SNAPSHOOT
ENGINEERED FOR A SAFER TOMORROW

현장을 이해하고, 필요한 솔루션을 연결합니다.

산업안전 · 추락방지 시스템
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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.

추락방지 시스템

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전신형 안전대 · 랜야드 · 안전블록
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홈페이지 바로가기 →
문서 라이브러리 바로가기 →
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English-US

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Technical Data Sheet

3M™ Scotch-Weld™ Toughened Epoxy Adhesive LSB60

Product Details

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ Toughened Epoxy Adhesive LSB60 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

*LSB60 has been tested and meets surface flammability (ASTM E 162) and rate of smoke generation (ASTM E 662). This material also meets Bombardier requirements as they pertain to toxic gas production (Bombardier SMP 800-C). The adhesive was also tested to Boeing BSS 7239 requirements, although there is no specific pass criteria for this test.
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 lb/gal
Accelerator Net Weight		9.8 lb/gal
Base Viscosity	27 °C (80 °F)	17,200 cP [2]
Accelerator Viscosity	27 °C (80 °F)	68,200 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	3700 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	3600 lb/in² (CF) [1]
Cold Rolled Steel	MEK/Abrade/MEK	3200 lb/in² (CF/AF) [1]
Galvanized Steel	MEK/Abrade/MEK	3400 lb/in² (CF/AF) [1]
Polycarbonate (PC)	IPA Wipe/Abrade/IPA Wipe	480 lb/in² (AF) [1]
Fiber-Reinforced Plastic	IPA Wipe/Abrade/IPA Wipe	2000 lb/in² (CF) [1]
FRP (Epoxy)	IPA Wipe/Abrade/IPA Wipe	2000 lb/in² (CF) [1]
FRP (Polyester)	IPA Wipe/Abrade/IPA Wipe	2700 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)	3.6 lb/in width (CF) [1]
	23 °C (73 °F)	13.3 lb/in width (AF) [1]
4 h	82 °C (180 °F)	15.9 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

Substrate: Aluminum to Aluminum
Surface Prep: MEK/Abrade/MEK

Attribute Name	Test Method	Value
Honeycomb Climbing Drum Peel	ASTM D1781	56.5 lbf-in/in [1]

[1] ¼" core cell (partial core 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

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

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 18 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

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