

3M

Scotch-Weld™

Structural Adhesive Film

SF100

Technical Datasheet

January 2009

Introduction

3M™ Scotch-Weld™ Structural Adhesive Film SF100 is a toughened, thermosetting epoxy adhesive formulated to provide durability in metal and composite bonding. Properties of Scotch-Weld SF100 film are balanced to provide excellent performance with preferred shop handling characteristics. Advantages are:

- Excellent hot/wet durability
- Vacuum bag curable
- Minimum 45 days out-time at ambient conditions
- Broad based compatibility with metal & composite
- Controlled flow for minimum flash
- Versatile cure cycles
- Resistant to prebond humidity in cured and uncured composites
- High fracture toughness and peel strength
- Compatible with both waterborne and solvent based adhesive primers

Available Constructions

| Construction | Weight | | Nominal Thickness | |
|--------------|--------------------|------------------|-------------------|-----|
| | lb/ft ² | g/m ² | mils | mm |
| SF100 OST | 0.060 | 294 | 10 | .25 |
| SF100 M | 0.085 | 417 | 13 | .33 |

Code: OST = One Side Tacky with Non-Woven Carrier on Low Tack Surface
M = Non-Woven Supporting Carrier (Matte)
SF100 films are off-white in their uncured and fully cured forms.

3M™ Scotch-Weld™ Structural Adhesive Film SF100 Technical Datasheet

Typical Product Performance

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

I. Typical 3M™ Scotch-Weld™ Structural Adhesive Film SF100 Properties upon Complete Cure:

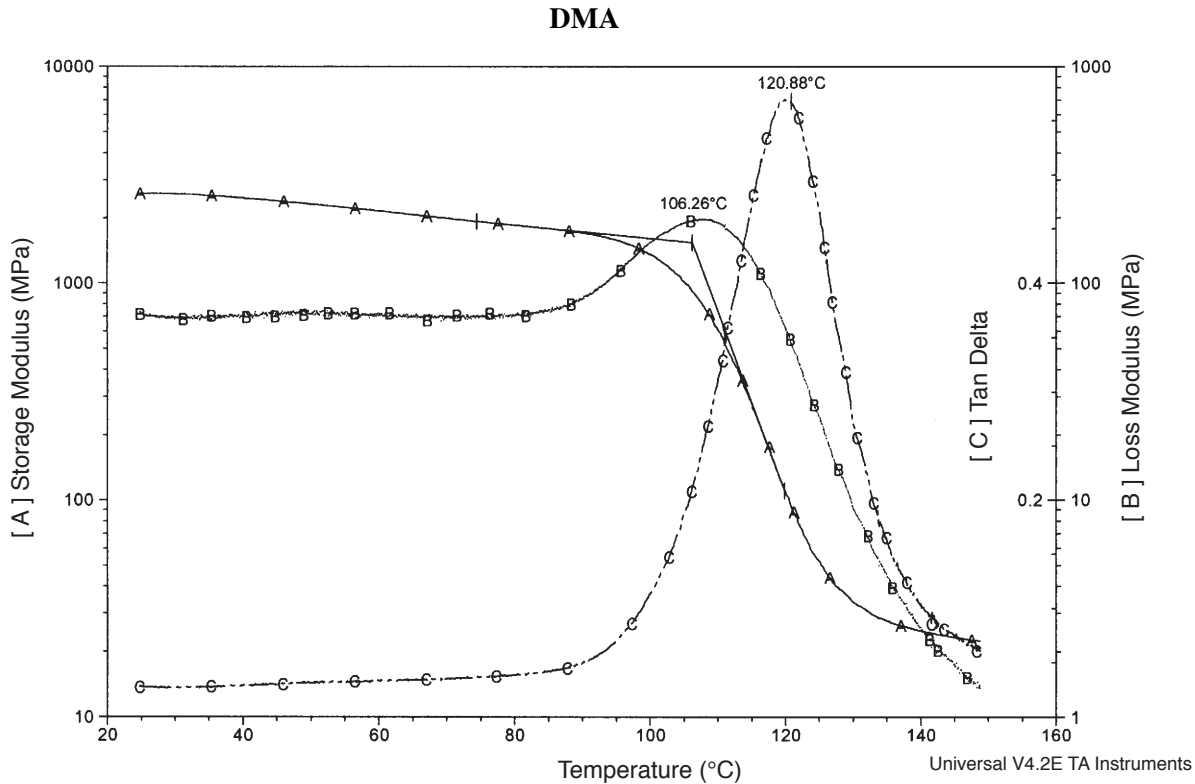
| Property | Typical Value | Method |
|---------------------------------------|---------------|---------------------|
| Glass Transition Temperature (Tg) Dry | 250°F (121°C) | DMA @ 2°C/min. ramp |

