

Technical Data Sheet

3M™ Scotch-Weld™ Urethane Adhesive DP620NS Black

Product Description

3M™ Scotch-Weld™ Urethane Adhesive DP620NS is a black, rapid setting, two-component polyurethane. It is packaged as 1:1 ratio liquids in a duo-pak cartridge. With the squeeze of the trigger, the components are automatically mixed and easily dispensed as a bubble-free non-sag paste.

Product Features

- Medium open time
- 1:1 Mix Ratio
- Bonds to a wide variety of substrates
- Easy Mixing, Non-Sag formulation
- Low Temperature Flexibility
- Low shrinkage

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	Additional Information
Color	Black	View 


Notes: Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.

Base Color	Clear Yellowish
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Accelerator Color	Opaque Black
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Base Density	9.0 to 9.4 lb/gal
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Accelerator Density	9.5 to 9.9 lb/gal
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Base Viscosity	3000 to 6000 cP	View 
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Temp C: 23C
Temp F: 72F

Notes: Brookfield CP #52 @ 50 rpm

Accelerator Viscosity

1000 to 5000 cP

[View](#) 

Temp C: 23C
Temp F: 72F

Notes: Brookfield CP #52 @ 50 rpm

Mix Ratio by Volume (B:A)

1:1

Mix Ratio by Weight (B:A)

1:1

Typical Mixed Physical Properties

Property

Values

Additional Information

Open Time (min)


20 min

[View](#) 

Notes: 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 1/8" bead of molten adhesive on a non-metallic surface.

Worklife, 10g mixed

20 min

[View](#) 

Temp C: 23C
Temp F: 73F

Time to Handling Strength

4 hr

[View](#) 

Temp C: 23C
Temp F: 73F

Notes: Minimum time required to achieve 50 psi of overlap shear strength. Cure times are approximate and depend on adhesive temperature.

Typical Physical Properties

Property

Values

Additional Information

Color

Black

[View](#) 

Test Name: Cured

Typical Cured Characteristics

Property

Values

Additional Information

Modulus

131000 lb/in²

[View](#) 

Test Method: ASTM D638

Test Condition: Room Temperature

Shore D Hardness

50

[View](#) 

Test Method: ASTM D2240

Temp C: 23C
Temp F: 73F

Strain at Break	110 %	View
Test Method: ASTM D638		
Test Condition: Room Temperature		
Temperature Range	-60-250 °F	View
Test Condition: Continuous		
Temperature Range	-51-121 °C	View
Test Condition: Continuous		

Typical Performance Characteristics

Property	Values	Additional Information
Long Term Temp C	121 °C	View
Test Condition: Long Term (day, weeks)		
Minimum Long Term Temperature Resistance	-51 °C	View
Test Condition: Long Term (day, weeks)		
Long Term Temp F	250 °F	View
Test Condition: Long Term (day, weeks)		
Minimum Long Term Temperature Resistance	-60 °F	View
Test Condition: Long Term (day, weeks)		
Bell Peel	30 lb/in width	View






Test Method: ASTM D3167

Temp C: 23C
Temp F: 72F
Substrate: Aluminum

Notes: Bell peel strengths were measured on 1 in. wide bonds at the temperatures noted. The testing jaw separation rate was 6 in. per minute. AF: adhesive failure CF: cohesive failure SF: substrate failure

Overlap Shear Strength 7day Aluminum	2880 lb/in ²	View
Test Method: ASTM D1002		
Test Name: Overlap Shear Strength		
Dwell/Cure Time: 7.0		
Dwell Time Units: day		
Temp C: 23C		
Temp F: 73F		
Environmental Condition: 50%RH		
Substrate: Aluminum		
Surface Preparation: MEK/Abrade/MEK		

Notes: 1in wide 1/2in overlap specimens. 2 panels of 0.05-0.064in x 4in x 7in 2024T-3 clad aluminum bonded and cut to 1in wide samples after 24hr. Jaw separation 0.1 in/min, 0.005-0.008in bondline. Cohesive (CF), Adhesive (AF), and Substrate (SF) Failure

