SNAPSHOOT
ENGINEERED FOR A SAFER TOMORROW

현장을 이해하고, 필요한 솔루션을 연결합니다.

산업안전 · 추락방지 시스템
산업용 소재 · 건축자재
제품 제안부터 공급·시공·설치·교육까지



COMPANY INFORMATION

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TECHNICAL DOCUMENTS

인증서 · 데이터시트 · 기술자료

제품의 규격과 성능, 인증 및 적용 조건을 확인하기 위한 자료입니다.

ABOUT SNAPSHOOT

제품 공급을 넘어, 현장에 맞는 해결책으로

스냅슛은 산업현장의 작업 환경과 요구 조건을 바탕으로
적합한 제품과 시스템을 제안합니다. 현장 실사를 통해 설치 조건을 확인하고,
공급부터 시공·설치 및 사용 교육까지 필요한 과정을 함께합니다.

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English-US

Last Revision Date: September, 2024

Supersedes: June, 2024

Technical Data Sheet

3M™ Scotch-Weld™ Epoxy Adhesive DP100 Plus LH

Product Details

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ Epoxy Adhesive DP-100 PlusLH Clear is a fast setting, two-part, 1:1 mix ratio mercaptan-cured epoxy adhesive. It is unique among fast setting mercaptan cure epoxies in that it combines high shear strength with good peel performance properties. Scotch-Weld DP-100 PlusLH Clear is transparent and slightly flexible when cured. Available in larger containers as 3M™ Scotch-Weld™ Epoxy Adhesive 100 Plus B/A Clear

Product Features

• 2-4 minute worklife • High shear and peel strength • Slightly flexible • Low Halogen

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 Uncured Physical Properties

Attribute Name	Test Method	Temperature	Value
Base Color			Clear
Accelerator Color			Clear
Base Resin			Epoxy
Accelerator Resin			Mercaptan
Base Net Weight			9.7 — 9.9 lb/gal
Accelerator Net Weight			9.4 — 9.8 lb/gal
Base Viscosity	3M C1d	27 °C (80 °F)	4000 — 11000 cP [1]
Accelerator Viscosity	3M C1d	27 °C (80 °F)	7000 — 13000 cP [1]
Mix Ratio by Volume (B:A)			1:1
Mix Ratio by Weight (B:A)			1:1

[1] Procedure involves Brookfield RVF, #7 spindle, 20 rpm. Measurement taken after 1 minute rotation.

Typical Mixed Physical Properties

Rate of Strength Buildup

Substrate: Etched Aluminum
Temperature: 23 °C (73 °F)
Test Method: ASTM D1002, ISO 4587

Dwell Time	Value
1 h	600 lb/in² [1]
6 h	900 lb/in² [1]
24 h	1,100 lb/in² [1]
7 d	2,800 lb/in² [1]
1 month	3,400 lb/in² [1]

[1] 25 mm (1 in) wide 12.7 mm (0.5 in) overlap specimens with 25 mm x 102 mm (1 in x 4 in) substrates. 13 - 20 µm (0.005-0.008 in) bondline.
Jaw separation 2.5 mm/min (0.1 in/min)
Substrate thickness 1.3 - 1.6 mm (0.05-0.064 in)
Cohesive (CF), Adhesive (AF), Substrate (SF) Failure

Attribute Name	Test Method	Temperature	Value
Worklife, 2g mixed	3M C3180	23 °C (73 °F)	3 min [1]
Worklife, 20g mixed	3M C3180	23 °C (73 °F)	2 min [2]
Tack Free Time	3M C3173		9 — 10 min [3]
Set Time (min)		23 °C (73 °F)	20 min [4]
Time to Full Cure		23 °C (73 °F)	48 h [5]

[1] Procedure involves periodically measuring a 2 gram mixed mass for self leveling and wetting properties. This time will also approximate the usable worklife in an 3M™ EPX™ Applicator mixing nozzle.

[2] Procedure involves periodically measuring a 20 gram mixed mass for self leveling and wetting properties. This time will also approximate the usable worklife in an 3M™ EPX™ Applicator mixing nozzle.

[3] Involves dispensing 0.5 gram amount of adhesive onto substrate and testing periodically for no adhesive transfer to metal spatula.

[4] Minimum time required to achieve 0.3 MPa (50 psi) of overlap shear strength. Cure times are approximate and depend on adhesive temperature.

[5] The cure time is defined as that time required for the adhesive to achieve a minimum of 80% of the ultimate strength as measured by aluminum-aluminum OLS.

