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

스냅슛 (SNAPSHOOT)

ADDRESS (15431) 경기도 안산시 단원구 풍전로 37-9 트리플렉스 301동 118호
TEL 0507-1374-9229
FAX 0504-481-6749
E-MAIL bkkim@snapshoot.co.kr

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.

추락방지 시스템

안전대부착설비 · 수평·수직 라이프라인
레일 시스템 · 리지드 포스트

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산업안전 보호구

전신형 안전대 · 랜야드 · 안전블록
작업 환경에 맞춘 개인보호구

산업용 소재·건축자재

산업용 테이프 · 접착제 · 기능성 소재
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홈페이지 바로가기 →
문서 라이브러리 바로가기 →
시공사례 바로가기 →
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본 페이지는 스냅슛의 자료 제공 안내용 표지입니다. 첨부된 인증서 및 기술자료의 발행 주체, 인증 대상과 적용 범위는 해당 원문을 기준으로 확인해 주세요.



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English-US

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Technical Data Sheet

3M™ Scotch-Weld™ Epoxy Adhesive 2214 Hi-Temp

Product Details

Regulatory Info/SDS

Product Description

• One part 250°F (121°C) curing 100% solids, 3M™ Scotch-Weld™ Epoxy Adhesive 2214 is a paste consistency epoxy adhesive designed for bonding metals and many high temperature plastics such as fiberglass reinforced plastic, polyester, and phenolics.
• 3M™ Scotch-Weld™ Adhesive 2214 Hi-Temp is an aluminum filled, deaerated product for use where higher strengths are required between 180°F to 350°F (82°C to 177°C).

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	Value
Color	Gray [1]
Viscosity	>1,000,000 cP [2]
Viscosity	15 — 30 s [3]
Net Weight	12 lb/gal
Base	Modified Epoxy

[1] Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.
[2] Because of Thixotropic paste nature of these products Brookfield viscosity will be over 1,000,000 cps.
[3] Time to deliver 20 g@ 345 kPa (50 psi) through a 2.5 mm (0.10 in) orifice.

Typical Mixed Physical Properties

Temperature: 121 °C (250 °F)

Attribute Name	Value
Time to Full Cure	40 min

Typical Physical Properties

Attribute Name	Value
Cured Color	Gray

Typical Cured Characteristics

Temperature: 23 °C (73 °F)

Attribute Name	Test Method	Value
Modulus		800,000 lb/in²
Shore D Hardness	ASTM D2240	88

Typical Performance Characteristics

Substrate: Cold Rolled Steel
Surface Prep: MEK/Abrade/MEK
Temperature: 23 °C (73 °F)
Dwell Time: 7 d

Attribute Name	Test Method	Value
Overlap Shear Strength	ASTM D1002, ISO 4587	2,400 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

Temperature: 23 °C (73 °F)
Test Method: ASTM D1876

Substrate	Surface Prep	Value
Aluminum		2 lb/in width [1]
Steel	MEK Wipe	5 lb/in width [1]

[1] T-Peel bonds were measured on 25 mm (1 in) wide specimens cut from two FPL etched 203 x 203 x 0.8 mm (8 x 8 x 0.032 in), 2024 T3 clad aluminum panels bonded together. The separation note of the testing jaws was 508 mm/min (20 in/min).

Attribute Name	Value
Elongation at Break	1 %
Tensile Strength at Break	8,000 lb/in²

Electrical and Thermal Properties

Attribute Name	Test Condition	Value
Coefficient of Thermal Expansion	0 ~ 80 °C	48 x 10^{-6} m/m/°C
Thermal Conductivity		0.189 (btu-ft)/(h-ft²-°F)

Attribute Name	Test Method	Value
Arc Resistance	ASTM D495	119 s

Handling/Application Information

Directions for Use

CAUTION: Use caution if your bond line is thicker than 1 mm as an exothermic reaction may occur during cure with production of intense heat and smoke. The likelihood of this happening depends on your joint design, the mass of material cured, and the ability for heat to be dissipated by the substrates.

1. Warm products to room temperature before opening containers to restore proper application consistency and to prevent moisture condensation on adhesive surface. Containers may be stored at room temperature for 1-2 days to thaw. Do not warm at temperatures above 80°F (27°C).

2. 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 substrates, the required bond strength, environmental aging resistance, and requirements determined by the user in light of the user's particular purpose and method of application. For specific surface preparations on common substrates, see the section on surface preparation.

3. Use gloves to minimize skin contact and do not use solvents for cleaning hands.

4. For maximum bond strength, apply product evenly to both surfaces to be joined.

5. Join the adhesive coated surfaces and heat cure using the appropriate bondline temperature and time for the specific product being used.

6. Keep parts from moving during cure as contact pressure is necessary.

7. Cleanup can be accomplished with solvent such as 3M™ Scotch-Grip™ Solvent No. 3 or Methyl Ethyl Ketone.*
*Note: Prior to use of these solvents, extinguish or eliminate any ignition sources and read and follow supplier's environmental, health, and safety recommendations listed on the MSDS and product label.

