English-US

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Technical Data Sheet

3M™ Scotch-Weld™ (PUR) Adhesive TS230 Black

Product Details

Regulatory Info/SDS

Product Description

3M™ Scotch-Weld™ PUR Adhesives are a family of one-component, moisture curing, urethane adhesives. These adhesives are applied warm and can 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™ PUR Adhesive TE100 Black 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

- One component
- 100% solids
- Various set times
- Rapid rate of strength build-up
- High strength bonds
- Highly plasticizer resistant
- Broad substrate adhesion
- Can be used to bond many 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)		Black
Viscosity	121 °C (250 °F)	8,400 cP [1]
Density (molten)		9.1 lb/gal

[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 (73 °F)

Attribute Name	Test Method	Dwell Time	Value
Modulus	ASTM D638, ISO 527	7 d	3,000 lb/in² [1]
Shore D Hardness	ASTM D2240		42

[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 (77 °F)
Dwell Time: 168 h

Substrate	Value
ABS	47 lb/in width [1]
Acrylic (PMMA)	47 lb/in width [1]
Aluminum	48 lb/in width [1]
Fiber-Reinforced Plastic	78 lb/in width (Cotton duck failed during testing) [1]
Glass	45 lb/in width [1]
Polycarbonate (PC)	101 lb/in width (Cotton duck failed during testing) [1]
Polystyrene	45 lb/in width [1]
Polyvinyl chloride (PVC)	90 lb/in width (Cotton duck failed during testing) [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	Value
Elongation at Break	ASTM D638, ISO 527	7 d	23 °C (73 °F)	825 % [1]
Application Temperature				121 °C (250 °F) [2]

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

[2] Dispensing temperature should never exceed 275°F (135°C)

Handling/Application Information

Directions for Use

1/10th gallon Cartridges: Should be heated for a minimum of 45 minutes in either the 3M Pre- heater (Pn.23564) or EZ250 Adhesive Applicator (Pn. 23563). The PUR can be held at dispensing temperature for up to 16 hours* (total time in pre-heater and applicator).

2 kilogram bag, 5 gallon pail, and drum: For bulk dispensing equipment refer to the equipment manufacture for adhesive warm up procedures.

***Note:**It is recommended that adhesive heated longer than this total time be discarded and fresh adhesive introduced.

Cartridge dispensing equipment: The 1/10th gallon cartridge should only be dispensed using the 3M™ Scotch-Weld™ PUR EZ250 Adhesive Applicator, Pn 23563. Refer to applicator instructions for complete information on cartridge loading and application.

Bulk dispensing equipment: Bulk containers of adhesive (2 kilogram foil bag, 5 gallon, and 55 gallon) can only be dispensed through equipment specifically designed for use with hot melt polyurethane reactive adhesives (PURs). All equipment must be used in strict accordance with the recommendations of the equipment manufacturer.
Note: The suggestions that follow should be reviewed thoroughly with the bulk equipment manufacturer before using.

Most bulk dispensing systems have separate temperature control zones for the platen (or reservoir), hose(s), and dispensing head(s). 5 and 55 gallon drum systems which utilize a heated platen should have all zones set to 250°F (121°C)1 during normal operation. If equipped, the unit should be programmed to reduce temperatures of all zones to 160-180°F (71-82°C) if not in operation for more than 1 hour. For inverted 5 and 55 gallon systems, the reservoir should be set at 200°F (93°C) with all other zones at 250°F (121°C)1. The reservoir can be set at temperatures up to 250°F (121°C)1 if a full container of adhesive or more is dispensed through the machine in a day.

First Time Start-up and Extended Shutdown Periods: 3M Scotch-Weld™ Purge Material 3756 should be used for first time equipment start-up and for shutdown periods of longer than 1 week. 3M Scotch-Weld™ purge material 3756 is a non-reactive material designed to dispense and flow like Scotch-Weld polyurethane reactive adhesives.
Short Shutdown Periods: For shutdown periods of less than 2 weeks a high temperature grease should be applied to all dispensing heads. The grease acts as a moisture barrier which will help prevent or reduce cure in the dispensing heads.

1Dispensing temperature should never exceed 275°F (135°C)

Clean up: 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. Avoid cleaning with alcohol as it will interfere with the curing process. 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

Aluminum (uncoated) and Rubber: Clean all surfaces to be bonded with methyl ethyl ketone (MEK), abrade with fine grit abrasive, wipe with MEK. After cleaning surfaces allow solvent1 to completely evaporate before bonding. Priming may be necessary on aluminum if part will be subjected to hot/humid conditions.

Glass[2]: Clean all surfaces to be bonded with methyl ethyl ketone (MEK). After cleaning surfaces allow solvent[1] to completely evaporate before bonding. Priming may be necessary on glass if part will be subjected to hot/humid conditions.

Metal[2]: Clean all surfaces to be bonded with a suitable solvent1 such as acetone or methyl ethyl ketone (MEK). After cleaning surfaces allow solvent to completely evaporate before bonding.

Plastic[3]: Clean all surfaces to be bonded with a suitable solvent1 such as acetone or methyl ethyl ketone (MEK). After cleaning surfaces allow solvent to completely evaporate before bonding.

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Plastic[3]:contaminated with mold release: Clean all surfaces to be bonded with a suitable solvent1 such as acetone or methyl ethyl ketone (MEK), then abrade with fine grit abrasive, wipe with solvent such as

Wood: All surfaces should be dry and free of contaminants such as sawdust, dirt or other substances that may interfere with the adhesive bonding process. If the surface to be bonded contains a coating or finish, bonds should be made and evaluated to ensure proper adhesion.

1. When using solvents, use in a well ventilated area. Extinguish all sources of ignition in the work area and observe product directions for use and precautionary measures. Refer to product label and MSDS for further precautions. Always pre-test solvent to ensure it is compatible with substrates.

The use of alcohols as a cleaning solvent may interfere with the curing process of the PUR if proper precautions are not followed. If alcohol is used, allow adequate time for the alcohol to completely evaporate from the substrate before applying the PUR. Also prevent any alcohol from coming in contact with uncured adhesive.

2. Do not bond glass or metal to itself or each other because full cure will not occur due to the low moisture vapor permeation rate of the substrate.

3. 3M™ Scotch-Weld™ PUR Adhesives are not recommended for bonding untreated polyolefins to themselves or to other substrates. For these materials the adhesion maybe improved by surface treatment of the bond area using flame, corona, or plasma treatment.

Application Techniques

After heating adhesive to 250°F (121°C), apply an adequate amount of 3M™ Scotch- Weld™ PUR Adhesive to one of the substrates to be bonded. Adhesive should only be applied to clean, dry surfaces. (See surface preparation below for additional information)

For the best results apply the PUR only on substrates that are at ambient/room temperature prior to adhesive application.

Join the substrates within the recommended open time and hold/fixture the bonded part until the adhesive has adequately set.

Lot Code Information

Example of lot number:8023K4
Code Description
8 Last digit of year manufactured 023 Julian date (day number 0 – 366)
K4 Alpha-numeric lot code (random not sequential)
In this example, the date of manufacture is January 23, 2008.

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. The shelf life stated applies only to product that is stored in the original, unopened container under specified storage conditions. The stated shelf life of 1/10th gallon cartridge and 2 Kg foil bag is 12 months from date of manufacture and 5 gallon and 55 gallon drum is 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

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ISO Statement

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

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