Redux® 840

One-part foaming epoxy paste adhesive

Product Data

Description

Redux® 840 is a black one-part, foaming, epoxy paste adhesive that is thixotropic.

Features

- Provides a shear-carrying connection across any discontinuities in bonded sandwich panels
- Maximum service temperature of 80°C / *176°F*
- Can cure at temperatures from 120°C to 175°C / *248°F to 347°F*
- Suitable for application by spatula or extrusion
- Very low volatile content

Redux 840 is available in 3 litre packs, 25 litre cans and 210 litre drums.

Applications

- Bonding segments of honeycomb core.
- Bonding edges of honeycomb core to structural edge members in bonded sandwich panels.
- Panel section bonding

Uncured Adhesive Properties

Property	Units		Test Method
Colour	na	Black	Visual
Density @ 22°C	g/cc	ca. 1.08	EN 542
Density @ 72°F	*lb/ft³*	ca. 67.4	
Slump properties @ 22°C	mm	3	BMS 5-28
Slump properties @ 52°C	mm	50	
Slump properties @ 72°F	*inch*	*0.12*	
Slump properties @ 125°F	*inch*	*1.97*	

Redux 840

Instructions For Use

1. **Pretreatment**

   All substrates must be free of contamination and in as ideal a state for bonding as possible. Pretreatment varies depending on the chosen substrates. Please refer to the Hexcel Composites publication Redux Bonding Technology for optimum procedures.

2. **Application**

   Redux 840 can be applied with a spatula to the pretreated and dried substrates. An even contact pressure should be applied to the joint.

3. **Curing**

Cure Cycles		
Time (minutes)	Temperature (°C)	*Temperature (°F)*
60	120	*248*
30	150	*302*
20	175	*347*

Expansion Ratios				
Cure Cycle	Units	60 minutes @ 120°C / *248°F*	30 minutes @ 150°C / *302°F*	20 minutes @ 175°C / *347°F*
5°C / min Heat-Up Rate	% increase	50 - 80	60 - 110	70 - 110

4. **Cleaning**

   Many industrial solvents, such as acetone and denatured alcohol, are suitable for removing uncured adhesive. Before use of solvents, please refer to the suppliers' Material Safety Data Sheets.

Storage – Test Method EN6041

- At -18°C / *0°F*, Redux 840 has a shelf life of 12 months, when stored in sealed containers.
- At 5°C / *41°F*, Redux 840 has a shelf life of 100 days, when stored in sealed containers.
- At 30°C / *86°F* & 75% RH, Redux 840 has a shelf life of 35 days, when stored in sealed containers.

Mechanical Bonding Performance

Double Lap Shear Strength – Test Method - Hexcel IS202 - Dry

Test Temperature		60 minutes @ 120°C / *248°F*		30 minutes @ 150°C / *302°F*		20 minutes @ 175°C / *347°F*	
°C	*°F*	MPa	*psi*	MPa	*psi*	MPa	*psi*
22	*72*	13.3	*1929*	15.5	*2248*	13.6	*1973*
80	*176*	11.0	*1595*	11.4	*1653*	11.1	*1610*

Double Lap Shear Strength – Test Method - Hexcel IS202 - 1000 hours @ 80°C / *176°F*, 100% RH

Test Temperature		60 minutes @ 120°C / *248°F*		30 minutes @ 150°C / *302°F*		20 minutes @ 175°C / *347°F*	
°C	*°F*	MPa	*psi*	MPa	*psi*	MPa	*psi*
22	*72*	9.93	*1440*	6.70	*972*	9.87	*1432*

Tube Shear Strength – Test Method - EN2667-2 - Dry

Test Temperature		60 minutes @ 120°C / *248°F*		30 minutes @ 150°C / *302°F*		20 minutes @ 175°C / *347°F*	
°C	*°F*	MPa	*psi*	MPa	*psi*	MPa	*psi*
-55	*-67*	18.9	*2741*	18.5	*2683*	15.1	*2190*
22	*72*	13.2	*1914*	15.5	*2248*	12.3	*1784*
80	*176*	11.1	*1610*	9.05	*1313*	7.62	*1105*

Short Beam Shear Strength – Test Method - DMS 2180 - Dry

Test Temperature		60 minutes @ 120°C / *248°F*		30 minutes @ 150°C / *302°F*		20 minutes @ 175°C / *347°F*	
°C	*°F*	MPa	*psi*	MPa	*psi*	MPa	*psi*
22	*72*	6.2	*899*	6.3	*914*	6.3	*914*

Cured Neat Resin Properties

Glass Transition - Test Method EN 6064	Tg E' onset		Tg Tan δ	
Cure Cycle	°C	*°F*	°C	*°F*
60 minutes @ 120°C / *248°F*	113	*235*	134	*273*
30 minutes @ 150°C / *302°F*	114	*237*	134	*273*
20 minutes @ 175°C / *347°F*	114	*237*	132	*270*

Block Compression – Test Method ASTM D695	Block Compression Strength @ 22°C / *72°F*	
Cure Cycle	MPa	*psi*
60 minutes @ 120°C / *248°F*	31	*4496*
30 minutes @ 150°C / *302°F*	12	*1740*
20 minutes @ 175°C / *347°F*	11	*1595*

Foamed/Cured Density	Density @ 22°C / *72°F*	
Cure Cycle	g/cc	*lb/ft³*
60 minutes @ 120°C / *248°F*	0.76	*47*
30 minutes @ 150°C / *302°F*	0.55	*34*
20 minutes @ 175°C / *347°F*	0.53	*33*

Handling and Safety Precautions

Redux products are safe to use providing that certain precautions, normally taken when handling chemicals, are observed. The uncured materials must not be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin. Impervious rubber or plastic gloves should be worn in addition to eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended.

Before using Redux 840, please consult the Material Safety Data Sheet.

Release Certification

The Quality System at Hexcel Composites Duxford has been certified to ISO9001 by Lloyds 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 Redux 840 on request.

Important

All information is believed to be accurate but is given without acceptance of liability. 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 important terms.

Performance values given in this data sheet are based on experimental, routine Quality Control and Specification testing results obtained under laboratory conditions. They are typical values expected for Redux 840 prepared and cured as recommended and under the conditions indicated. They do not and should not constitute specification minima.

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