



# HexBond™ ST1480

## Epoxy Film Adhesive



### Product Data Sheet

#### Description

HexBond™ ST1480 is a modified epoxy film adhesive. This 180°C/356°F cure film adhesive is specially designed for bonding metal-to-metal and composite-to-composite structures. Its formulation, based on epoxy resin, provides high peel strength and toughness with high shear strength.

#### Features

- Excellent metal-to-metal peel strength and composite-to-composite bonding
- 180°C/356°F cure
- Service temperature from -55°C to 150°C (-67°F to 302°F)
- Excellent moisture resistance in high humidity environments
- Available in a wide range of film thicknesses

#### Applications

- Metal-to-metal bonding
- Sandwich construction
- Composite-to-composite bonding

#### Form

|                | Areal Weight<br>(psf // g/m <sup>2</sup> ) | Color | Support                                      | Roll Width (mm) |
|----------------|--|-------|--|-----------------|
| ST1480.03 NW   | 0.03 / 146                                 | Grey  | Polyester non-woven<br>(17g/m <sup>2</sup> ) | 915             |
| ST1480.06 NW   | 0.06 / 292                                 | Grey  | Polyester non-woven<br>(17g/m <sup>2</sup> ) | 915             |
| ST1480-03 UNS  | 0.03 / 146                                 | Grey  | -  | 915             |
| ST1480.02 UNS  | 0.02 / 100                                 | Grey  | -  | 915             |
| ST1480.015 UNS | 0.015 / 75                                 | Grey  | -  | 915             |

#### Instructions For Use

Refer to the Material Safety Data Sheet before handling.

- Store at or below -18°C/0°F
- To avoid any moisture, allow the adhesive to warm at room temperature before opening the waterproof polyethylene bag
- Bonding surfaces should be clean, dry and properly prepared
- Remove protective liners before bonding (release paper and polyethylene film)
- Typical cure cycle:
  - 90 min at 180°C/350°F
  - Heat-up rate: 2°C/min
  - Pressure: 3 bar (44 psi) during whole cycle
  - 4 hours at 150°C/302°F acceptable
- Shelf-life: 12 months from date of shipment at recommended storage conditions



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#### Bond Strength Performance After Cure <sup>(1)</sup>

| Test   | Test Temperature<br>(°C / °F) | ST1480.03 NW<br>146g/m <sup>2</sup> (0.03psf)  |                        | ST1480.06<br>NW<br>292g/m <sup>2</sup><br>(0.06psf) | ST1480.03<br>UNS<br>146g/m <sup>2</sup><br>(0.03psf) | ST1480.02<br>UNS<br>100g/m <sup>2</sup><br>(0.02psf) | ST1480.015<br>UNS<br>75g/m <sup>2</sup><br>(0.015psf) |
|--|-------------------------------|--|------------------------|---|--|--|---|
| Curing Cycle   | -                             | 90 min at 180°C /<br>356°F   | 4h at 150°C /<br>302°F | 90 min at 180°C / 356°F                             |  |  |   |
| Single<br>Lap Shear<br>Strength<br>Composite/<br>Composite <sup>(2)</sup><br>(MPa / psi) | 23 / 73                       | 33.8 / 4900  | -                      | 32.6 / 4700   | -  | -  | -   |
|  | 80 / 176                      | 29.7 / 4300  |                        | 30.1 / 4300   |  |  |   |
|  | 135 / 275                     | 21.1 / 3060  |                        | 24.4 / 3500   |  |  |   |
| Single<br>Lap Shear<br>Strength<br>Metal/Metal <sup>(3)</sup><br>(MPa / psi)             | -55 / -67                     | 27.2 / 3950  |                        | 29.3 / 4200   | -  | -  | -   |
|  | 23 / 73                       | 22.3 / 3230  | 21.2 / 3070            | 28.5 / 4100   | 29.1 / 4200  | 26.8 / 3900  | 25.4 / 3700   |
|  | 80 / 176                      | -  | -                      | 27 / 3900   | -  | -  | -   |
|  | 120 / 248                     | 19.8 / 2870  | 20 / 2900              | 25.8 / 3740   | 23.3 / 3350  | 20.2 / 2900  | 18.7 / 2700   |
|  | 150 / 302                     | 16.1 / 2300  | 16 / 2300              | 23.1 / 3350   | 19.9 / 2900  | 17.4 / 2500  | 16.1 / 2300   |
|  | 180 / 356                     | 9.9 / 1450   | 10.2 / 1480            | -   | 13.5 / 1950  | 11.7 / 1700  | 10.7 / 1550   |
| Floating Roller<br>Peel <sup>(4)</sup><br>(N / 25mm)                                     | 23 / 73                       | 125  |                        | 113   | 85   | 100  | 75  |
| Glass<br>Transition<br>Temperature<br>Tg Onset<br>(°C/°F)                                | -                             | 193 / 379 (curing cycle 90 min at 180°C / 356°F)<br>180 / 356 (curing cycle 4h at 150°C / 302°F) |                        |   |  |  |   |

