

Technical Data Sheet

3M™ Scotch-Weld™ Acrylic Adhesive DP805

Product Description

3M™Scotch-Weld™ Acrylic Adhesive DP805 is a two-part, 1:1 mix ratio, toughened acrylic structural adhesive. It exhibits excellent shear and peel strength along with good impact and durability, and bonds well to many metals, ceramics, wood and most plastics.


Product Features

- Excellent shear and peel strengths
- Easy mixing
- 5 minute worklife
- Non-sag
- Minimal surface preparation
- 1:1 mix ratio


Technical Information Note

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

Typical Mixed Physical Properties

| Property | Values | Additional Information |
|-------------------|--------|--|
| Applied Open Time | 3 min | View  |

Notes: Approximate time after application of adhesive that bonds can be made without adversely affecting wetting out of adhesive and ultimate performance levels.


| | | |
|----------|------------|--|
| Worklife | 3 to 4 min | View  |
|----------|------------|--|

Notes: Maximum time that adhesive can remain in a static mixing nozzle and still be expelled without undue force on the applicator. Cure times are approximate and depend on adhesive temperature.

| | | |
|----------------|-------------|--|
| Set Time (min) | 7 to 10 min | View  |
|----------------|-------------|--|

Temp C: 23C
Temp F: 73F

Notes: Minimum time required to achieve 50 psi of overlap shear strength. Cure times are approximate and depend on adhesive temperature.

| | | |
|-------------------|------------|--|
| Time to Full Cure | 8 to 24 hr | View  |
|-------------------|------------|--|

Temp C: 23C
Temp F: 73F

Notes: Time to develop 80% of maximum overlap shear values.

| | | |
|-------------------------------|------------------------|--|
| Rate of Strength Buildup 7min | 125 lb/in ² | View  |
|-------------------------------|------------------------|--|


Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 7.0
Dwell Time Units: min
Temp C: 23C
Temp F: 72F
Substrate: Etched Aluminum

Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

Rate of Strength Buildup 15min

1000 lb/in²

View 

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 15.0
Dwell Time Units: min
Temp C: 23C
Temp F: 72F
Substrate: Etched Aluminum

Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

Rate of Strength Buildup 30min

2000 lb/in²

View 


Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 30.0
Dwell Time Units: min
Temp C: 23C
Temp F: 72F
Substrate: Etched Aluminum

Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

Rate of Strength Buildup 1hr

2600 lb/in²

View 

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 1.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 72F
Substrate: Etched Aluminum

Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

Rate of Strength Buildup 2hr

2800 lb/in²

View 

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 2.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 72F
Substrate: Etched Aluminum

Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

Rate of Strength Buildup 4hr

3200 lb/in²


View 


Test Method: ASTM D1002


Test Name: Overlap Shear Strength

Dwell/Cure Time: 4.0
Dwell Time Units: hr
Temp C: 23C
Temp F: 72F
Substrate: Etched Aluminum


Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in

| | | |
|--|-------------------------|--|
| Rate of Strength Buildup 1day | 3500 lb/in ² | View  |
| <p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 1.0 Dwell Time Units: day Temp C: 23C Temp F: 72F Substrate: Etched Aluminum</p> <p>Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in</p> | | |

| | | |
|--|-------------------------|--|
| Rate of Strength Buildup 2day | 3500 lb/in ² | View  |
| <p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 2.0 Dwell Time Units: day Temp C: 23C Temp F: 72F Substrate: Etched Aluminum</p> <p>Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in</p> | | |

| | | |
|--|-------------------------|--|
| Rate of Strength Buildup 7day | 3500 lb/in ² | View  |
| <p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 72F Substrate: Etched Aluminum</p> <p>Notes: 1 in wide 1/2 in overlap specimens with 1 in x 4 in substrates. 0.005-0.008in bondline. Jaw separation 0.1 in/min. Substrate thickness 0.05-0.064 in</p> | | |


Typical Physical Properties

| Property | Values | Additional Information |
|------------------|-------------|--|
| Color | Pale Yellow | View  |
| Test Name: Cured | | |

Typical Uncured Physical Properties


| Property | Values | Additional Information |
|------------|-----------|------------------------|
| Base Color | Off-White | |

Accelerator Color Yellow

Base Viscosity 75000 cP View 

Temp C: 23C
Temp F: 72F

Notes: Brookfield RVF #7 spindle at 20 rpm.

