

Technical data sheet



Product: DP604NS

Manufacturer: 3M DEUTSCHLAND GMBH

Product group: KLEBSTOFF

Article group: 2-K KLEBSTOFF

Download: 13.05.2024

3M™ SCOTCH-WELD™ DP604NS

This data sheet was provided to you by Tewipack Uhl GmbH. The company tewipack Uhl GmbH assumes no responsibility for the topicality and the Accuracy of the information contained. The properties of the products can vary due to various influences such as composition and condition of the Substrate, impurities in or on the substrate, temperature and humidity at the Change storage and environmental conditions during use. Using this product in combination with other material, the customer is responsible for to check through our own tests whether the product is suitable for the planned combination and whether this combination delivers the expected results

Tewipack Uhl GmbH
Industriestraße 15
D-75382 Althengstett

Telephone:
+49(0)7051/9297-0
Fax:
+49(0)7051/9297-99

E-Mail:
info@tewipack.de
Website:
www.tewipack.de

Managing director:
Alexander Uhl,
Michael Uhl
HRB 330424
Amtsgericht
Stuttgart

Bank details:
Sparkasse
Sindelfingen
Pforzheim
Calw
BLZ 666 500
85
Konto 17 787

Commerzbank
Sindelfingen
BLZ 603 400 71
Konto 8 001 166

Vereinigte
Volksbank AG
Böblingen
BLZ 603 900 00
Konto 80 089
003

Postbank
Stuttgart
BLZ 600 100
70
Konto 146
294 708

3M

Scotch-Weld™

Urethane Adhesive

DP604NS, Black

Technical Data Sheet

Dezember 2023

Product Description

3M™ Scotch-Weld™ Urethane Adhesive DP604NS 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.

Features

- Fast Setting
- 1:1 Mix Ratio
- Easy Mixing, Non-Sag formulation
- Low Temperature Flexibility

Suggested Applications:

Building & Construction Maintenance & Repair

Manufacturing & Assembly

- Bonds wood or metal door sills to concrete and seals permanently
- Bonds wood and metal door frames to wood or metal structure
- Bonds wood paneling to wood or plaster
- As a combination structural adhesive and sealant in construction applications
- Bonding of aluminum shades to glass
- Damming material against corrosion
- Sealing fabric water hoses
- General bonding and sealing (structural sealing)

Note: The data in this sheet were generated using the 3M™ EPX Applicator System equipped with an EXP static mixer, according to manufacturer's directions. Thorough hand-mixing will afford comparable results.

**Typical
Uncured
Physical
Properties**

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

Property	Condition	DP604NS, Black
Appearance	Part B Part A	Clear Yellowish Opaque Black
Mix Ratio (B:A)	By volume By weight	1:1 1:1
Viscosity¹, centipoise	Part B Part A	800 - 2000 cP 1500 - 3500 cP
Density, lb/gal	Part B Part A	8.3-8.7 8.5-8.9
Work Life @ 23°C (73°F)	10 g, 1/4" thick, @ 25°C (77°F)	4 minutes

¹Brookfield CP #3 @ 20 rpm, 24°C (75°F)

**Typical
Cured
Physical
Properties**

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

Property	Condition	DP604NS, Black
Appearance	Cured	Black
Time to Handling Strength	50 PSI Overlap shear strength	20 minutes
Hardness After Cure		85 Shore A
Elastic Modulus (ASTM D638)	24°C (75°F)	6700 psi
Strain at Break (ASTM D638)	24°C (75°F)	420%
Temperature Range	Continuous Exposure	-51°C (-60°F) to 121°C (250°F)

3M™ Scotch-Weld™

Urethane Adhesive

DP604NS, Black

Typical Adhesive Performance Characteristics

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

Aluminum, Overlap Shear, at Temperature (PSI) (ASTM D1002)

Temperature	DP604NS, Black
-40°C (-40°F)	1340
23°C (73°F)	650
82°C (180°F) (15 min.) ¹	340

¹Represents time in test chamber oven before test.

