

February, 2019

3M™ Scotch-Weld™ Epoxy Adhesive DP460 Off White

Product Description

3M™ Scotch-Weld™ Epoxy Adhesive DP460 Off-White is a high performance, two-part epoxy adhesive offering outstanding shear and peel adhesion, and very high levels of durability.

Product Features

- High shear strength
- 60 minute work life
- Easy mixing
- High peel strength
- Recognized as meeting UL 94 HB



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

Property	Values	Temp C	Temp F
Base Color	White		
Accelerator Color	Amber		
Base Viscosity	20,000 - 50,000 cP	23C	72F
Accelerator Viscosity	8,000 - 14,000 cP	23C	72F
Base Resin	Epoxy		
Accelerator Resin	Amine		
Base Net Weight	9.3 to 9.7 lb/gal		
Accelerator Net Weight	8.8 to 9.2 lb/gal		
Mix Ratio by Volume (B:A)	2:1		
Mix Ratio by Weight (B:A)	2:0.96		

Typical Mixed Physical Properties

Property	Values		Temp C	Temp F	Notes	Method	Test Name	Dwell/ Cure Time	Dwell Time Units	Substrate	Substrate Notes
Worklife, 20g mixed	60 min		23C	73F							
Worklife, 10g mixed	75 min		23C	73F							
Worklife, 5g mixed	90 min		23C	73F							
Time to Full Cure	4 hr	24 hr	23C	73F	The cure time is defined as that time required for the adhesive to achieve a minimum of 80% of the ultimate strength as measured by aluminum-aluminum OLS.						

Table continued on next page

Typical Mixed Physical Properties (continued)

Property	Values		Temp C	Temp F	Notes	Method	Test Name	Dwell/ Cure Time	Dwell/ Cure Units	Substrate	Substrate Notes
Rate of Strength Buildup 6hr	1000 lb/in ²		23C	72F	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubber, 0.125 in.; plastics, 0.125 in.	ASTM D1002	Overlap Shear Strength	6	hr	Etched Aluminum	0.005- 0.008in bondline
Rate of Strength Buildup 1day	4000/60 lb/in ²		23C	72F	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubber, 0.125 in.; plastics, 0.125 in.	ASTM D1002	Overlap Shear Strength	1	day	Etched Aluminum	0.005- 0.008in bondline
Rate of Strength Buildup 5hr	400 lb/in ²		23C	72F	The average bondline temperature during the cure time will be somewhat lower than the oven temperature. The value in the denominator is the expected minimum 73°F (23°C) T-peel strength (piw) measured after the indicated cure cycle. NOTE: The data in this Technical Data Sheet were generated using the 3M™ EPX™ Applicator System equipped with an EPX static mixer, according to manufacturer's directions. Thorough hand-mixing will afford comparable results.	ASTM D1002	Overlap Shear Strength	5	hr	Aluminum	7mil bondline
Rate of Strength Buildup 7hr	3500 lb/in ²		23C	72F	The average bondline temperature during the cure time will be somewhat lower than the oven temperature. The value in the denominator is the expected minimum 73°F (23°C) T-peel strength (piw) measured after the indicated cure cycle. NOTE: The data in this Technical Data Sheet were generated using the 3M™ EPX™ Applicator System equipped with an EPX static mixer, according to manufacturer's directions. Thorough hand-mixing will afford comparable results.	ASTM D1002	Overlap Shear Strength	7	hr	Aluminum	7mil bondline

Table continued on next page

Typical Mixed Physical Properties (continued)

Property	Values		Temp C	Temp F	Notes	Method	Test Name	Dwell/ Time	Dwell/ Time Units	Substrate	Substrate Notes
Open Time	60 min				Maximum time allowed after applying adhesive to one substrate before bond must be closed and fixed in place. Cure times are approximate and depend on adhesive temperature. For hotmelts: The approximate bonding range of a 1/8" bead of molten adhesive on a non-metallic surface.						

