based on experimental results obtained during testing under laboratory conditions. They are typical values expected for HexBond™ 340USP prepared and cured as recommended and under the conditions indicated. They do not and should not constitute specification minima.

Metal Bonding Strengths

HexBond™ 340U(SP) at areal weights indicated in the tables were used to bond Alclad2024-T3 aluminium test specimens; the aluminium was pretreated in accordance with DTD 915B (ii) chromic/sulphuric acid pickling).

Test	Test Temperature °C (°F)	HexBond™ 340U(SP) 50g/m² (0.010psf)	HexBond™ 340U(SP) 75g/m² (0.015psf)
Lap Shear Strength MPa (psi)	22 (72) 150 (302)	31 (4495) 18 (2610)	32 (4640) 21 (3045)
Floating Roller Peel N/25mm (lb/in)	22 (72)	136 (30.5)	152 (34.1)

Outgassing

Property	Test Method	Typical Result
Total Mass Loss (TML)%		1.168
Recovered Mass Loss (RML)%		0.109
Collected Volatile Condensed Material (CVCM)%	ESA PSS-01-702	0.000



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Adhesives storage life

Shelf Life: 18 months at -18°C (0°F)
Out Life: 90 days at 19 – 27°C (66-80°F)

The storage life is considered to have expired when either of these conditions has elapsed.
Refer to the box label to determine the specific batch expiry date.

Definitions

Shelf life: The maximum storage time for HexBond™ adhesives from date of manufacture, when stored continuously in a sealed moisture-proof bag at -18°C (0°F).

Out life: The maximum accumulated time allowed at 19 – 27°C (66-80°F) between removal from the freezer for use and return to freezer after use.

Storage Conditions

HexBond™ 340U(SP) has been formulated for maximum storage life consistent with its high performance. However certain precautions can help to enhance storage life as follows:

1. When not in use rolls of film adhesive should be stored at -18°C (0°F) in their original, sealed packaging.
2. To avoid the risk of local thinning of the film under its own weight, the roll should be kept on a horizontal mandrel passed through the tube core on which the roll is wound.
3. When returning rolls to refrigeration it is essential to protect the film by sealing it within a water vapour barrier packaging material such as polythene. Original packaging should be used where possible.
4. On withdrawal from refrigeration the water vapour barrier packaging must not be removed until the roll of adhesive has reached room temperature. This may take up to 24 hours depending on the size of the roll and the temperature involved. Failure to observe this will result in the film becoming damp.
5. The film must be handled with care whilst in the frozen state since it will be brittle and easily cracked.

Volatile content

HexBond™ 340U(SP) has a very low volatile content, usually well below 1%. In practice, the loss in weight when cured is negligible and emission of volatile products is not of practical significance.

Associated products

HexBond™ 122 surface pretreatment protection solutions (primers).

HexBond™ 219/2-NA foaming film adhesive

Handling and safety precautions

In common with all HexBond™ adhesives in film form, HexBond™ 340U(SP) is particularly free from handling hazards for the following reasons:

- Film is covered on both sides by protective release paper and polythene sheet which are not removed until final component assembly. It should be cut to shape before removing the protective coverings and virtually no handling of the film is necessary.
- Low tack at normal room temperature. The film is dependent on elevated temperature for wetting-out the adherend surfaces.
- Volatile-free at normal room temperature.
- Splash-free, leak-free, spillage-free.

However, the usual precautions necessary when handling synthetic resins should be observed. A Safety Data Sheet for HexBond™ 340U(SP) is available on request.



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Release Certification

The Quality System at Hexcel Composites Duxford has been certified to ISO 9001 by Lloyd's Register Quality Assurance, and is approved by the UK Civil Aviation Authority and Ministry of Defence. Certificates of Conformity and Test Reports can be issued for batches of HexBond™ 340U(SP) on request.

For more information

Hexcel is a leading worldwide supplier of composite materials to aerospace and industrial markets. Our comprehensive range includes:

- HexTow® carbon fibers
- HexForce® reinforcements
- HiMax™ multiaxial reinforcements
- HexPly® prepgs
- HexMC®-i molding compounds
- HexFlow® RTM resins
- HexBond™ adhesives
- HexTool® tooling materials
- HexWeb® honeycombs
- Acousti-Cap® sound attenuating honeycomb
- Engineered core
- Engineered products
- Polyspeed® laminates & pultruded profiles
- HexAM™ additive manufacturing

For US quotes, orders and product information call toll-free 1-800-688-7734. For other worldwide sales office telephone numbers and a full address list, please go to:

<http://www.hexcel.com/contact>

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