Technical data sheet

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3M SCOTCH-WELD ADHESIVE TS230 WHITE

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Technical Data Sheet

3M™ Scotch-Weld™ Polyurethane Reactive Adhesive TS230 White

Product Description

3M™ Scotch-Weld™ Polyurethane Reactive Adhesives are a family of one-component, moisture curing, urethane adhesives. These adhesives are applied warm and bond a wide variety of substrates such as wood, fiber reinforced plastic (FRP) and many other plastics to themselves, to metal and to glass.

3M™ Scotch-Weld™ TS230 White is a sprayable/extrudable grade adhesive with long set time ideal for bonding a wide variety of plastics including polystyrene and polyacrylic. Bonds aluminum and glass to plastic and wood.

Product Features

- 100% solids
- High strength bonds
- Rapid rate of strength build-up
- One component
- Broad substrate adhesion
- Various set times
- Highly plasticizer resistant
- Can be used to bond heat sensitive materials

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 (solid)		White/Off-White
Viscosity	121 °C	9,000 cP [1]
Density (molten)		1.09 g/cm³

[1] Measured on Brookfield viscometer with Thermosel using spindle #27

Typical Mixed Physical Properties

Attribute Name	Value
Open Time	4 min [1]
Time to Handling Strength	150 s [2]

[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] Min time between bond creation and ability to support a 34 kPa (5 psi) tensile load. Open and set times determined by RT environment. Higher temps will lengthen open and set times, while lower temperatures will shorten open time and set time.

Typical Cured Characteristics

Temperature: 23 °C

Attribute Name	Test Method	Dwell Time	Value
Modulus	ASTM D638, ISO 527	7 d	37 MPa [1]
Shore D Hardness	ASTM D2240		45

[1] Die C, measured on 0.3 - 0.4 mm (0.011 - 0.017 in) thick films

Typical Performance Characteristics

180° Peel Adhesion

Temperature: 25 °C
Dwell Time: 168 h

Substrate	Value
ABS	96 N/cm [1]
Acrylic (PMMA)	95 N/cm [1]
Aluminum	89 N/cm [1]
Fiber-Reinforced Plastic	158 N/cm [1]
Glass	109 N/cm [1]
Polycarbonate (PC)	166 N/cm [1]
Polystyrene	88 N/cm [1]
Polyvinyl chloride (PVC)	133 N/cm [1]

[1] N/R – Not Recommended. 25 x 203 mm (1 x 8 in) flexible cotton duck (canvas) bonded to rigid 25 x 102 x 3.2 mm (1 x 4 x 0.125 in) substrates. Jaw separation 51 mm/min (2 in/min).
Bonds were prepared using the suggested procedure for the particular substrate tested.

Attribute Name	Test Method	Dwell Time	Temperature	Substrate	Value
Elongation at Break	ASTM D638, ISO 527	7 d	23 °C		700 % [1]
Tensile Strength at Break	ASTM D638, ISO 527	7 d	23 °C		23 MPa [1]
T-Peel Adhesion	ASTM D1876	7 d	23 °C	Plasticized Vinyl	0.1 MPa [2]
Application Temperature					121 °C

[1] Die C, measured on 0.3 - 0.4 mm (0.011 - 0.017 in) thick films

[2] The separation rate of the testing jaws was 51 mm/min (2 in/min).
Bonds were prepared using the suggested procedure for the particular substrate 25 mm wide (1 in) tested.
AF: adhesive failure CF: cohesive failure SF: substrate failure

Handling/Application Information

Directions for Use

Apply to clean, dry surfaces. Remove oil, grease and other contaminants by wiping with isopropyl alcohol.* For fiber reinforced plastics and other materials that are often contaminated with mold release agents, it is recommended that the surface be solvent wiped, abraded and solvent-wiped.* For additional information, see section on surface preparation. After heating to recommended application temperature, apply adequate amount of 3M™ Scotch-Weld™ Polyurethane Reactive Adhesive to one of the substrates to be bonded. Join the substrates within the adhesives specified open time and hold/fixture the bonded part until the adhesive has adequately set. Do not use to bond metal or glass to itself or each other or cure will not occur due to low moisture vapor transmission of the substrate.

(Important: Adhesive heated at application temperature for more than 16 hours should be discarded.)