Attribute Name	Test Condition	Value
Exotherm time to reach max temp	2 g mass	6 min [1]
Exotherm time to reach max temp	20 g mass	3 min [1]
Exotherm max temp	2 g mass	128 °F [1]
Exotherm max temp	20 g mass	260 °F [1]

[1] Exotherm determined using the stated mass mixed for 1 minute and then by electronic thermocouple measuring the peak temperature and time to that temperature.

Typical Physical Properties

Attribute Name	Value
Cured Color	Clear

Typical Cured Characteristics

Attribute Name	Test Method	Temperature	Value
Shore D Hardness	ASTM D2240	23 °C (73 °F)	83
Weight Loss by Thermal Gravimetric Analysis (TGA)	ASTM E1131	116 °C (241 °F)	1 % [1]
Weight Loss by Thermal Gravimetric Analysis (TGA)	ASTM E1131		318 °C (604 °F) [1]

[1] Weight loss by Thermal Gravimetric Analysis reported as that temperature at which 5% weight loss occurs by TGA in air at 5 °C (9 °F) rise per minute.

Typical Performance Characteristics

Overlap Shear Strength

Temperature: 23 °C (73 °F)
Dwell Time: 24 h
Test Method: ASTM D1002, ISO 4587
Environmental Condition: +2 hr @ 71 °C (160 °F)

Substrate	Value
Etched Aluminum	3,500 lb/in² [1]
Aluminum	1,800 lb/in² [1]
Cold Rolled Steel	1,700 lb/in² [1]
Fir	700 lb/in² [1]
Glass, Borosilicate	250 lb/in² [1]

Substrate	Value
Polycarbonate (PC)	600 lb/in² [1]
Acrylic (PMMA)	300 lb/in² [1]
Fiberglass	1,500 lb/in² [1]
ABS	280 lb/in² [1]
PVC	450 lb/in² [1]
Polypropylene (PP)	80 lb/in² [1]

[1] 25 mm (1") wide, 12.7 mm (1/2") overlap samples, 25 mm (1") x 102 mm (4") substrates, bondline thickness: 0.13-0.20 mm (5-8 mil)
Separation rate 2.5 mm/min (0.1 in/min) metal, 51 mm/min (2 in/min) plastic, 510 mm/min (20 in/min) rubber.
Substrate thickness: steel 1.5 mm (60 mil), other metal 1.3-1.6 mm (50-64 mil), rubber and plastic 3.2 mm (125 mil)
Cohesive Failure (CF), Adhesive Failure (AF), Mixed Failure (MF), Substrate Failure (SF)

T-Peel Adhesion

Substrate: Etched Aluminum
Test Method: ASTM D1876

Temperature	Value
-55 °C (-67 °F)	2 lb/in width [1]
23 °C (73 °F)	13 lb/in width [1]
49 °C (120 °F)	15 lb/in width [1]
66 °C (150 °F)	2 lb/in width [1]
82 °C (180 °F)	1 lb/in width [1]

[1] T-peel strengths were measured on 25 mm (1 in) wide bonds. Jaw separation 508 mm/min (20 in/min). The substrates were 0.51 mm (0.020 in) thick, 13 - 20 µm (0.005 - 0.008 in) bondline. Samples dwelled for 24 hrs at 23 °C + 2 hrs at 71 °C before testing.

Temperature: 23 °C (73 °F)
Dwell Time: 2 h
Test Method: ASTM D882
Environmental Condition: +2 hr @ 71 °C (160 °F)

Attribute Name	Value
Elongation	75 % [1]
Tensile Strength	1,850 lb/in² [1]

[1] Samples were 51 mm (2 in) dumbbells with 3.2 mm (0.125 in) neck and 0.8 mm (0.03 in) sample thickness. Separation rate was 51 mm/min (2 in/min).

Attribute Name	Value
Additional Test notes	The following product performance data was obtained in the 3M laboratory under the conditions specified. The following data show typical results obtained with 3M™ Scotch-Weld™ Epoxy Adhesive DP100 Plus Clear when applied to properly prepared substrates, cured, and tested according to the specifications indicated. This data was generated using the 3M™ EPX™ Applicator System equipped with an EPX static mixer, according to manufacturer's directions. Thorough hand mixing should afford comparable results.

Typical Environmental Performance

Solvent Resistance

Environmental Condition	Value
24hr @ RT + 2hr @ 71 °C (160 °F) + Isopropyl Alcohol 1hr	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + Acetone 1hr	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + 1, 1, 1 - Trichloroethane 1hr	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + Freon TF 1hr	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + Freon TMC 1hr	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + RMA Flux 1hr	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + Isopropyl Alcohol 1mo	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + Acetone 1mo	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + 1, 1, 1 - Trichloroethane 1mo	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + Freon TF 1mo	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + Freon TMC 1mo	A [1]
24hr @ RT + 2hr @ 71 °C (160 °F) + RMA Flux 1mo	A [1]

[1] Cured OLS samples immersed in solvent and after dwell, examined for surface attack compared to control.
A: Unaffected, no color or texture change
B: Slight attack, slight swelling of surface.
C: Moderate/severe attack, extreme swelling of surface.