DMA Performance

TA Instruments Thermal Analyzer — DMA Multi-Frequency - Single Cantilever

Method Log:

- 1: Data storage: Off
- 2: Equilibrate at 25.00°C
- 3: Data storage: On
- 4: Ramp 2.00°C/min to 150.00°C
- 5: End of method.



| | Dry Tg [°C] (Ambient) | | Wet Tg [°C] (1000h @ 160°F) | |
|-------|-----------------------|---------------------|-----------------------------|---------------------|
| | Onset [°C] | Tan Delta Peak [°C] | Onset [°C] | Tan Delta Peak [°C] |
| SF100 | 106 | 121 | 76 | 84 |

*Tested @ 2°C min TA Instruments Thermal Analyzer — DMA Multi-Frequency - Single Cantilever

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Typical Product

Performance (*continued*)

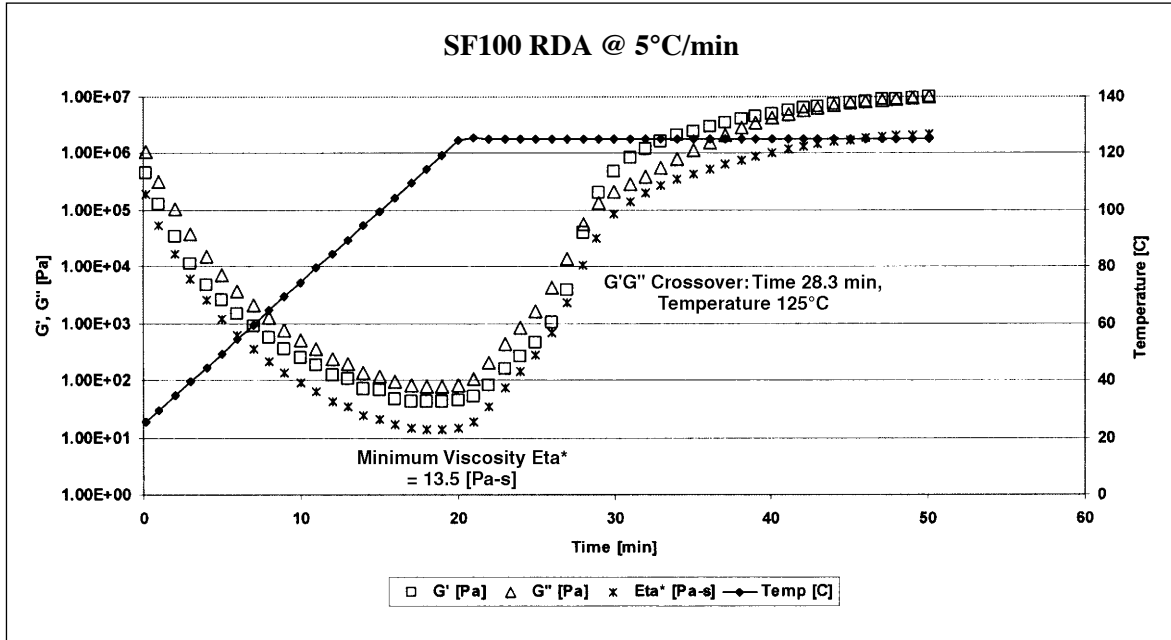
Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

II. Parallel Plate RDA

Test Equipment: Rheometric Dynamic Analyzer (RDA)

3M™ Scotch-Weld™ Structural Adhesive Film SF100 adhesive

1 Hz frequency, 5°C/min heat up rate, 25 mm parallel plates, 1% initial strain, strain adjustment 100%.



III. Thick Adherend Lap Shear Properties

Cincinnati Testing Laboratories, Inc.

Report #0145-6844.

| Sample | Test Condition | Bondline Thickness Mean [in] | Peak Load [lbf] | Shear Strength [psi] | Shear Modulus [Mpsi] | SlopeG [lbf/in] | SlopeR [lbf/in] | Failure Location |
|---------|----------------|------------------------------|-----------------|----------------------|----------------------|-----------------|-----------------|------------------|
| SF100 | -67°F | 0.012 | 4660 | 9635 | 0.194 | 6216400 | 4866729 | 100% cohesive |
| Std Dev | | 0.001 | 53 | 76 | 0.009 | 3801054 | 264760 | |
| SF100* | 180°F | 0.011 | 1435 | 2939 | 0.043 | 1586744 | 1500681 | 100% cohesive |
| Std Dev | | 0.001 | 88 | 186 | 0.004 | 59346 | 68641 | |

*Pre-Conditioned 30 days/160°F/85% relative humidity.