Typical Performance Characteristics

Property	Values		Method	Test Name	Dwell/ Time	Dwell/ Time Units	Temp C	Temp F	Environmental Conditions	Substrate	Substrate Notes	Surface Preparation	Notes	Failure mode
Overlap Shear Strength 7day Aluminum	3500 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Aluminum	0.005-0.008in bondline	MEK/ Acetone	Overlap (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values		Method	Test Name	Dwell Time	Dwell Temp Units	Temp C	Temp F	Environmental Conditions	Substrate	Surface Notes	Surface Preparation	Failure mode
Overlap Shear Strength 7day Cold Rolled Steel	2800 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH Cold Rolled Steel	0.005-0.008in MEK/acetone bondline	0.005-0.008in MEK/acetone bondline	Adhesive Failure (AF)	Overlap Shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)
Overlap Shear Strength 7day Copper	4000 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH Copper	0.005-0.008in MEK/acetone bondline	0.005-0.008in MEK/acetone bondline	Adhesive Failure (AF)	Overlap Shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values		Method	Test Name	Dwell Time	Dwell Temp Units	Temp C	Temp F	Environmental Conditions	Substrate	Substrate Notes	Surface Preparation	Notes	Failure mode
Overlap Shear Strength 7day Stainless Steel	4000 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Stainless Steel	0.005-0.008 in. bondline	MEK	Overlap Shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	
Overlap Shear Strength 7day ABS	300 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	ABS	0.005-0.008 in. bondline	IPA Wipe	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values		Method	Test Name	Dwell Time	Dwell Temp Units	Temp C	Temp F	Environmental Conditions	Substrate	Surface Notes	Surface Preparation	Failure mode	
Overlap Shear Strength 7day ABS	575 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	ABS	0.005 in. Vipe	IPA	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	
Overlap Shear Strength 7day Polyvinyl chloride (PVC)	500 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Polyvinyl chloride (PVC)	0.005 in. Vipe	IPA	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values		Method	Test Name	Dwell Time	Dwell Temp Units	Temp C	Temp F	Environmental Conditions	Substrate	Substrate Notes	Surface Preparation	Notes	Failure mode
Overlap Shear Strength 7day Polyvinyl chloride (PVC)	350 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Polyvinyl chloride (PVC)	0.008 in. bondline	IPA Wipe	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	
Overlap Shear Strength 7day Polycarbonate (PC)	400 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Polycarbonate (PC)	0.008 in. bondline	IPA Wipe	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values		Method	Test Name	Dwell Time	Dwell Temp Units	Temp C	Temp F	Environmental Conditions	Substrate	Substrate Notes	Surface Preparation	Notes	Failure mode
Overlap Shear Strength 7day Polycarbonate (PC)	500 lb/in²		ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Polycarbonate (PC)	0.008 in. Vipe/bondline	IPA	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	
Overlap Shear Strength 7day Acrylic (PMMA)	220 lb/in²	330 lb/in²	ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Acrylic (PMMA)	0.008 in. Vipe/bondline	IPA	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values	Method	Test Name	Dwell Time	Dwell Temp Units	Temp C	Temp F	Environmental Conditions	Substrate	Substrate Notes	Surface Preparation	Notes	Failure mode
Overlap Shear Strength 7day Fiber-Reinforced Plastic	800 lb/in²	ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Fiber-Reinforced Plastic	0.005 in. thick	IPA Wipe	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	
Overlap Shear Strength 7day Fiber-Reinforced Plastic	1000 lb/in²	ASTM D1002	Overlap Shear Strength	7	day	23C	73F	50%RH	Fiber-Reinforced Plastic	0.005 in. thick	IPA Wipe	Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. These bonds were made individually using 1 in. x 4 in. pieces of substrate except for aluminum. Two panels 0.063 in. thick, 4 in. x 7 in. of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hour. The separation rate of the testing jaws was 0.1 in. per minute for metals, 2 in. per minute for plastics and 20 in. per minute for rubbers. The thickness of the substrates were: steel, 0.060 in.; other metals, 0.05-0.064 in.; rubbers, 0.125 in.; plastics, 0.125 in. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)	SF
T-Peel Adhesion -55C Aluminum	5 to 10 lb/in width	ASTM D1876	T-Peel Adhesion			-55C	-67F		Aluminum	0.032 in. thick		T-peel strengths were measured on 1 in. wide bonds. The testing jaw separation rate was 20 inches per minute.	