Electrical and Thermal Properties

Attribute Name	Test Condition	Value
Coefficient of Thermal Expansion	5 ~ 20 °C	93 x 10^{-6} m/m/°C [1]
Coefficient of Thermal Expansion	40 ~ 140 °C	182 x 10^{-6} m/m/°C [1]
Glass Transition Temperature (Tg)	Mid-Point	29 °C [2]
Glass Transition Temperature (Tg)	Onset	23 °C [2]

[1] CTE determined using TMA Analyzer using a heating rate of 10 °C per minute. Second heat values given.

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

Attribute Name	Test Method	Temperature	Test Condition	Value
Dielectric Constant	ASTM D150	23 °C (73 °F)	1 KHz	6.6
Dissipation Factor	ASTM D150	23 °C (73 °F)	1 KHz	0.06
Dielectric Strength	ASTM D140			710 V/mil
Volume Resistivity	ASTM D257	23 °C (73 °F)		6.7 x 10^{11} Ω-cm

Temperature: 110 °F

Attribute Name	Test Method	Value
Thermal Conductivity	C177	.32 x10^-3 Cal/s/cm/°C (0.133 W/m/K) (0.077 (btu-ft)/(h-ft^2-°F)) [1]

[1] Thermal conductivity determined using C-matic Instrument using 51 mm (2 in) diameter samples.

Handling/Application Information

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. However, the amount of surface preparation depends on the required bond strength and the environmental aging resistance desired by user. For specific surface preparations on common substrates, see the section on surface preparation.
2. Use gloves to minimize skin contact. Do not use solvents for cleaning hands.
3. Mixing
For Duo-Pak Cartridges
3M™ Scotch-Weld™ Epoxy Adhesive DP100 Plus Clear is 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 ensure 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 applicator 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 in the typical uncured properties section. Mix approximately 15 seconds after uniform color is obtained.
4. For maximum bond strength, apply adhesive evenly to both surfaces to be joined.
5. Application to the substrates should be made within 3 minutes. Larger quantities and/or higher temperatures will reduce this working time.
6. Join the adhesive coated surfaces and allow to cure at 60°F (16°C) or above until completely firm. Heat up to 200°F (93°C), in order to speed curing. These products will cure in 48 hours @ 75°F (24°C).
7. Keep parts from moving during cure. Contact pressure necessary. Maximum shear strength is obtained with a 3-5 mil bond line.
8. Excess uncured adhesive can be cleaned up with methyl ethyl ketone (MEK).*
Adhesive Coverage:A 0.005 in thick bond line will yield a coverage of 320 sqft/gallon.
*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow manufacturer's precautions and directions for use.

Surface Preparation

For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must be completely removed. However, the amount of surface preparation directly depends on the required bond strength and the environmental aging resistance desired by user.
The following cleaning methods are suggested for common surfaces:
Steel:
1. Wipe free of dust with oil-free solvent such as acetone, isopropyl or 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 - 41.5 oz./gallon 2024-T3 aluminum (dissolved) 0.2 oz./gallon minimum
Tap water as needed to balance
3. Rinse: Rinse panels in clear running tap water.
4. Dry: Air dry 15 minutes; force 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.

Note: Read and follow component supplier's environmental health and safety information prior to preparing this etch solution.
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.*

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

Application Equipment

For small or intermittent applications, the 3M™ EPX™ Applicator is a convenient method of application.

For larger applications, these products may be applied by use of flow equipment.

Two-part meter/mixing/dispensing equipment is available for intermittent or production line use. These systems may be desirable because of their variable shot size and flow rate characteristics and are adaptable to many applications.

Storage and Shelf Life

Store under normal conditions of 16° to 27°C (60° to 80°F) and 40 to 60% relative humidity in the original packaging, out of direct sunlight. For best performance, use this product within 24 months in unopened original bulk containers or 15 months in duo-pak containers.

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

Automotive Disclaimer

Select Automotive Applications:
This product is an industrial product and has not been designed or tested for use in certain automotive applications, such as automotive electric powertrain battery or high voltage applications, which may require the product to be manufactured in a IATF certified facility, meet a Ppk of 1.33 for all properties, undergo an automotive production part approval process (PPAP), or fully adhere to automotive design or quality system requirements (e.g., IATF 16949 or VDA 6.3). Customer assumes all responsibility and risk if customer chooses to use this product in these applications.

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ISO Statement

This product was manufactured under a 3M quality system registered to ISO 9001 standards.

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