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Typical Product Performance (continued) **Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

IV. Metal to Metal - Overlap Shear Strength - ASTM D1002

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)

Primer: 3M™ Scotch-Weld™ Structural Adhesive Primer EW-5000

Metal: 2024-T3 bare - FPL etched and phosphoric acid anodized

| Test Temperature | SF100 | |
|------------------|-------|-----|
| | PSI | MPa |
| -67°F (-55°C) | 6400 | 44 |
| 75°F (24°C) | 6100 | 42 |
| 180°F (82°C) | 4600 | 31 |
| 250°F (121°C) | 2300 | 16 |

V. Metal to Metal Wide Area Blister Detection Shear Strength - ASTM D3165

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)

Primer: Scotch-Weld EW-5000 Primer

Metal: 2024-T3 Bare 0.063" thick - FPL etched and phosphoric acid anodized

| Test Temperature | SF100 | |
|------------------|-------|-----|
| | PSI | MPa |
| 75°F (24°C) | 5400 | 37 |
| 180°F (82°C) | 3400 | 24 |

VI. Overlap Shear Strength - Composite - ASTM D1002

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)

Pre-cured with Boeing BMS 8-79 prepreg

| Test Temperature | SF100 | |
|------------------|-------|-----|
| | PSI | MPa |
| 75°F (24°C) | 5500 | 38 |
| 180°F (82°C) | 3800 | 26 |

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Typical Product Performance (*continued*) **Note:** The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

VII. Metal to Metal Floating Roller (Bell) Peel Strength - ASTM D3167

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)
Primer: Scotch-Weld EW-5000 Primer
Metal: 2024-T3 Bare FPL Etched and phosphoric acid anodized 0.025" to 0.063" Aluminum
Peel Rate: 6"/min.

| Test Temperature | SF100 | |
|------------------|-------|--------|
| | PIW | N/25mm |
| -67°F (-55°C) | 49 | 218 |
| 75°F (24°C) | 77 | 343 |
| 180°F (82°C) | 84 | 374 |
| 250°F (121°C) | 73 | 325 |

VIII. Metal to Honeycomb Climbing Drum Peel Strength - ASTM D1781

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)
Primer: Scotch-Weld EW-5000 Primer
Skins: 2024-T3 0.020" Thick Aluminum - FPL Etched and phosphoric acid anodized
Core: 1/4" cell - 1/2" thick - 5052 alloy - 4 mil foil - non-perforated
Test Rate: 1.0"/min. (cross head speed)

| Test Temperature | in-lb/3 in. | N m/75mm |
|------------------|-------------|----------|
| 75°F (24°C) | 68 | 8.1 |

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Typical Product Performance (continued) **Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

IX. Composite Honeycomb Climbing Drum Peel - ASTM D1781

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)
 Co-cured with Boeing BMS 8-124, Type 1, Class 1, Grade 8, .5" thick honeycomb and
 Boeing BMS 8-79 prepreg

| Test Temperature | SF100 | |
|------------------|-------------|-----------|
| | in-lb/3 in. | N m/75 mm |
| 75°F (24°C) | 50 | 6 |

X. Metal to Honeycomb Flatwise Tensile - ASTM C-297

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)
Primer: 3M™ Scotch-Weld™ Structural Adhesive Primer EW-5000
Metal: Skins: 2024-T3 Aluminum - FPL etched and phosphoric acid anodized
Core: 1/4" cell - 1/2" thick - 5052 alloy - 4 mil foil - non-perforated

| Test Temperature | SF100 | |
|------------------|-------|-----|
| | PSI | MPa |
| 75°F (24°C) | 1000 | 7 |

Composite Face Sheets Co-Cured

Cure Cycle: 250°F (121°C) - 90 minutes - 45 psig - 4.5°F/min rise rate (2.1°C/min)
 Co-cured with 1/2" HRP, 3/16" cell size, 8 lb/ft³ Boeing BMS 8-79 prepreg

| Test Temperature | SF100 | |
|---------------------------------|-------|-----|
| | PSI | MPa |
| -67°F (-55°C) | 1272 | 9 |
| 75°F (24°C) | 1310 | 9 |
| 180°F (82°C) | 657 | 4 |
| 15 days 160°F (71°C) / 100 % RH | 908 | 6 |

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Typical Product

Performance (*continued*)

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

XI. Out Time Performance

1. Exposure at 77°F (23°C) / Ambient Humidity

Out Time Performance - Overlap Shear (OLS)

3M™ Scotch-Weld™ Structural Adhesive Film SF100 was exposed at 77°F (23°C)/ambient humidity for the number of days specified below before bonding - using 3M™ Scotch-Weld™ Structural Adhesive Primer EW-5000. Scotch-Weld SF100 film. OLS tested in accordance with ASTM D1002. Floating Roller Peel (FRP) tested in accordance with ASTM D3167-97.