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values		Method	Test Name	Dwell Time	Dwell Temp Units	Temp C	Temp F	Environmental Conditions	Substrate	Substrate Notes	Surface Preparation	Notes	Failure mode
T-Peel Adhesion 23C Aluminum	60 lb/in width		ASTM D1876	T-Peel Adhesion			23C	73F		Aluminum	0.032 in thick		T-peel strengths were measured on 1 in. wide bonds. The testing jaw separation rate was 20 inches per minute.	
T-Peel Adhesion 82C Aluminum	3 to 5 lb/in width		ASTM D1876	T-Peel Adhesion			82C	180F		Aluminum	0.032 in thick		T-peel strengths were measured on 1 in. wide bonds. The testing jaw separation rate was 20 inches per minute.	
T-Peel Adhesion 23C Etched Aluminum	60 lb/in width		ASTM D1876	T-Peel Adhesion			23C	73F		Etched Aluminum	0.032 in thick; 17 - 20 mil bondline		T-peel strengths were measured on 1 in. wide bonds. The testing jaw separation rate was 20 inches per minute.	
T-Peel Adhesion 23C Etched Aluminum	50 lb/in width		ASTM D1876	T-Peel Adhesion			23C	73F		Etched Aluminum	0.032 in thick; 5 - 8 mil bondline		T-peel strengths were measured on 1 in. wide bonds. The testing jaw separation rate was 20 inches per minute.	
T-Peel Adhesion 23C Cold Rolled Steel	40 lb/in width		ASTM D1876	T-Peel Adhesion			23C	73F		Cold Rolled Steel	0.032 in thick; 17 - 20 mil bondline	Oakite degrease	T-peel strengths were measured on 1 in. wide bonds. The testing jaw separation rate was 20 inches per minute.	

Table continued on next page

Typical Performance Characteristics (continued)

Property	Values		Method	Test Name	Dwell Time	Dwell Time Units	Temp C	Temp F	Environmental Conditions	Substrate	Substrate Notes	Surface Preparation	Notes	Failure mode
T-Peel Adhesion 23C Cold Rolled Steel	25 lb/in width		ASTM D1876	T-Peel Adhesion			23C	73F		Cold Rolled Steel	0.032 in thick; 17 - 20 mil bondline	MEK/Abrasive	Adhesive strengths were measured on 1 in. wide bonds. The testing jaw separation rate was 20 inches per minute.	

3M™ EPX™ Pneumatic Applicator Delivery Rates

Property	Values	Test Condition	Notes
Pneumatic Applicator Delivery Rates	31.1 g/min	200 ml Applicator – Maximum Pressure 58 psi. 6mm Nozzle	Tests were run at a temperature of 70°F ± 2°F (21°C ± 1°C) and at maximum applicator pressure.
Pneumatic Applicator Delivery Rates	132 g/min	200 ml Applicator – Maximum Pressure 58 psi. 10mm Nozzle	Tests were run at a temperature of 70°F ± 2°F (21°C ± 1°C) and at maximum applicator pressure.

Electrical and Thermal Properties

Property	Values	Method	Temp C	Temp F	Test Condition
Volume Resistivity	2.4 × 10^14 Ω-cm	ASTM D257	23C	73F	
Coefficient of Thermal Expansion	59 × 10^-6 m/m/°C				Below Tg
Coefficient of Thermal Expansion	159 × 10^-6 m/m/°C				Above Tg

3M™ Scotch-Weld™ Epoxy Adhesive DP460 Off White

Handling/Application Information

Directions for Use

3M™ Scotch-Weld™ Epoxy Adhesives DP460 Off-White is supplied in dual syringe plastic duo-pak cartridges as part of the 3M™ EPX™ Applicator System. The duo-pak cartridges are supplied in 50 ml, 200 ml and 400 ml configurations. To use the 50 ml cartridge simply insert the duo-pak cartridge into the EPX applicator and start the plunger into the cylinders using light pressure on the trigger. Next, remove the duo-pak cartridge cap and expel a small amount of adhesive to be sure both sides of the duo-pak cartridge are flowing evenly and freely. If simultaneous mixing of Part A and Part B is desired, attach the EPX mixing nozzle to the duo-pak cartridge and begin dispensing the adhesive.

With the 200 ml and 400 ml cartridges, the nozzle must be attached before dispensing any material to prevent unmixed adhesive from getting into the applicator cartridge holder. A small quantity of material should be discarded until uniform color, consistency of product and even flow is evident.

When mixing Part A and Part B manually, the components must be mixed in the ratio indicated in the typical uncured properties section. Complete mixing of the two components is required to obtain optimum properties.

Two-part mixing/proportioning/dispensing equipment is available for intermittent or production line use. These systems are ideal for line uses because of their variable shot size and flow rate characteristics and are adaptable to most applications.

Surface Preparation

The following surface preparations were used for substrates described in this Technical Data Sheet.

A. Aluminum Etch

Optimized FPL Etch - 3M (test method C-2803)

1. Alkaline degrease – Oakite 164 solution (9-11 oz./gallon water) at 190°F ± 10°F (88°C ± 5°C) for 10-20 minutes. Rinse immediately in large quantities of cold running water (3M test method C-2802).