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

Cleanup: Allow product to solidify. Remove uncured waxy material (usually within the first 20 minutes after application) by scraping with a putty knife or similar tool.
For cured material, remove by cutting or sanding. Do not use heat or flame to remove adhesive.

Cure Time: The cure rate will vary depending on air temperature, relative humidity, substrate type and bond line thickness. Cure rate is more rapid on wood (moisture rich substrate) than on plastic.

Surface Preparation

Plastic: Wipe with isopropanol soaked cheesecloth.* Allow solvent to evaporate before bonding. Note: 3M™ Scotch-Weld™ Polyurethane Reactive Adhesives are not recommended for bonding untreated polyolefins.
Plastic contaminated with mold release: Wipe with isopropyl alcohol soaked cheesecloth, abrade with fine grit abrasive, wipe with isopropyl alcohol soaked cheesecloth.* Allow solvent to evaporate before bonding.
FRP, Rubber and Aluminum (uncoated):Wipe with methyl ethyl ketone (MEK) soaked cheesecloth, abrade with fine grit abrasive, wipe with MEK soaked cheesecloth.* Allow solvent to evaporate before bonding. Priming may be necessary on aluminum if part will be subjected to hot/humid conditions.
Glass: Wipe with MEK-soaked cheesecloth.* Allow solvent to evaporate before bonding. Priming may be necessary on glass if subject part will be subjected to hot/humid conditions.
*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

Dispensing Equipment

3M™ Scotch-Weld™ Polyurethane Reactive Adhesive Cartridges can only be dispensed through the 3M™ Scotch-Weld™ Polyurethane Reactive Adhesive Applicator. Other container sizes can be dispensed through bulk equipment specifically designed for use with hot melt polyurethane reactive adhesives (P.U.R.). For more information on P.U.R. application equipment, contact your local 3M sales representative. All equipment must be used in strict accordance with the recommendations of the manufacturer.
WARNING: Do not use Scotch-Weld polyurethane reactive adhesive above 275°F (135°C). Scotch-Weld polyurethane reactive adhesive should not be applied to substrates that exceed 275°F (135°C).
Caution: Wear heat resistant gloves and safety glasses when handling. Container sizes available: 10 fl. oz. cartridge, 2 kilogram foil bag, 1 gallon can, five gallon pail, 55 gallon drum.

Storage and Shelf Life

For maximum shelf life, store product at normal indoor warehouse storage (below 120°F/49°C), indoors and protected from exposure to moisture. For best performance, use unopened 10 fluid ounce cartridge and 2 kg within 12 months and other sizes within 6 months from date of manufacture.

Available Sizes - Detailed

Available Package Sizes:
1/10th gallon cartridge[1] [2] 2 Kilo bag[3] 5 gallon pail 55 gallon drum
10 fluid oz/295ml 2 Kgs(4.4 lb) 36 pounds (16.3 kg) 400 pounds (181.4 kg)
Thread size for nozzle M15 X 1.5 Slug OD. – 5.0in (127 mm) Pail ID. – 11.25in (285.8mm) Drum ID. – 23.6in (600.5 mm) Pail Ht. – 13.5in (343 mm) Drum Ht. – 34.8in (883.9 mm)
[1]5 -1/10th gallon cartridges per case.
[2]10 disposable plastic nozzles are supplied with each case of adhesive.
[3]6 -2kg bags per case.

Approximate Coverage per container:
(Linear ft per container based on 1/8in dia. Bead size)
1/10th gallon cartridge 2 Kilo bag 5 gallon pail 55 gallon drum
250ft (76.2m) 1650ft (502.9m) 13,500ft (4114.8m) 170,200ft (51876.9m)

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

Precautionary Information: Refer to product label and Material Safety Data Sheet for health and safety information before using the product. For information, please contact your local 3M Office. You can click or scan QR code to see contact detail or visit www.3M.com Important Information: All statements, technical information and recommendations contained in this document are based upon tests or experience that 3M believes are reliable. However, many factors beyond 3M's control can affect the use and performance of a 3M product in a particular application, including the conditions under which the product is used and the time and environmental conditions in which the product is expected to perform. Since these factors are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for the user's method or application. All questions of liability relating to this product are governed by the terms of the sale subject, where applicable, to the prevailing law. Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications. This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a

result of our recommendations.

ISO Statement

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

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