Overlap Shear - SF100

| Test Temperature | Control | | 14 Days | | 32 Days | | 42 Days | | 60 Days | |
|------------------|---------|-----|---------|-----|---------|-----|---------|-----|---------|-----|
| | PSI | MPa | PSI | MPa | PSI | MPa | PSI | MPa | PSI | MPa |
| 77°F (23°C) | 6838 | 47 | 6787 | 47 | 6395 | 44 | 6821 | 47 | 6919 | 48 |
| 180°F (82°C) | 4749 | 33 | 5262 | 36 | 5517 | 38 | 4883 | 34 | 5792 | 40 |
| 250°F (121°C) | 3408 | 23 | 2491 | 17 | 2997 | 21 | 3606 | 25 | 4226 | 29 |

OLS was measured on 1" wide, 1/2" overlap specimen cut from 0.063" thick 4" x 7" bonded panels of FPL etched (ASTM D2674) and phosphoric acid anodized (ASTM D3933) 2024-T3 bare aluminum.

Scotch-Weld EW-5000 primer bake cycle: 30 min. air dry followed by 60 min. bake at 250°F (121°C).

Scotch-Weld SF100 film cure cycle: 4.5°F/min. rise to 250°F. Hold 90 min. at 250°F. 45 psi pressure. 5°F/min. cool down. Vacuum vented at 15 psi.

Out Time Performance – Floating Roller Peel

3M™ Scotch-Weld™ Structural Adhesive Film SF100 was exposed at 77°F (23°C) / ambient humidity for the number of days specified below before bonding. Test panels were primed using 3M™ Scotch-Weld™ Structural Adhesive Primer EW-5000. FRP was tested in accordance with ASTM D3167.

Floating Roller Peel - lb/in (kN/m) - SF100

| Test Temperature | Control | | 30 days | | 60 days | | 90 days | | 120 days | |
|------------------|---------|------|---------|------|---------|------|---------|------|----------|------|
| | PIW | kN/m | PIW | kN/m | PIW | kN/m | PIW | kN/m | PIW | kN/m |
| 77°F (23°C) | 26 | 5 | 26 | 5 | 26 | 5 | 28 | 5 | 29 | 5 |
| 180°F (82°C) | 33 | 6 | 35 | 6 | 32 | 6 | 36 | 6 | 37 | 6 |
| 250°F (121°C) | 33 | 6 | 37 | 6 | 35 | 6 | 35 | 6 | 37 | 6 |

FRP was measured on 1/2" wide specimens cut from 3" x 8" x 0.063" 2024-T3 bare, FPL etched and phosphoric acid anodized aluminum panels bonded to 3" x 10" x 0.025" 2024-T3 bare, FPL etched and phosphoric acid anodized (ASTM D3933) aluminum panels.

Scotch-Weld EW-5000 primer bake cycle: 30 min. air dry followed by 60 min. bake at 250°F (121°C).

Scotch-Weld SF100 film cure cycle: 4.5°F/min. rise to 250°F. Hold 90 min. at 250°F. 45 psi pressure. 5°F/min. cool down. Vacuum vented at 15 psi.

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Typical Product Performance (continued)

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Prebond Out Time Data - Minimum Viscosity vs. Out-Time

3M™ Scotch-Weld™ Structural Adhesive Film SF100 was exposed at 77°F (23°C) / ambient humidity for the number of days specified below before testing.