2. Optimized FPL Etch Solution (1 liter):

Material	Amount
Distilled Water	700 ml plus balance of liter (see below)
Sodium Dichromate	28 to 67.3 grams
Sulfuric Acid	287.9 to 310.0 grams
Aluminum Chips	1.5 grams/liter of mixed solution

To prepare 1 liter of this solution, dissolve sodium dichromate in 700 ml of distilled water. Add sulfuric acid and mix well. Add additional distilled water to fill to 1 liter.

Heat mixed solution to 66 to 71°C (150 to 160°F). Dissolve

1.5 grams of 2024 bare aluminum chips per liter of mixed solution. Gentle agitation will help aluminum dissolve in about 24 hours.

To FPL etch panels, place them in the above solution at 150 to 160°F (66 to 71°C) for 12 to 15 minutes.

Note: Review and follow precautionary information provided by chemical suppliers prior to preparation of this etch solution.

3. Rinse immediately in large quantities of clear running tap water.

4. Dry – air dry approximately 15 minutes followed by force dry at 140°F (60°C) maximum for 10 minutes (minimum).

5. Both surface structure and chemistry play a significant role in determining the strength and permanence of bonded structures. It is therefore advisable to bond or prime freshly primed clean surfaces as soon as possible after surface preparation in order to avoid contamination and/or mechanical damage. Please contact your 3M sales representative for primer recommendations.

B. Oakite Degrease

Oakite 164 solutions (9-11 oz./gallon of water) at 190°F ± 10°F (88°C ± 5°C) for 2 minutes. Rinse immediately in large quantities of cold running water.

C. MEK/Abrade/MEK

Wipe surface with a methyl ethyl ketone (MEK) soaked swab, abrade and wipe with a MEK soaked swab.* Allow solvent to evaporate before applying adhesive.

D. Isopropyl Alcohol Wipe

Wipe surface with an isopropyl alcohol soaked swab.* Allow solvent to evaporate before applying adhesive.

E. Isopropyl Alcohol/Abrade/Isopropyl Alcohol

Wipe surface with an isopropyl alcohol soaked swab, abrade using clean fine grit abrasives, and wipe with an isopropyl alcohol soaked swab.* Then allow solvent to evaporate before applying adhesive.

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

3M™ Scotch-Weld™ Epoxy Adhesive DP460 Off White

Storage and Shelf Life

Store products at 60-80°F (15-27°C) for maximum shelf life.
These products have a shelf life of 24 months from date of manufacture in original containers at room temperature.

Industry Specifications

UL 94 HB
NFPA 130 test report details (ASTM E162, ASTM E662, BSS 7239, SMP 800-C)

Trademarks

3M, Scotch-Weld and EPX are trademarks of 3M Company.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/company-us/all-3m-products/~ /3M-Scotch-Weld-Epoxy-Adhesive-DP460/?N=5002385+3293241275&rt=rud
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=DP460 Off White

Typical Physical Properties

Color: Off-White

Conditions
Test Name: Cured

Typical Cured Characteristics

Shore D Hardness: 77

Conditions
Temp C: 23C
Temp F: 73F
Methods
ASTM D2240

Family Group

	DP460 Off White	DP460NS
Color Test Name: Cured	Off-White	Off-White
Open Time (min)	60	60

ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

3M™ Scotch-Weld™ Epoxy Adhesive DP460 Off White

Information

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

Product Selection and Use: Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment and reviewing all applicable regulations and standards (e.g., OSHA, ANSI, etc.). Failure to properly evaluate, select, and use a 3M product and appropriate safety products, or to meet all applicable safety regulations, may result in injury, sickness, death, and/or harm to property.

Warranty, Limited Remedy, and Disclaimer: Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, then the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

Limitation of Liability: Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.

Disclaimer: 3M industrial and occupational products are intended, labeled, and packaged for sale to trained industrial and occupational customers for workplace use. Unless specifically stated otherwise on the applicable product packaging or literature, these products are not intended, labeled, or packaged for sale to or use by consumers (e.g., for home, personal, primary or secondary school, recreational/sporting, or other uses not described in the applicable product packaging or literature), and must be selected and used in compliance with applicable health and safety regulations and standards (e.g., U.S. OSHA, ANSI), as well as all product literature, user instructions, warnings, and limitations, and the user must take any action required under any recall, field action or other product use notice. Misuse of 3M industrial and occupational products may result in injury, sickness, or death. For help with product selection and use, consult your on-site safety professional, industrial hygienist, or other subject matter expert. For additional product information, visit www.3M.com.



3M United States
3M Center
St. Paul, MN 55144-1000
800-362-3550
www.3M.com

Please recycle.
© 3M 2021. All Rights Reserved.

The brands listed above are trademarks of 3M