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

밀폐공간 진입·구조 솔루션

데빗암 · 삼각대 · 구조용 윈치
윈치 안전블록 · 구조장비

산업안전 보호구

전신형 안전대 · 랜야드 · 안전블록
작업 환경에 맞춘 개인보호구

산업용 소재·건축자재

산업용 테이프 · 접착제 · 기능성 소재
구조용 스크류 · 목조건축 자재

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홈페이지 바로가기 →
문서 라이브러리 바로가기 →
시공사례 바로가기 →
문의하기 →

본 페이지는 스냅슛의 자료 제공 안내용 표지입니다. 첨부된 인증서 및 기술자료의 발행 주체, 인증 대상과 적용 범위는 해당 원문을 기준으로 확인해 주세요.



English-US

Last Revision Date: September, 2024

Supersedes: June, 2024

Technical Data Sheet

3M™ Scotch-Weld™ Toughened Epoxy Adhesive LSB60NS

Product Details

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ Toughened Epoxy Adhesive LSB60NS is a high performance, two-part, toughened epoxy adhesive offering outstanding shear adhesion and very high levels of durability with a choice of flow characteristics. This epoxy has a 90 minute worklife and is a 1:1 mix ratio. Ideal for bulk application through meter mix dispensing equipment and the manufacture of large panel products.

Product Features

- Toughened
- High shear and peel
- 5 hour handling strength
- Flame, Smoke and Toxicity Tested
- 90 minute work life
- 1:1 mix ratio and easy mixing

NOTE: The following data is taken from tests conducted on limited production runs. 3M will continue to test samples from additional product runs and will issue a new data page if the test results change.

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	Temperature	Value
Color		Gray [1]
Base Color		White
Accelerator Color		Dark Gray
Base Resin		Epoxy
Accelerator Resin		Amine
Mix Ratio by Volume (B:A)		1:1
Mix Ratio by Weight (B:A)		1:1
Base Net Weight		10.1 lb/gal
Accelerator Net Weight		9.8 lb/gal
Base Viscosity	27 °C (80 °F)	24,000 cP [2]
Accelerator Viscosity	27 °C (80 °F)	97,000 cP [2]

[1] Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.

[2] Viscosity measured using Brookfield RTV, spindle #7, 20 RPM

Typical Mixed Physical Properties

Attribute Name	Temperature	Value
Open Time		90 min [1]
Worklife	23 °C (73 °F)	90 min [2]
Time to Handling Strength	23 °C (73 °F)	5 h [3]
Time to Full Cure	23 °C (73 °F)	7 d

[1] Max time allowed after applying adhesive to a substrate before bond must be closed and fixed. Cure times approximate and depend on adhesive temperature. Hotmelts: The approx. bonding range of a 3.2 mm (1/8 in) bead of molten adhesive on a non-metallic surface.

[2] 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.

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

Typical Physical Properties

Attribute Name	Value
Cured Color	Gray

Typical Cured Characteristics

Temperature: 23 °C (73 °F)

Attribute Name	Test Method	Value
Shore D Hardness	ASTM D2240	62

Typical Performance Characteristics

Temperature: 23 °C (73 °F)
Substrate: Cushioned Sleeve A

Attribute Name	Test Method	Value
90° Peel Adhesion	ASTM D3330	3500 N/cm (CF/AF)

Overlap Shear Strength

Temperature: 23 °C (73 °F)
Dwell Time: 7 d
Test Method: ASTM D1002, ISO 4587

Substrate	Surface Prep	Value
Aluminum	MEK/Abrade/MEK	3500 lb/in² (CF) [1]
Cold Rolled Steel	MEK/Abrade/MEK	3000 lb/in² (CF/AF) [1]
Galvanized Steel	MEK/Abrade/MEK	3400 lb/in² (CF/AF) [1]
Polycarbonate (PC)	IPA Wipe/Abrade/IPA Wipe	400 lb/in² (AF) [1]
Fiber-Reinforced Plastic	IPA Wipe/Abrade/IPA Wipe	2100 lb/in² (AF/CF) [1]
FRP (Epoxy)	IPA Wipe/Abrade/IPA Wipe	2100 lb/in² (AF/CF) [1]
FRP (Polyester)	IPA Wipe/Abrade/IPA Wipe	2200 lb/in² (SF) [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)

Bell Peel

Substrate: Etched Aluminum
Test Method: ASTM D3167

Dwell Time	Temperature	Value
	-55 °C (-67 °F)	3.2 lb/in width (CF) [1]
	23 °C (73 °F)	11.6 lb/in width (AF/CF) [1]
4 h	82 °C (180 °F)	11 lb/in width (AF) [1]

[1] 25 mm (1 in) wide bonds. 0.5 mm (0.02 in) thick, 1.7 mm (0.065 in) bondline
Jaw separation rate 15 mm/min (6 in/min)
AF: adhesive failure CF: cohesive failure SF: substrate failure

Handling/Application Information

Directions for Use

1. For highest 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. 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 a 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 60-90 minutes. Larger quantities and/or higher temperatures will reduce this working time.
5. Join the adhesive coated surfaces and allow to cure at 60oF (16oC) or above until completely firm. Heat up to 120oF - 150oF (49oC - 66oC) will speed curing.
6. Keep parts from moving during cure. Apply contact pressure if 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*.
*Note: when using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

Surface Preparation

3M™ Scotch-Weld™ Toughened Epoxy Adhesives LSB60 and LSB60NS is designed to be used on plastic or metal surfaces. For high strength structural bonds, paint, oxide films, oils, dust, mold release agents and all other surface contaminants must me 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 solvent 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. Wipe free of dust with oil-free solvent such as acetone or isopropyl alcohol solvents*.
2. Sandblast or abrade using clean fine grit abrasives
3. Wipe again with oil-free solvent such as acetone or isopropyl alcohol solvents*
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.

Industry Specifications

NFPA 130 test report for details (ASTM E1354)
NFPA 130 test report for details (ASTM E162, ASTM E662, SMP 800-C, BSS 7239)

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 12 months from date of manufacture.

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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For Additional Information

To request additional product information or to arrange for sales assistance, call toll free 1-800-362-3550 or visit www.3M.com/structuraladhesives.

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

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