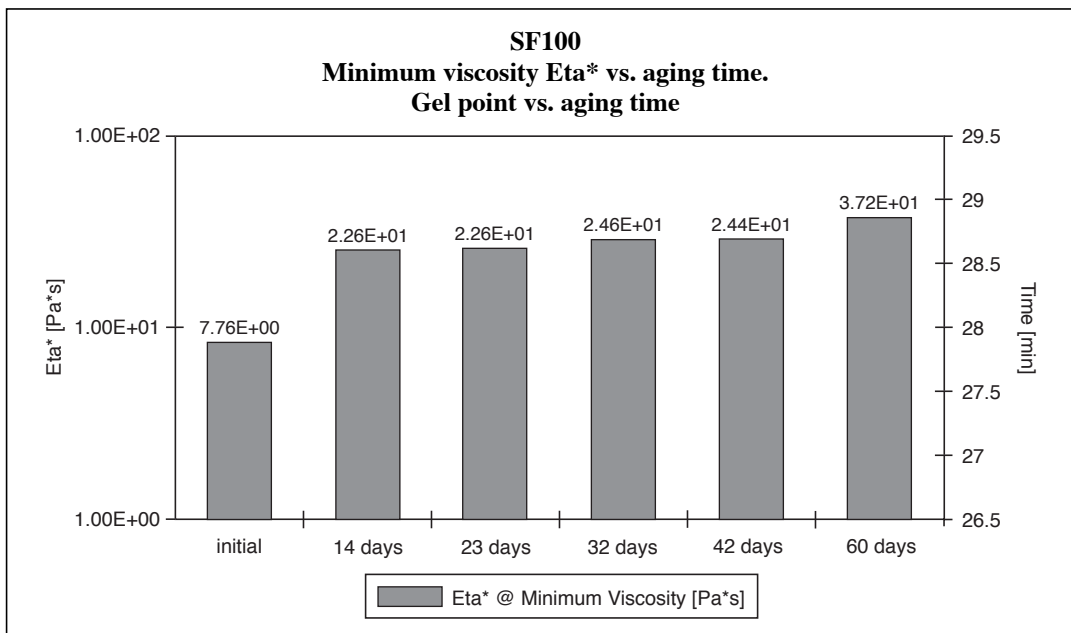
Test Equipment: Rheometric Dynamic Analyzer

Frequency = 1Hz

Heat-Up Rate = 5°C/min.

Strain Rate = 0.2%

Date Collection Frequency = 30 sec.



2. Exposure at 90°F (32°C) / 50% Relative Humidity

Prebond Out Time - OLS

3M™ Scotch-Weld™ Structural Adhesive Film SF100 was exposed at 90°F (32°C) / 50% relative humidity for the number of days specified below before bonding - using 3M™ Scotch-Weld™ Structural Adhesive Primer EW-5000. OLS tested in accordance with ASTM D 1002.

Overlap Shear

| Test Temperature | Control | | 28 Days | |
|------------------|---------|-----|---------|-----|
| | PSI | MPa | PSI | MPa |
| 180°F (82°C) | 4862 | 34 | 5459 | 38 |
| 250°F (121°C) | 3786 | 26 | 4123 | 28 |

OLS was measured on 1" wide, 1/2" overlap specimen cut from 0.063" thick 4" x 7" bonded panels of FPL etched (ASTM D2674) and phosphoric acid anodized (ASTM D3933) 2024-T3 bare aluminum.

Scotch-Weld EW-5000 primer bake cycle: 30 min. air dry followed by 60 min. bake at 250°F (121°C).

Scotch-Weld SF100 film cure cycle: 4.5°F/min. rise to 250°F. Hold 90 min. at 250°F. 45 psi pressure. 5°F/min. cool down. Vacuum vented at 15 psi.

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Typical Product

Performance (*continued*)

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Prebond Out Time Data - Minimum Viscosity vs. Out-Time

3M™ Scotch-Weld™ Structural Adhesive Film SF100 was exposed at 90°F (32°C) / 50% relative humidity for the number of days specified below before testing.