Overlap Shear Strength 7day Cold Rolled Steel	1700 lb/in ²	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 73F Environmental Condition: 50%RH Substrate: Cold Rolled Steel Surface Preparation: MEK/Abrade/MEK</p> <p>Notes: Overlap shear (OLS) strengths were measured on 1in wide 1/2in overlap specimens on 1in x 4in x .060in substrates. Jaw separation 0.1 in/min. 0.005-0.008in bondline. Cohesive (CF), Adhesive(AF), and Substrate(SF) Failure</p>		
Overlap Shear Strength 7day ABS	630 lb/in ²	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 73F Environmental Condition: 50%RH Substrate: ABS Surface Preparation: IPA Wipe/Abrade/IPA Wipe</p> <p>Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. Bonds made with 1 in x 4 in x 0.125in pieces of substrate with a 0.005-0.008in bondline. Jaw Separation 2in/min Cohesive (CF), Adhesive (AF), Substrate (SF) Failure</p>		
Overlap Shear Strength 7day Polyvinyl chloride (PVC)	480 lb/in ²	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 73F Environmental Condition: 50%RH Substrate: Polyvinyl chloride (PVC) Surface Preparation: IPA Wipe/Abrade/IPA Wipe</p> <p>Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. 1" x 4" x 0.125" substrate Jaw separation 2 in/min; 0.005-0.008in bondline. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)</p>		
Overlap Shear Strength 7day Polycarbonate (PC)	430 lb/in ²	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0 Dwell Time Units: day Temp C: 23C Temp F: 73F Environmental Condition: 50%RH Substrate: Polycarbonate (PC) Surface Preparation: IPA Wipe/Abrade/IPA Wipe</p> <p>Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. 1" x 4" x 0.125" substrate Jaw separation 2 in/min; 0.005-0.008in bondline. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)</p>		
Overlap Shear Strength 7day Acrylic (PMMA)	400 lb/in ²	View 
<p>Test Method: ASTM D1002</p> <p>Test Name: Overlap Shear Strength Dwell/Cure Time: 7.0</p>		

Dwell Time Units: day
Temp C: 23C
Temp F: 73F
Environmental Condition: 50%RH
Substrate: Acrylic (PMMA)

Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. 1" x 4" x 0.125" substrate Jaw separation 2 in/min; 0.005-0.008in bondline. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)

Overlap Shear Strength 7day Fiber-Reinforced Plastic

700 lb/in²

View 

Test Method: ASTM D1002

Test Name: Overlap Shear Strength
Dwell/Cure Time: 7.0
Dwell Time Units: day
Temp C: 23C
Temp F: 73F
Environmental Condition: 50%RH
Substrate: Fiber-Reinforced Plastic
Surface Preparation: IPA Wipe/Abrade/IPA Wipe

Notes: Overlap shear (OLS) strengths were measured on 1 in. wide 1/2 in. overlap specimens. 1" x 4" x 0.125" substrate Jaw separation 2 in/min; 0.005-0.008in bondline. Cohesive Failure (CF), Adhesive Failure (AF), Substrate Failure (SF)

Storage and Shelf Life

Store products at 60-80°F (15-27°C) for maximum shelf life.

These products have a shelf life of 18 months from date of manufacture in original duo-pak containers at room temperature.

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Bottom Matter

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Handling/Application Information

Application Examples

- Prototype building

- Bonding of dis-similar substrates
- As a combination structural adhesive and sealant in construction applications
- General bonding and sealing (structural sealing)

Directions for Use

3M™ Scotch-Weld™ Urethane Adhesive DP620NS is supplied in dual syringe plastic duo-pak cartridges as part of the 3M™ EPX™ Applicator System. The duo-pak cartridges are supplied in 48.5 ml configuration. To use the EPX cartridge system simply insert the duo-pak cartridge into the EPX applicator. 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.

When mixing Part A and Part B manually the components must be mixed in the ratio indicated in the typical uncured properties section of this data sheet. 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.

Apply adhesive to clean, dry surfaces, joint parts and secure until adhesive sets.

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.

Rinse immediately in large quantities of clear running tap water.

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

3. 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 Only Surface Preparation

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

E. Isopropyl Alcohol/Abrade/Isopropyl Alcohol Surface Preparation

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.

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40066434/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=DP620NS Black

ISO Statement

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