<sup>(1)</sup> Cure cycle: 90 min at 180°C/356°F - Heat-up rate: 2°C/min - Pressure: 3 bar (44 psi)

<sup>(2)</sup> According to AITM 1-0019, on HexPly® UD/M21/35%/268/T700GC (Hexcel) co-bonded

<sup>(3)</sup> According to EN 2243-1, on aluminum 2024T3 clad treated with sulfo-chromic acid etch

<sup>(4)</sup> According to EN 2243-2, on aluminum 2024T3 clad treated with sulfo-chromic acid etch



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#### Humidity Exposure

| Test  | Test Temperature<br>(°C / °F) | Exposure                                | ST1480.03 NW<br>146g/m <sup>2</sup> (0.03psf) | ST1480.06<br>NW<br>292g/m <sup>2</sup><br>(0.06psf) | ST1480.03<br>UNS<br>100g/m <sup>2</sup><br>(0.03psf) | ST1480.02 UNS<br>100 g/m <sup>2</sup><br>(0.02psf) | ST1480.015<br>UNS<br>75g/m <sup>2</sup><br>(0.015psf) |
|---|-------------------------------|---|---|---|--|--|---|
| 90 min at 180°C / 356 °F                                |                               |   |   |   |  |  |   |
| Single Lap Shear Strength                               | 23 / 73                       | 2000 hours<br>70°C /<br>158°F<br>85% RH | 30.3 / 4400                                   | -   | 29.9 / 4300  |  |   |
| Composite/<br>Composite<br>( <sup>2</sup> ) (MPa / psi) | 80 / 176                      |   | 26.5 / 3800                                   | -   | 21.8 / 3100  |  |   |
| Single Lap Shear Strength                               | 23 / 73                       |   | 21.2 / 3100                                   | 22.0 / 3200   | -  | 25.6 / 3700  | 24.5 / 3500   |
| Metal/Metal<br>( <sup>3</sup> ) (MPa / psi)             | 120 / 248                     | 2000 hours<br>70°C /<br>158°F<br>85% RH | 14.5 / 2100                                   | 14.2 / 2050   | -  | 15.5 / 2250  | 14.8 / 2150   |
|   | 150 / 302                     |   | 7.2 / 1050                                    | 7.1 / 1030  | -  | 7.9 / 1150   | 8.6 / 1250  |
| Glass Transition Temperature<br>Tg Onset<br>(°C/°F)     | -                             |   | 119 / 246                                     |   |  |  |   |
| Single Lap Shear Strength                               | 23 / 73                       | 2000 hours<br>70°C /<br>158°F           | 28.9 / 4200                                   | 30.5 / 4400   |  |  |   |
| Composite/<br>Composite<br>( <sup>2</sup> ) (MPa / psi) | 80 / 16                       |   | 21.3 / 3100                                   | 22.8 / 3300   |  |  |   |
| Glass Transition Temperature<br>Tg Onset<br>(°C / °F)   | -                             |   | 111 / 232                                     |   |  |  |   |