Test Equipment: Rheometric Dynamic Analyzer

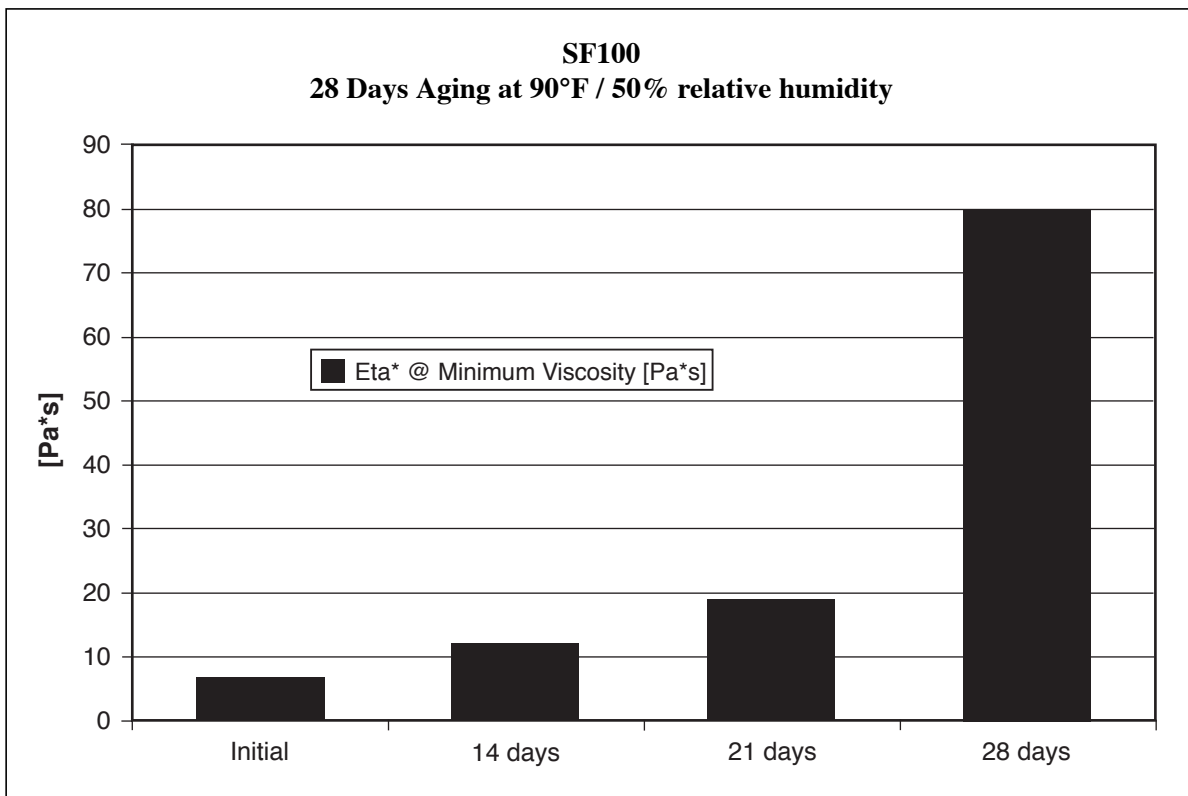
Frequency = 1Hz

Heat-Up Rate = 5°C/min.

Strain Rate = 0.2%

Date Collection Frequency = 30 sec.

| | Time @ Minimum Viscosity Eta* [min] | Eta* @ Minimum Viscosity [Pa*s] |
|----------------|--|--|
| Initial | 19.317 | 6.93 |
| 14 days | 19.333 | 1.29E+01 |
| 21 days | 19.017 | 1.95E+01 |
| 28 days | 18.317 | 8.00E+01 |



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Typical Product Performance (continued) **Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.**

XII. Typical Vacuum Cure Performance

Adhesive: 3M™ Scotch-Weld™ Structural Adhesive Film SF100
Cure Cycle: 4.5°F/min rise rate to 250°F, hold @ 250°F for 90 min, cool down @ 10°F/min, pressure 0 psi,
Vacuum: 28 in of hg
Primer: Cytec® BR-127
Method: 3M Test Method C-244: 2024-T3 0.063" thick aluminum, 0.5"/min.
Pre-conditioning: 500 hr and 1000 hr @ 160°F in DI Water

| Test Temperature | Initial | | After 500 hr @ 160°F Water | | After 1000 hr @ 160°F Water | |
|------------------|---------|-----|----------------------------|-----|-----------------------------|-----|
| | PSI | MPa | PSI | MPa | PSI | MPa |
| 75°F (24°C) | 4202 | 29 | 3737 | 26 | 3282 | 23 |
| 180°F (82°C) | 3374 | 23 | – | – | 2449 | 16 |

Product Application

Note: While this information is provided as a general application guideline based upon typical conditions, it is recognized that no two applications are identical due to differing assemblies, method of heat and pressure application, production equipment and other limitations. It is therefore suggested that experiments be run, within the actual constraints imposed, to determine optimum conditions for your specific application and to determine suitability of product for particular intended use.

XIII. Surface Preparation

A thoroughly cleaned, dry, grease-free surface is essential for maximum performance. Cleaning methods which will produce a break-free water film on metal surfaces are generally satisfactory.

A. Aluminum: Phosphoric acid anodize (3M Test Method C-2780), Chromic acid anodize with or without a chromate seal (3M Test Methods C-2801 or C-2782) are preferred for maximum joint durability in moist environments. Optimized FPL Etch has also demonstrated improved durability performance. Optimized FPL Etch - 3M Company (3M Test Method C-2803 or ASTM D 2651)

1. Alkaline degrease - Oakite™* 164 solution 9-11 oz./gallon of water at 190° ± 10°F for 10 to 20 minutes. Rinse immediately in large quantities of cold running water (3M Test Method C-2802).
*Chemetall Oakite, Berkeley Heights, NJ.
2. Optimized FPL Etch Solution (1 liter):

Material Amount

Distilled Water 700 ml plus balance of liter (see below)
Sodium Dichromate 28 to 67.3 grams
Sulfuric Acid 287.9 to 310.0 grams
Aluminum Chips 1.5 grams/liter of mixed solution

Note: Review and follow safety and precautionary information provided by chemical supplier prior to preparation of this etch solution.