Accelerator Viscosity 150000 cP View 

Temp C: 23C
Temp F: 72F

Notes: Brookfield RVF #7 spindle at 20 rpm.

Base Resin Acrylic

Base Net Weight 8.4 lb/gal

Accelerator Net Weight 8.1 lb/gal

Mix Ratio by Volume (B:A) 1:1

Mix Ratio by Weight (B:A) 1:1

Typical Cured Characteristics

| Property | Values | Additional Information |
|----------|--------|------------------------|
|----------|--------|------------------------|

| | | |
|------------------|----|--|
| Shore D Hardness | 79 | View  |
|------------------|----|--|

Test Method: ASTM D2240

Temp C: 23C
Temp F: 73F

| | | |
|------------------|-------------------------|--|
| Tensile Strength | 3200 lb/in ² | View  |
|------------------|-------------------------|--|


Test Method: ASTM D882

Notes: Tensile and Elongation. Samples were 2 in. dumbbells with 0.125 in. neck and .030 in. sample thickness. Separation rate was 2 inches per minute.

| | | |
|---|----|--|
| Weight Loss by Thermal Gravimetric Analysis (TGA) | 1% | View  |
|---|----|--|

Temp C: 135C
Temp F: 275F


Notes: By TGA in air at 50°F (10°C)/min. TGA-7.

Weight Loss by Thermal Gravimetric Analysis (TGA) 5 % [View](#) 

Temp C: 233C
Temp F: 451F


Notes: By TGA in air at 50°F (10°C)/min. TGA-7.

Typical Performance Characteristics

| Property | Values | Additional Information |
|------------|--------|--|
| Elongation | 30 % | View  |

Test Method: ASTM D882

Notes: Samples were 2 in. dumbbells with 0.125 in. neck and .030 in. sample thickness. Separation rate was 2 inches per minute.

| | | |
|--------------------------------------|------------------------|--|
| Overlap Shear Strength 7day Aluminum | 900 lb/in ² | View  |
|--------------------------------------|------------------------|--|

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 7.0
Dwell Time Units: day
Temp C: 23C
Temp F: 73F
Environmental Condition: 50%RH
Substrate: Aluminum
Surface Preparation: Solvent Wipe


Notes: 1in wide 1/2in overlap specimens. 2 panels of 0.05-0.064in x 4in x 7in 2024T-3 clad aluminum bonded and cut to 1in wide samples after 24hr. Jaw separation 0.1 in/min, 0.005-0.008in bondline. Cohesive (CF), Adhesive (AF), and Substrate (SF) Failure

| | | |
|--|----------------|--|
| T-Peel Adhesion -55C Aluminum to Etched Aluminum | 20 lb/in width | View  |
|--|----------------|--|

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: -55C
Temp F: -67F
Substrate: Aluminum to Etched Aluminum

Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

| | | |
|---|----------------|--|
| T-Peel Adhesion 23C Aluminum to Etched Aluminum | 35 lb/in width | View  |
|---|----------------|--|

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: 23C
Temp F: 73F
Substrate: Aluminum to Etched Aluminum


Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

| | | |
|---|----------------|--|
| T-Peel Adhesion 38C Aluminum to Etched Aluminum | 35 lb/in width | View  |
|---|----------------|--|

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: 38C
Temp F: 100F
Substrate: Aluminum to Etched Aluminum


Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

T-Peel Adhesion 54C Aluminum to Etched Aluminum 36 lb/in width [View](#) 

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: 54C
Temp F: 130F
Substrate: Aluminum to Etched Aluminum


Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

T-Peel Adhesion 66C Aluminum to Etched Aluminum 35 lb/in width [View](#) 

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: 66C
Temp F: 150F
Substrate: Aluminum to Etched Aluminum


Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

T-Peel Adhesion 82C Aluminum to Etched Aluminum 34 lb/in width [View](#) 

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: 82C
Temp F: 180F
Substrate: Aluminum to Etched Aluminum

Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

T-Peel Adhesion 23C Neoprene Rubber to Steel 16 lb/in width [View](#) 

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: 23C
Temp F: 73F
Substrate: Neoprene Rubber to Steel
Surface Preparation: Abraded and Acetone Wiped
Failure Mode: Rubber delamination/tear


Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

T-Peel Adhesion 23C Nirtile Steel 4 lb/in width [View](#) 

Test Method: 3M C439

Test Name: T-Peel Adhesion
Temp C: 23C
Temp F: 73F
Substrate: Nirtile Steel
Surface Preparation: Abraded and Acetone Wiped

Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.