#### Fluid Exposure

| Test                                     | Test Temperature<br>(°C / °F) | Exposure  | ST1480.03 NW<br>46g/m <sup>2</sup> (0.03psf) | ST1480.06 NW<br>292g/m <sup>2</sup> (0.06psf) |
|--|-------------------------------|---|--|---|
| Single Lap Shear Strength                | 23 / 73                       | 2000 hours<br>70°C in hydraulic fluid                   | 18 / 2600                                    | 25.9 / 3800                                   |
| Metal/Metal ( <sup>3</sup> ) (MPa / psi) | 80 / 176                      |   | 14.2 / 2060                                  | 18.6 / 2700                                   |
| Single Lap Shear Strength                | 23 / 73                       | 2000 hours<br>50°C in hydraulic fluid/<br>water mixture | 20.4 / 300                                   | 28.2 / 4100                                   |
| Metal/Metal ( <sup>3</sup> ) (MPa / psi) | 80 / 176                      |   | 19.1 / 2770                                  | 23.5 / 3400                                   |
| Single Lap Shear Strength                | 23 / 73                       | 24 hours<br>23°C in solvent                             | 23.2 / 3300                                  | 28.2 / 4100                                   |
| Metal/Metal ( <sup>3</sup> ) (MPa / psi) | 80 / 176                      |   | 21.7 / 3150                                  | 25.6 / 3700                                   |

(<sup>1</sup>) Cure cycle: 90 min at 180°C/356°F - Heat up rate: 2°C/min - Pressure: 3 bar (44 psi)

(<sup>2</sup>) According to AITM 1-0019, on HexPly® UD/M21/35%/268/T700GC (Hexcel) co-bonded

(<sup>3</sup>) According to EN 2243-1, on aluminum 2024T3 clad treated with sulfo-chromic acid etch

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#### Physical-Chemical Properties

Rheometer TA instrument AR2000

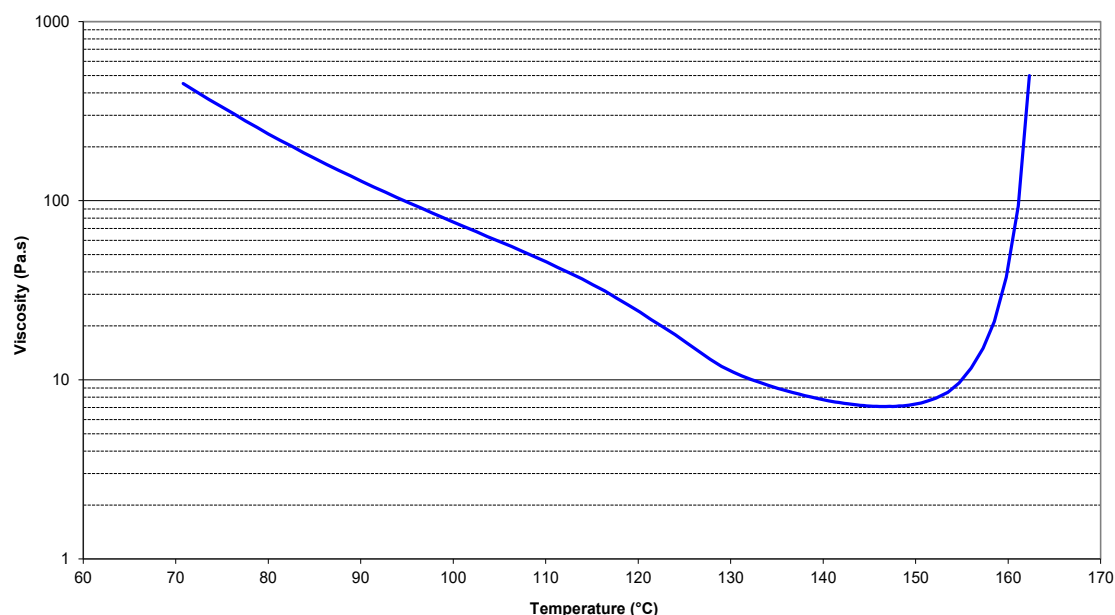
Test settings: Parallel plate 25mm

Temperature ramp: 2°C/min, 10% strain

Frequency: 10 rad/s

Gap: 600µm

ST1480 viscosity profile



This information is provided for informal purposes only, without legal responsibility and does not constitute a specification. Users are expected to perform adequate verification and testing to ensure that materials meet required specification.

#### For more information

Hexcel is a leading worldwide supplier of composite materials to aerospace and industrial markets.

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- HexTow® carbon fibers
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- Acousti-Cap® sound attenuating honeycomb
- HexForce® reinforcements
- HexFlow® RTM resins
- Engineered products
- HiMax™ multiaxial reinforcements
- HexTool® tooling materials
- Polyspeed™ laminates
- HexPly® prepregs
- HexWeb® honeycombs
- Engineered core
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