To prepare 1 liter of this solution, dissolve sodium dichromate in 700 ml of distilled water. Add sulfuric acid and mix well. Add additional distilled water to fill to 1 liter. Heat mixed solution to 66 to 71°F (150 to 160°F). Dissolve 1.5 grams of 2024 bare aluminum chips per liter of mixed solution. Gentle agitation will help aluminum dissolve in about 24 hours.

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Product Application (continued)

To FPL etch panels, place them in the above solution at 150 to 160°F (66 to 71°C) for 12 to 15 minutes.

3. Rinse immediately in large quantities of clear running tap water.
4. Dry - Air dry approximately 15 minutes followed by a force dry at 140°F (maximum).
5. Current theory suggests that both surface structure and chemistry play a significant role in determining the strength and permanence of bonded structure. It is therefore advisable to bond or prime freshly cleaned surfaces as early as possible after preparing to avoid contamination and/or mechanical damage.

B. Aluminum Honeycomb Core

1. Soak in clean aliphatic naphtha (conforming to TT-N-95A) for five minutes at room temperature. Dry 10 minutes at 140°F (maximum).
2. Optional - Immerse in etching solution above for 2 minutes 155 ± 5°F. Rinse, air dry and force dry in a similar manner to skins.

C. Titanium CP or 6AI 4V both Turco®* 5578 and improved phosphate fluoride processing have been used successfully with 3M™ Scotch-Weld™ Structural Adhesive Film SF100.

1. Vapor hone 140 grit in water - rinse thoroughly with clear running tap water.
2. Degrease - solvent or alkaline process.
3. Immerse for 15 minutes at 185 ± 5°F in the following bath:
Turco® 5578 - 420 grams
Distilled water - Balance to make 1 liter
4. Immerse for 1 minute in 170 ± 5°F distilled water.
5. Spray rinse for 5 minutes in hot tap water ~ 130°F.
6. Air dry for 10 to 20 minutes.
7. Force dry for 15 minutes at 140°F (maximum).
8. It is advisable to bond or prime freshly cleaned surfaces within four hours.

*Available from Henkel, Dusseldorf, Germany.

D. Stainless Steel - Type 301

1. Vapor hone 140 grit in water.
2. Rinse thoroughly in clear running tap water.
3. Alkaline degrease - see procedure above.
4. Rinse thoroughly in clear running tap water.
5. Immerse for 10 minutes at 75 ± 5°F in the following bath:
Distilled Water 73-95 oz/gal
Nitric Acid 42° Be 30-50 oz/gal
Hydrofluoric Acid 70% 3-5 oz/gal
6. Rinse thoroughly in clear running tap water.
7. Air dry for 10-20 minutes.
8. Force dry for 15 minutes at 150°F.
9. Bond or prime within four hours after preparing.

E. Cured fiberglass or carbon fiber reinforced epoxy resin based reinforced plastic.

1. Abrade with 3M™ 180 grit paper or 3M™ Scotch-Brite® Pad, (do not cut through resin into reinforcing fibers).
2. Degrease using acetone or MEK using an unsized cheesecloth pad.
3. Air dry for two hours minimum.

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Product Application (*continued*)

XIV. Primers

For most applications, use of a corrosion inhibiting primer is suggested to obtain maximum bond durability in moist, corrosive environments. 3M™ Scotch-Weld™ Structural Adhesive Primers EW-5000, EW-5000 AS, EC-3924B, and EC-3960 have all been successfully used with 3M™ Scotch-Weld™ Structural Adhesive Film SF100. Because of their characteristics which allow both spray and brush application methods, Scotch-Weld EW-5000, EW-5000 AS and EC-3924B are the most commonly used adhesive primers for use with Scotch-Weld SF100 film. For suggested application techniques, refer to the respective primer data sheets.

XV. Adhesive Film Application

Care should be taken during application to avoid contamination of the adhesive and substrates by any substances which will interfere with the wetting action of the adhesive.

Layup:

A. 3M™ Scotch-Weld™ Structural Adhesive Film SF100 M

1. Cut a portion of film sufficient for the assembly from the stock roll with protective liner(s) in place.
2. If the film has one protective liner, place the exposed adhesive against the substrate using the liner as a protective cover. If two liners are present, remove one and follow as above.
3. Position film and rub out all air between the adhesive and the substrate. Use of a rubber roller will facilitate this process.
4. Remove protective liner.
5. Complete assembly being careful to avoid trapping air and cure.

B. 3M™ Scotch-Weld™ Structural Adhesive Film SF100 OST

Scotch-Weld OST films are designed to facilitate the removal of air from large area solid panel construction. Application of vacuum to the assembly prior to and during the initial heat cycle is normally required (see cure conditions below).

