Technical Data Sheet

3M™ Scotch-Weld™ Urethane Adhesive DP605NS Off White

Product Description

3M™ Scotch-Weld™ Urethane Adhesive DP605 NS Off-White is a two-part, non-sag urethane adhesive. It provides tough, flexible bonds with good adhesion to a wide variety of substrates, especially wood and many properly abraded and cleaned plastics. Good adhesion can also be obtained on painted metals and ceramics and glass. For maximum bond durability under moisture conditions, priming of glass is required.

Product Features

- Tough, flexible bonds
- Non-Sag/Thixotropic
- 1:1 Mix Ratio
- 5 minute worklife
- Bonds wood and many plastics
- Low Halogen Content

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	Off-White	View
Notes: Colors may vary from nearly white to yellow/amber. Adhesive performance is not affected by color variation.		
Base Color	White	
Accelerator Color	Tan	
Base Density	8.8 to 9.2 lb/gal	
Accelerator Density	9.7 to 10.2 lb/gal	
Base Viscosity	11 to 20 s	View
Temp C: 23C Temp F: 72F		

Notes: (Approx.) time to deliver 20 gms @ 20 psi through a .104" orifice

Accelerator Viscosity	11 to 20 s	View

Temp C: 23C
Temp F: 72F

Notes: (Approx.) time to deliver 20 gms @ 20 psi through a .104" orifice

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)	5 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	5 min	View

Temp C: 23C
Temp F: 73F

Set Time (min)	15 to 20 min	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.

Time to Full Cure	48 hr	View

Temp C: 23C
Temp F: 73F

Notes: 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.

Typical Physical Properties

Property	Values	Additional Information
Color	Off-White	View

Test Name: Cured

Typical Cured Characteristics

Property	Values	Additional Information

Shore D Hardness	62	View

Test Method: ASTM D2240

Temp C: 23C
Temp F: 73F

Total Chlorine	670 ppm	View

Notes: Halogen content measured using ion chromatography; “low halogen” defined by International Electrotechnical Commission (IEC) Standard 61249-2-21 as having less than 900 ppm chlorine, less than 900 ppm bromine, and less than 1,500 ppm total halogens.

Total Bromine	<10 ppm	View

Notes: Halogen content measured using ion chromatography; “low halogen” defined by International Electrotechnical Commission (IEC) Standard 61249-2-21 as having less than 900 ppm chlorine, less than 900 ppm bromine, and less than 1,500 ppm total halogens.

Total Halogens	<800 ppm	View

Notes: Halogen content measured using ion chromatography; “low halogen” defined by International Electrotechnical Commission (IEC) Standard 61249-2-21 as having less than 900 ppm chlorine, less than 900 ppm bromine, and less than 1,500 ppm total halogens.

Weight Loss by Thermal Gravimetric Analysis (TGA)	300 °C	View

Test Method: ASTM E1131

Notes: Weight loss by Thermal Gravimetric Analysis reported as that temperature at which 5% weight loss occurs by TGA in air at 5°C (9°F) rise per minute.

Weight Loss by Thermal Gravimetric Analysis (TGA)	572 F	View

Test Method: ASTM E1131

Notes: Weight loss by Thermal Gravimetric Analysis reported as that temperature at which 5% weight loss occurs by TGA in air at 5°C (9°F) rise per minute.

Typical Performance Characteristics

Property	Values	Additional Information
Elongation	100 %	View

Test Method: ASTM D882

Bell Peel	33 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	650 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: 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	660 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: Cold Rolled Steel
Surface Preparation: MEK/Abrade/MEK

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

Overlap Shear Strength 7day ABS	640 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: ABS
Surface Preparation: IPA Wipe/Abrade/IPA Wipe

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

Overlap Shear Strength 7day Polyvinyl chloride (PVC)	620 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: Polyvinyl chloride (PVC)
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)

Overlap Shear Strength 7day Polycarbonate (PC)	720 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: Polycarbonate (PC)
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)

Overlap Shear Strength 7day Acrylic (PMMA)	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: 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	640 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)

Electrical and Thermal Properties

Property	Values	Additional Information
Glass Transition Temperature (Tg)	41 °C	View

Test Condition: Mid-Point

Notes: Glass Transition Temperature (Tg) determined using DSC Analyzer with a heating rate of 68°F (20°C) per minute. Second heat values given.

Dielectric Constant 1KHz	3.1	View

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F
Test Condition: 1 KHz

Dissipation Factor 1KHz	0.021	View

Test Method: ASTM D150

Temp C: 23C
Temp F: 72F
Test Condition: 1 KHz

Volume Resistivity	1.0 x 10^14 Ω-cm	View

Test Method: ASTM D257

Temp C: 23C
Temp F: 73F

Coefficient of Thermal Expansion	121 x 10^-6 m/m/°C	View

Test Condition: below 41°C

Notes: TCE determined using TMA Analyzer using a heating rate of 10°C per minute. Second heat values given.

Coefficient of Thermal Expansion	219 x 10^-6 m/m/°C	View

Test Condition: above 41°C

Notes: TCE determined using TMA Analyzer using a heating rate of 10°C per minute. Second heat values given.

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.

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.

Bottom Matter

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Handling/Application Information

Directions for Use

3M™ Scotch-Weld™ Urethane Adhesive DP605NS 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 and 200 ml configurations. 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).

Dissolve1.5 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.

*Note: When using solvents, extinguish all ignition sources, including pilot lights,

and follow the manufacturer's precautions and directions for use.

D. Isopropyl Alcohol Wipe Only Surface Preparation

Wipe surface with an isopropyl alcohol soaked swab.* 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.

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/b40066468/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=DP605NS Off White

Family Group

Link Tags:

DP605NS Off White

Products	Open Time (min)	Color	Shore D Hardness
DP605NS Off White	5 min	Off-White	62

ISO Statement

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

Information

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