



Redux® 382H

Film adhesive

Product Data

Description

Redux® 382H is a 250°F curing modified epoxy film adhesive available in both supported and unsupported versions. Redux® 382H is a versatile adhesive system suitable for bonding a wide variety of substrates with various temperature cure cycles.

Features

- Superior bonding capability on substrates with high moisture contents
- Low volatile content allows use with perforated and non-perforated core materials
- Excellent environmental resistance when tested to US Military Specification MMM-A-132
- Handling characteristics minimize shop handling and lay up times. Meets requirements of US Specifications:
 - MMM-A-132
 - MIL-A-25463
 - ASTM-E865-82

Applications

- Redux® 382H is adaptable to high and low temperature cure cycles normally associated with large scale metal to metal and sandwich panel bonding
- Redux® 382H gives superior mechanical properties on metal, wood and paper substrates

Forms

Straw-colored, light tack, flexible film adhesive available supported or unsupported (Redux 382HU)

Product Description	Areal Weight psf	Roll Width in.	Standard Roll ft ²
Redux® 382H	0.03	49	670
Redux® 382H	0.06	49	670
Redux® 382HU	0.06	49	670

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 the Hexcel publication, Redux® Bonding Technology, for optimum procedures.

If there is to be a delay between the pretreatment and bonding of aluminum, the pretreated surface should be protected with Redux® 112 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 Redux® 112 should not alter the bonding performance of Redux® 382H (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 (60°F-80°F) before removing the protective polyethylene.
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 polyethylene backing sheet.
5. Complete the joint assembly and apply pressure while the adhesive is being cured. 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 bonding assembly until it has cooled sufficiently to be handled without discomfort.

Curing

Redux® 382H should be cured at 250±5°F for 60 minutes at 275°F for 30 minutes, or at 212°F for 3 hours 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 25-50 psi and heat up rates of approximately 5°F per minute are recommended during cure. After curing it is recommended that components are cooled to below 140°F before releasing the pressure.

Mechanical Properties

The data represents average properties of Redux® 382H at 0.06 psf when cured at 250°F for 60 minutes at 30 psi MMM-A-132 and MIL-A-25463

Test	Test Temperature (°F)	Redux® 382H
Lap Shear Strength psi	-67	4500
	70	5000
	180	3900
	212	2600
Lap Shear after following exposures (psi) 30 days in tap water 30 days at 120°F (95%rH) 30 days salt spray	70	4750
	70	4750
	70	4900
Climbing Drum Peel in-lb/3in	-67	44
	70	60
	180	52
Flatwise Tensile psi	-67	1100
	70	1200
	180	850

Storage

Redux® 382H has been formulated for maximum storage life consistent with its high performance. Certain precautions, however, will help to enhance that storage life as follows:

1. When stored at room temperature (less than 80°F) it should be kept on a horizontal mandrel passed through the tube core on which the roll is wound. This avoids the risk of local thinning of the film under the weight of the roll.
2. When storing under refrigeration the original packaging should be retained if possible. When returning to the refrigerator after use, it is essential to protect the film with a water vapor barrier packaging material such as polyethylene.
3. On withdrawal from the refrigerator the water vapor barrier packaging should 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).
4. The film should be handled with care while in the frozen state since it will be brittle and easily cracked.

On receipt, Redux® 382H will have a storage life of at least 6 months at 0°F plus an additional shop life of 10-15 days at below 80°F.

Volatile content

Redux® 382H 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

Redux® 112 surface pretreatment protection solution (primer)
Redux® 212/NA and 206/NA foaming film adhesives

Handling and safety precautions

In common with all Redux® adhesives in film form, Redux® 382H is particularly free from handling hazards for the following reasons:

- Film is covered on both sides by protective release paper and polyethylene 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.
- Virtually tack-free (dry) 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 Material Safety Data Sheet for Redux® 382H is available on request.



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 Defense. Certificates of Conformity and Test Reports can be issued for batches of Redux® 382H on request.

Important

Hexcel Corporation believes, in good faith, that the technical data and other information provided herein is materially accurate as of the date this document is prepared. Hexcel reserves the right to modify such information at any time. The performance values in this data sheet are considered representative but do not and should not constitute specification minima. The only obligations of Hexcel, including warranties, if any, will be set forth in a contract signed by Hexcel or in Hexcel's then current standard Terms and Conditions of Sale as set forth on the back of Hexcel's Order Acknowledgement.

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Hexcel is a leading worldwide supplier of composite materials to aerospace and other demanding industries. Our comprehensive product range includes:

- Carbon Fiber
- RTM Materials
- Honeycomb Cores
- Carbon, glass, aramid and hybrid preregs
- Structural Film Adhesives
- Honeycomb Sandwich Panels
- Engineered Core
- Reinforcement Fabrics

For US quotes, orders and product information, call toll-free: 1-800-688-7734.

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