1. Cut a portion of film sufficient for the application with the liner in place.
2. Remove the protective liner and apply the high tack side of the film against the substrate (high tack side is adjacent to the liner).
3. Position the film and rub out all air between the adhesive and the substrate (use of a rubber and roller will facilitate this process).
4. Complete assembly and cure.

XVI. Cure Conditions & Characteristics

Scotch-Weld SF100 film is designed to provide short cure times in the 225 to 300°F temperature range. While performance outside this cure temperature range has not been fully investigated, limited results suggest that cure temperatures as high as 350°F may be used as well as longer cure times at 200°F (6 hrs.) to obtain useful performance.

A. Weight Loss During Cure (3M Test Method C-274)

Less than 0.1% (60 min at 250°F)

B. Cure Time and Temperature

Cure Time and Temperature

A cure time of 60-90 minutes at 250 +/- 5°F (126°C) is suggested. All specimens have been cured in an autoclave with a rise rate of 4.5 °F/min (2.5 °C) and 45 psig (3.1 x 10⁵ Pa).

1. For temperatures from 250 to 300°F, a cure time of 60 minutes at temperature is suggested.
2. For temperatures between 225 and 250°F, a cure time of 90 minutes at temperature is suggested.

Following cure, it is suggested that pressure be maintained until the assembly has been cooled to 150°F or below.

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Product Application (*continued*)

C. Heat Up Rate

Bond line temperature rise rates between 1°F/min. and 20°F/min. have been used successfully with 3M™ Scotch-Weld™ Structural Adhesive Film SF100. It must be noted that hot entry cures at 300°F and above can be expected to produce reduced performance due to formation of bond line porosity.

D. Cure Pressure

1. Positive Pressure Cures

During cure, pressure is required to keep parts in alignment and to overcome distortions and thermal expansion of the adherends. When bonding honeycomb assemblies with non-perforated core, pressure is required to overcome the thermal expansion of air in the honeycomb cells.

Positive pressure between 20 and 80 psi have been used successfully with Scotch-Weld SF100 film. For very small area bonds, however, pressures at the higher end of this range may produce excessive squeeze out and adhesive bond line starvation. For large solid panel constructions which are autoclave cured, application of vacuum for 15 to 20 minutes prior to application of heat and pressure is suggested to assist in removing any residual air trapped in the assembly.

Normally, the vacuum is released following application of 15 psi positive pressure. For problem assemblies, maintain the vacuum during the heatup cycle to about 130°F to further assist in providing void free bonds.

Note: When using Scotch-Weld SF100 OST film it is essential that these suggested vacuum application steps be included to gain the full effect of the air removal potential of the OST construction.

2. Vacuum Curing

Scotch-Weld SF100 films can be successfully cured using vacuum cure techniques. For performance comparable to positive pressure cures, Scotch-Weld SF100 films should be cured using a vacuum level in the range of 8-18 inches of mercury. Higher vacuum levels could result in porosity and corresponding strength reductions. Scotch-Weld SF100 M and OST versions have shown a high level of performance retention across the 10-28 inches of mercury vacuum level range.

XVII. Complimentary 3M Products for use with Scotch-Weld SF100 film

3M™ Scotch-Weld™ Adhesive Primer EW-5000

3M™ Scotch-Weld™ Adhesive Primer EW-5000 AS

3M™ Scotch-Weld™ Adhesive Primer EC-3960

3M™ Scotch-Weld™ Adhesive Primer EC-3924B

3M™ Scotch-Weld™ Core Splice Adhesive AF 3024

3M™ Scotch-Weld™ Void Filling and Edge Sealing Compound EC-3524 B/A

Note: This information is provided as a general application guideline based upon typical conditions. No two applications are identical due to differing assemblies, method of heat and pressure application, production equipment and other limitations. It is therefore suggested that experiments be run, within the actual constraints imposed, to determine optimum conditions for your specific application and to determine suitability of product for particular intended use.

XVIII. Storage and Stability

Storage Stability - Storage at 0°F or below is recommended for Scotch-Weld SF100 film to obtain maximum storage life. Scotch-Weld SF100 film can be left out of cold storage in unopened or sealed bags (80°F maximum) for 45 days without adversely affecting its performance.

Standard shelf life of Scotch-Weld SF100 film at 0°F or below is 12 months from date of shipment in the original unopened container.

Note: Scotch-Weld SF100 film should be permitted to thoroughly warm to room temperature before being used in order to prevent moisture condensation. (Do not open protective container prior to reaching ambient conditions.)

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Precautionary Information

Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, please visit www.3M.com/msds or call 1-800-364-3577 or (651) 737-6501.

For Additional Information

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