T-Peel Adhesion 23C Black SBR to Cold Rolled Steel 3 lb/in width [View](#) 

Test Method: 3M C439


Test Name: T-Peel Adhesion
Temp C: 23C
Temp F: 73F
Substrate: Black SBR to Cold Rolled Steel
Surface Preparation: Abraded and Acetone Wiped

Notes: Metal/metal bonds tested @ 20 in/min. Metal/rubber bonds pulled at 10 in/min.

Electrical and Thermal Properties

| Property | Values | Additional Information |
|-----------------------------------|--------|--|
| Glass Transition Temperature (Tg) | 60 °C | View  |

Notes: Glass Transition Temperature (Tg) determined using DSC Analyzer with a heating rate of 68°F (20°C) per minute. Second heat values given.


| | | |
|-----------------------------------|--------|--|
| Glass Transition Temperature (Tg) | 140 °F | View  |
|-----------------------------------|--------|--|

Notes: Glass Transition Temperature (Tg) determined using DSC Analyzer with a heating rate of 68°F (20°C) per minute. Second heat values given.

| | | |
|---------------------------|-----|--|
| Dielectric Constant 500Hz | 3.6 | View  |
|---------------------------|-----|--|

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

| | | |
|---------------------------|-----|--|
| Dielectric Constant 10KHz | 3.5 | View  |
|---------------------------|-----|--|


Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

| | | |
|----------------------------|-----|--|
| Dielectric Constant 100KHz | 3.4 | View  |
|----------------------------|-----|--|

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

| | | |
|--------------------------|-----|--|
| Dielectric Constant 1KHz | 3.6 | View  |
|--------------------------|-----|--|


Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

| | | |
|--------------------------|-------|--|
| Dissipation Factor 10KHz | 0.046 | View  |
|--------------------------|-------|--|

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

| | | |
|--------------------------|-------|--|
| Dissipation Factor 10KHz | 0.023 | View  |
|--------------------------|-------|--|


Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

| | | |
|---------------------------|-------|--|
| Dissipation Factor 100KHz | 0.018 | View  |
|---------------------------|-------|--|


Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

Dissipation Factor 1KHz 0.037 View 


Test Method: ASTM D150

Temp C: 23C
Temp F: 72F

Volume Resistivity $1.1 \times 10^{14} \Omega\text{-cm}$ View 

Test Method: ASTM D257

Temp C: 23C
Temp F: 73F

Surface Resistivity $2.1 \times 10^{15} \Omega$ View 

Test Method: ASTM D257

Storage and Shelf Life

Store product in cool, dry area where temperature is less than 80°F (27°C). Refrigerated storage (40°F to 55°F [4°C to 13°C]), but not frozen, is recommended to extend the shelf life of the products further.

When stored in its original unopened cartridges at temperatures below 80°F (27°C), 3M™ Scotch-Weld™ Acrylic Adhesive DP805 has a shelf life of 12 months from the date of manufacture from 3M. Within this time period, short term exposure (less than two weeks) to temperatures greater than 80°F (27°C), but less than 120°F (49°C), are acceptable.

If product handling does not meet these conditions then a visual inspection of the product during dispensing is recommended. Any appearance of gels in the mixing nozzle or abnormally high viscosity that makes adhesive delivery difficult indicates that the product should not be used.

Bottom Matter

3M
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Handling/Application Information

Directions for Use

The urethane foam tapes are generally ideal for interior applications or for exterior applications where the tape will be protected from the environment. The urethane foam is open cell.

3M™ Double Coated Urethane Foam Tape 4085 – Attach wire clips, Attach air fresheners

Directions for Use

1. For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely removed. The amount of surface preparation depends on the required bond strength, environmental aging resistance desired by user. For suggested surface preparations on common substrates, see the section on surface preparation.