Overlap Shear, Tested @ 23°C (73°F) (PSI) (ASTM D1002)

Product		DP604NS, Black
Aluminum	MEK/abrade/MEK	650
Cold Rolled Steel	MEK/abrade/MEK	660
Nylon	IPA/abrade/IPA	470
Polycarbonate	IPA/abrade/IPA	720
Acrylic	IPA/abrade/IPA	700
SMC	IPA/abrade/IPA	640
Rigid PVC	IPA/abrade/IPA	620
ABS	IPA/abrade/IPA	640
HIPS	IPA/abrade/IPA	550

Aluminum (etched) , Floating Roller peel, Tested @ 23°C (73°F) (PIW) (ASTM D3167)

Temperature	DP604NS, Black
23°C (73°F)	33

3M™ Scotch-Weld™
Urethane Adhesive
 DP604NS, Black

**Typical Adhesive
 Performance
 Characteristics**
(continued)

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

**Environmental Resistance, Aluminum (etched)
 Measured by Overlap Shear Tested @ 23°C (73°F) (PSI) (ASTM D1002)**

Environment	Condition	DP604NS, Black
Room Temperature	23°C (73°F)/50%RH, 30 days	100%
Water Vapour	66°C (150°F)/ 80% RH, 30 days	120%
IPA	23°C (73°F) 30 days; tested on ABS	90%

**Substrates and
 Testing**

A. Overlap Shear (ASTM D1002)

Overlap Shear (ASTM D-1002-64, 3M Test Method C-236) strength was measured on 1" wide x 1/2" overlap specimen. These bonds were made individually using 1" x 4" pieces of substrates except for Aluminum. Two panels 0.063 in. thick, 4 in. x 7y in of 2024T-3 clad aluminum were bonded and cut into 1 in. wide samples after 24 hours. The thickness of the adhesive bond line was approximately 0.005". All strengths were measured at 23°C (73°F) except when noted.

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, 0.125in.; plastics, 0.125 in. and samples were allowed to cure at 24°C (75°F) and approximately 50% RH for 1 week before tested. The separation rate of the testing jaws was 0.1 inch per minute for metals and 2 inches per minute for plastics.

B. Floating Roller Peel (Bell Peel) (ASTM D3167)

Bell peel strengths were measured on 1 in. wide bonds at the temperatures noted. The testing jaw separation rate was 6 in. per minute. The bonds were made with 0.064 in. bonded to 0.025 in. thick adherends.

C. Cure Cycle

All bonds were cured 7 days at 23°C (73°F) at 50% RH before testing or subjected to further conditioning or environmental aging.

**Handling and
Application
Information****Directions for Use**

3M™ Scotch-Weld™ Urethane Adhesive DP604NS 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 and 400 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 88°C ± 5°C (190°F ± 10°F) for 10-20 minutes. Rinse immediately in large quantities of cold running water (3M test method C-2802).
2. Optimized FPL Etch Solution (1 litre):

Material	Amount
Distilled Water	700 ml plus balance of litre (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 litre 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 litre. Heat mixed solution to 66 to 71°C (150 to 160°F).

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

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

3M™ Scotch-Weld™
Urethane Adhesive
DP604NS, Black

**Surface
Preparation**
(Continued)

Dry – air dry approximately 15 minutes followed by force dry at 60°C (140°F) 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 88°C ± 5°C (190°F ± 10°F) 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.

3M™ Scotch-Weld™
Urethane Adhesive
DP604NS, Black

Storage

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

Shelf Life

These products have a shelf life of 12 months from date of manufacture in original duo-pak containers at room temperature.

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.

Product 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. Given the variety of factors that can affect the use and performance of a 3M product, user is solely responsible for evaluating the 3M product and determining whether it is fit for a particular purpose and suitable for user's method of application.

**Warranty,
Limited
Remedy, and
Disclaimer**

Unless an additional warranty is specifically stated on the applicable 3M product packaging or product literature, 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 OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. If the 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.

**Automotive
Disclaimer**

Ausgewählte Automobilanwendungen: Dieses Produkt ist ein industrielles Produkt und wurde nicht für den Einsatz in bestimmten Automobilanwendungen entwickelt oder getestet, wie z.B. in Batterien für den elektrischen Antriebsstrang oder in Hochspannungsanwendungen, die erfordern, dass das Produkt in einer IATF-zertifizierten Einrichtung hergestellt wird, einen Ppk-Wert von 1,33 für alle Eigenschaften erfüllt, ein Genehmigungsverfahren für Produktionsteile in der Automobilindustrie (PPAP) durchläuft oder die Anforderungen an das Design oder das Qualitätssystem der Automobilindustrie (z.B. IATF 16949 oder VDA 6.3) vollständig erfüllt. Der Kunde übernimmt die gesamte Verantwortung und das Risiko, wenn er sich für die Verwendung dieses Produkts in diesen Anwendungen entscheidet.

Limitation of Liability

Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental or consequential, (including lost profits) regardless of the legal theory asserted, including warranty, contract, negligence or strict liability.

ISO 9001

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



3M Industrial Adhesives and Tapes Division
3M Canada
London, ON N6A 4T1
1-800-3M-HELPS
www.3M.ca

3M and Scotch-Weld are trademarks of 3M. Used under license in Canada.
© 2016, 3M. All rights reserved. BA-16-21007 160104547 E