

# Scotch-Weld™

## Epoxy Adhesives

5520plus Black



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## One-Part Epoxy Adhesives

5520plus Black

Technical Data

Jun. 2021

### Product Description

Scotch-Weld™ 5520plus Black is high performance one-part low temperature fast cure epoxy adhesive. This product shows excellent shear strength and good heat and humidity resistance. It provides good adhesion strength to various types of substrates when cured and is designed for heat sensitive elements and semiconductor devices, such as memory cards, CCD/CMOS, LED lens, earphone and high throughput display assembly etc.

### Features

- One part
- Cure at low temperature
- Fast cure
- Good Pot life
- Excellent shear strength
- Excellent heat and humidity resistance
- Excellent sealing
- Excellent potting performance

### Typical Uncured Properties

Note: The following technical information and data should be considered representative or typical only and should not be used for specification purposes.

Note: It may be taken different time to reach cure temperature in different process. Sufficient time must be added to allow the bond location to reach the desired cure temperature. Curing condition should be developed for each device.

Item		5520plus Black
Halogen content		<900 ppm
Viscosity (Brookfield, #4 Spindle, 100 rpm at 23°C)		1.5w-3w cP
Thixotropic		self-leveling
Density g/cc		1.10-1.30
Color		Black
Cure profile	55°C	30 mins
	90°C	2 mins
Pot life at 23°C		3 days
Shelf life at -20°C		12 months

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#### Typical Cured Properties (Overlap shear test (ASTM D 1002-72))

Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. The thickness of the bondline was 0.005-0.008 in.. All strengths were measured at 73F (23°C) except where noted. The separation rate of the testing jaws was 0.1 in. per minute.

Item	5520plus Black
Shore D Hardness	62
Elongation(10mm/min)	55%
Tensile strength	20 MPa
Tg (DSC)	47°C
Overlap shear strength AnAl to AnAl	13.5 MPa
Overlap shear strength Ni to SECC	14.0 MPa
Overlap shear strength AnAl to PC/ABS	11.5 MPa
Overlap shear strength AnAl to PBT(30% GF)	7.5 MPa
Overlap shear strength PC/ABS to PC/ABS	11.5 MPa, SF
Overlap shear strength PBT(30% GF) to PBT(30% GF)	6.5 MPa
Aging 7 days at 65°C, 95%RH AnAl to AnAl	15.0 MPa
Aging 7 days at 65°C, 95%RH Ni to SECC	12.0 MPa
Aging 7 days at 65°C, 95%RH AnAl to PC/ABS	10.5 MPa
Aging 7 days at 65°C, 95%RH AnAl to PBT (30% GF)	8.0 MPa
Aging 7 days at 65°C, 95%RH PC/ABS to PC/ABS	11.0 MPa, SF
Aging 7 days at 65°C, 95%RH PBT (30% GF) to PBT (30% GF)	5.5 MPa

#### Handling/Curing Information

##### Directions for Use

1. Storage at -20°C
2. 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 hours to thaw. Do not warm at temperatures above 27°C.
3. Use glove to avoid contacting container directly.
4. Avoid freezing products again after warming

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#### 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 190F±10F (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 150F± 5F (66°C ± 2°C).

Sodium Dichromate 4.1-4.9 oz./gallon

Sulfuric Acid, 66°3e 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 150F ± 10F (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.

#### Storage

Store products at -20° C or below for maximum storage life. Higher temperatures reduce normal storage life. Rotate stock on a "first-in-first-out" basis.

#### Shelf Life

This product has a shelf life of 12 months when stored in their unopened containers at -20°C.

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#### 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, contact 3M

#### Technical Information

The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

#### Warranty, Limited Remedy, and Disclaimer

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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. Address correspondence to: 3M Adhesives Division, 3M Center, Building 220-8E-05, St. Paul, MN 55144-1000. Our fax number is 651-733-9175. In Canada, phone: 1-800-364-3577. In Puerto Rico, phone: 1-787-750-3000. In Mexico, phone: 52-70-04-00.

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This Adhesives Division product was manufactured under a 3M quality system registered to ISO 9002 standards.

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For Additional Product Safety and Health Information, See Material Safety Data Sheet, or call:



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