2. Mixing

For Duo-Pak Cartridges

3M™ Scotch-Weld™ Acrylic Adhesives DP805 and DP820 are supplied in a dual syringe plastic duo-pak cartridge as part of the 3M™ EPX™ Applicator System. To use, simply insert the duo-pak cartridge into the EPX applicator and start the plunger into the cylinders using light pressure on the trigger. Next, remove the duo-pak cartridge cap and expel a small amount of adhesive to be sure both sides of the duo-pak cartridge are flowing evenly and freely. If automatic mixing of Part A and Part B is desired, attach the EPX mixing nozzle to the duo-pak cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of adhesive and mix thoroughly. Mix approximately 15 seconds after uniform color is obtained.

For Bulk Containers

Mix thoroughly by weight or volume in the proportions specified on the product label or in the typical uncured properties section. Mix approximately 15 seconds after uniform color is obtained.

3. For maximum bond strength, apply adhesive evenly to both surfaces to be joined.

4. Application to the substrates should be made within 2 minutes for Scotch-Weld acrylic adhesive DP805 or 15 minutes for Scotch-Weld acrylic adhesive DP820. Larger quantities and/or higher temperatures will reduce this working time.

5. Join the adhesive coated surfaces and allow to cure at 60°F (16°C) or above until completely firm. Heat up to 120°F-150°F (49°C-66°C) will speed up curing. Scotch-Weld acrylic adhesive DP805 will fully cure in 8-24 hours @ 73°F (23°C) and Scotch-Weld acrylic adhesive DP820 will fully cure in 24-48 hours @ 73°F (23°C).

6. Keep parts from moving during cure. Contact pressure necessary. Maximum shear strength is obtained with a 3-5 mil bond line.

7. Excess uncured adhesive can be cleaned up with ketone type solvents.*

8. Once Scotch-Weld acrylic adhesive DP805 has been applied to a surface, it is best to join the two mating surfaces together as soon as possible. The reason for this is that after approximately one minute Scotch-Weld acrylic adhesive DP805 may begin to form a very thin “skin” over the exposed surface. If left exposed long enough (2-3 minutes), a thick enough “skin” may form which will inhibit the proper wetting needed to achieve maximum performance. In instances where an extended exposed open time is required, it is still possible to achieve excellent bonds by coating both substrates to be joined and making the bond in such a manner as to rupture the “skin” surface. Scotch-Weld acrylic adhesive DP820 does not exhibit this skinning characteristic.

*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer’s precautions and directions for use.

Adhesive Coverage: A 0.005 in thick bondline will yield a coverage of 320 sqft/gallon (typical).

Surface Preparation

For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely removed. The amount of surface preparation depends on the required bond strength, environmental aging resistance desired by the user.

The following cleaning methods are suggested for common surfaces:

Steel:

1. Wipe free of dust with oil-free solvents such as acetone or isopropyl alcohol solvents.*

2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with solvent to remove loose particles.*
4. If a primer is used, it should be applied within 4 hours after surface preparation.

Aluminum:

1. Alkaline Degrease: Oakite 164 solution (9-11 oz./gallon water) at 190°F ± 10°F (88°C ± 5°C) for 10-20 minutes. Rinse immediately in large quantities of cold running water.
2. Acid Etch: Place panels in the following solution for 10 minutes at 150°F ± 5°F (66°C ± 2°C).

Sodium Dichromate 4.1 - 4.9 oz./gallon

Sulfuric Acid, 66°Be 38.5 o 41.5 oz./gallon

2024-T3 aluminum (dissolved) 0.2 oz./gallon minimum

Tap water as needed for balance

3. Rinse: Rinse panels in clear running tap water.
4. Dry: Air dry 15 minutes; forced air dry 10 minutes at 190°F ± 10°F (88°C ± 5°C).
5. If primer is to be used, it should be applied within 4 hours after surface preparation (or see instruction pertaining to a specific primer).

Plastics/Rubber:

1. Wipe with isopropyl alcohol.*
2. Abrade using fine grit abrasives.
3. Wipe with isopropyl alcohol.*

Glass:

1. Solvent wipe surface using acetone or MEK.*
2. Apply a thin coating (0.0001 in. or less) of 3M™ Scotch-Weld™ Metal Primer EC3901 to the glass surfaces to be bonded and allow the primer to dry before bonding.

*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

References

| Property | Values |
|-----------------------|---|
| 3m.com Product Page | https://www.3m.com/3M/en_US/p/d/b40066433/ |
| Safety Data Sheet SDS | https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=DP805 |

ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

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, call 1-800-364-3577 or (651) 737-6501.

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