Surface Preparation

The following cleaning methods are suggested for common surfaces:
Steel:
1. Wipe free of dust with oil-free solvent such as Methyl Ethyl Ketone.*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with solvent to remove loose particles.
Aluminum:
1. Vapor Degrease – Perchloroethylene* condensing vapors for 5-10 minutes.
2. Alkaline Degrease – Oakite 164 solution (9-11 oz./gallon water) at 190°F ± 10°F (87°C ± 5°C) for 10-20 minutes. Rinse immediately in large quantities of cold running water.
3. Acid (FPL) Etch – Place panels in their 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
4. Rinse – Rinse panels in clear running tap water.
5. Dry – Air dry 15 minutes; force dry 10 minutes at 150°F ± 10°F (66°C ± 5°C).
6. If primer is to be used, it should be applied within 4 hours after surface preparation.
Plastics:
1. Solvent wipe with Isopropyl Alcohol.*
2. Abrade using clean fine grit abrasives.
3. Solvent wipe with Isopropyl Alcohol.*
Rubbers:
1. Solvent wipe with Methyl Ethyl Ketone.*
2. Abrade using clean fine grit abrasives.
3. Solvent wipe with Methyl Ethyl Ketone.*
Glass:
1. Solvent wipe with acetone or Methyl Ethyl Ketone.*
Note: For glass applications which will be subjected to high moisture/humidity conditions, 3M™ Scotch-Weld™ Primer EC-3901 should be used to prime the glass.
***Note:**Prior to use of these solvents, extinguish or eliminate any ignition sources and read and follow supplier's environmental, health, and safety recommendations listed on the MSDS and product label.

Application Equipment

These products may be applied by spatula, trowel, or flow equipment.

Dispensing equipment is available for intermittent or production line use. These systems are ideal because of their variable shot size and flow rate characteristics and are adaptable to most applications. For more information, contact your local 3M sales representative.

Note: Minimum pumping temperature is 65°F (18°C) for all products.

3M™ Scotch-Weld™ Epoxy Adhesive 2214 Regular Production Extrusion Equipment
• Pump: Ratio 55:1 with a chopping check valve and priming piston, 8 in. air motor. 3.7in³ cycle
• Ram: Pneumatic type capacity-12 psi on material surface
• Hose: Super high pressure with standard lining
• Flow Gun: High pressure type

Output based on 1/4 in tip flow gun (material temperature 65°F [18°C]) (minimum pumping temperature is 65°F [18°C])
Hose Assembly Material Pressure (psi) (Output lb/min)
Length-20', I.D.-1/2 in 4800* .36
Length-20', I.D.-3/4 in 4800* 1.0

3M™ Scotch-Weld™ Epoxy Adhesive 2214 Non-Metallic Filled Production Extrusion Equipment
• Pump: Ratio 38:1 with a chopping check valve and priming piston
• Ram: Pneumatic type capacity-10 psi on material surface
• Hose: Super high pressure with standard lining
• Flow Gun: High pressure type

Output based on 1/4 in tip flow gun (material temperature 65°F [18°C]) (minimum pumping temperature is 65°F [18°C])
Hose Assembly Material Pressure (psi) (Output lb/min)
Length-10', I.D.-3/4 in 3000 2.3
Length-20', I.D.-3/4 in 3000 1.6
Length-20', I.D.-3/4 in
+10, I.D.-1/2 in 3000 1.2
Length-20', I.D.-1/2 in 3000 0.84

3M™ Scotch-Weld™ Epoxy Adhesive 2214 Hi-Temp Production Extrusion Equipment

• Pump: Ratio 40:1 with a chopping check valve and priming piston, 6 in. air motor. 2in³/cycle
• Ram: Pneumatic type capacity-12 psi on material surface
• Hose: Super high pressure with standard lining
• Flow Gun: High pressure type

Output based on 1/4 in tip flow gun (material temperature 65°F [18°C])
Hose Assembly Material Pressure (psi) (Output lb/min)
Length-20', I.D.-1/2 in 2400 0.4
Length-20', I.D.-3/4 in 2400 1.1

3M™ Scotch-Weld™ Epoxy Adhesive 2214 Hi-Dense Production Extrusion Equipment
• Pump: Ratio 55:1 with a chopping check valve and priming piston, 8 in. air motor. 3.7in³/cycle
• Ram: Pneumatic type capacity-12 psi on material surface
• Hose: Super high pressure with standard lining
• Flow Gun: High pressure type

Output based on 1/4 in tip flow gun (material temperature 65°F [18°C]) (minimum pumping temperature is 65°F [18°C])
Hose Assembly Material Pressure (psi) (Output lb/min)
Length-20', I.D.-1/2 in 4500* 0.45
Length-20', I.D.-3/4 in 4500* 0.9

3M™ Scotch-Weld™ Epoxy Adhesive 2214 Hi-Temp New Formula Production Extrusion Equipment
• Pump: Ratio 55:1 with a chopping check valve and priming piston, 8 in. air motor. 3.7in³/cycle
• Ram: Pneumatic type capacity-12 psi on material surface
• Hose: Super high pressure with standard lining
• Flow Gun: High pressure type

Output based on 1/4 in tip flow gun (material temperature 65°F [18°C]) (minimum pumping temperature is 65°F [18°C])
Hose Assembly Material Pressure (psi) (Output lb/min)
Length-20', I.D.-1/2 in 4800* 0.36
Length-20', I.D.-3/4 in 4800* 1.0

*These pressures will require a special consideration during hose selection. They are actual working pressures.

Storage and Shelf Life

Store products at 4°C (40°F) or below for maximum storage life. Higher temperatures reduce normal storage life. **CAUTION: Products are heat sensitive. Storage above 54°C (130°F) may cause an exothermic reaction resulting in evolution of excessive heat, noxious fumes, and possibly fire. All of these products have a shelf life of 12 months from the date of manufacture when stored in their unopened containers at 4°C (40°F) or below, or 18 months at -20°C (0°F) or below.**

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.

Information

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ISO Statement

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

3M™ Industrial Adhesives and Tapes Division
3M Center, St. Paul, MN 55144-1000
3M.com/iatd

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