# Technical data sheet

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|---|---|
| Product: | DP8010 |
| Manufacturer: | 3M DEUTSCHLAND GMBH |
| Product group: | KLEBSTOFF |
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## 3M™ SCOTCH-WELD™ DP8010 BLUE



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# Technical Data Sheet

3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 Blue

English-US
**Last Revision Date:** June, 2024
**Supersedes:** May, 2022

Product Details

Regulatory Info/SDS

## Product Description

3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 Blue is a two-part, acrylic-based adhesives (10:1 ratio by volume) that can bond many low surface energy plastics, including many grades of Polypropylene, Polyethylene and TPO's without special surface preparation.
This adhesive can replace screws, rivets, plastic welding, and two-step processes which include chemical etchants, priming or surface treatments in many applications.

## Product Features

- Ability to structurally bond polyolefins without special surface preparation
- Ability to bond dissimilar Substrates
- Regular and Non-Sag Formulations
- Room temperature cure
- Excellent water and humidity resistance
- Very good chemical resistance
- One step process; no pre-treatment of polyolefin substrates necessary
- Solvent-free adhesive system
- Convenient hand-held applicator
- Available in bulk

## 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

| Attribute Name | Value |
|---|---|
| Mix Ratio by Volume (B:A) | 10:1 |
| Mix Ratio by Weight (B:A) | 10:1 |

| Attribute Name | Test Method | Temperature | Value |
|---|---|---|---|
| Base Color | | | Off-White |
| Accelerator Color | | | Blue |
| Base Density | | | 8.5 lb/gal |
| Accelerator Density | | | 8.3 — 8.7 lb/gal |
| Base Viscosity | 3M C1d | 27 °C (80 °F) | 27,000 cP [1] |
| Accelerator Viscosity | 3M C1d | 27 °C (80 °F) | 17000 — 40000 cP [1] |

[1] Procedure involves Brookfield RVF, #7 spindle, 20 rpm. Measurement taken after 1 minute rotation.

## Typical Mixed Physical Properties

| Attribute Name | Temperature | Value |
|---|---|---|
| Skin Formation Time | | 3 min [1] |
| Worklife | 22 °C (72 °F) | 8 min [2] |
| Open Time | | 10 min [3] |
| Set Time (min) | 22 °C (72 °F) | 60 min [4] |
| Time to Full Cure | 22 °C (72 °F) | 24 h [5] |
| Dispense Viscosity | 22 °C (72 °F) | 25,000 cP |

[1] An open bead line will show some skinning in approximately 3 minutes. It is possible to bond parts with good strength if the parts are made within 10 minutes. Therefore, the adhesive has a 10 minute open time for making bonds.

[2] Maximum time that adhesive can remain in a static mixing nozzle and still be expelled without undue force on the applicator. Cure times are approximate and depend on adhesive temperature.

[3] 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.

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

[5] 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

| Attribute Name | Value |
|---|---|
| Cured Color | Blue-Green |
| Mixed Color | Blue-Green |

## Typical Cured Characteristics

| Attribute Name | Test Method | Temperature | Test Condition | Value |
|---|---|---|---|---|
| Modulus | ASTM D638 | 22 °C (72 °F) | | 77,000 lb/in² |
| Storage Modulus | | | DMA | 970 MPa [1] |
| Strain at Break | ASTM D638 | 22 °C (72 °F) | | 90 % |
| Shore D Hardness | ASTM D2240 | 22 °C (72 °F) | | 57 [2] |

[1] Temp ramp 3C/ min

[2] Tensile and Elongation. Samples were 51 mm (2") dumbbells with 3 mm (0.125") neck and 0.8 mm (0.03" sample thickness. Separation rate was 51 mm/min (2"/min)

## Typical Performance Characteristics

Substrate: Polypropylene (PP)
Temperature: 49 °C (120 °F)
Dwell Time: 72 h

| Attribute Name | Test Method | Value |
|---|---|---|
| 180° Peel Adhesion | ASTM D3330 | Substrate Failure oz/in [1] |

[1] 12 in/min (300 mm/min)

### Overlap Shear Strength

Temperature: 22 °C (72 °F)
Dwell Time: 7 d
Test Method: ASTM D1002, ISO 4587

| Substrate | Surface Prep | Value |
|---|---|---|
| Aluminum | MEK/Abrade/MEK | 1960 lb/in² (CF ) [1] |
| Cold Rolled Steel | MEK/Abrade/MEK | 1800 lb/in² (CF ) [1] |
| Stainless Steel | MEK/Abrade/MEK | 1820 lb/in² (CF ) [2] |
| Galvanized Steel | MEK/Abrade/MEK | 1330 lb/in² (CF ) [2] |
| Copper | MEK/Abrade/MEK | 1870 lb/in² (CF ) [2] |
| Polycarbonate (PC) | IPA Wipe/Abrade/IPA Wipe | 1150 lb/in² (SF ) [2] |
| Low Density Polyethylene (LDPE) | IPA Wipe | 360 lb/in² (SF ) [2] |
| UHMWPE | IPA Wipe | 770 lb/in² (CF ) [2] |

[1] 25 mm (1") wide, 12.7 mm (1/2") overlap samples, 25 mm (1") x 102 mm (4") substrates,
Separation rate 2.5 mm/min (0.1 in/min) metal, 51 mm/min (2 in/min) plastic, 510 mm/min (20 in/min) rubber.
Cohesive Failure (CF), Adhesive Failure (AF), Mixed Failure (MF), Substrate Failure (SF)

[2] 25 mm (1") wide, 12.7 mm (1/2") overlap samples, 25 mm (1") x 102 mm (4") substrates, bondline thickness: 0.13-0.20 mm (5-8 mil)
Separation rate 2.5 mm/min (0.1 in/min) metal, 51 mm/min (2 in/min) plastic, 510 mm/min (20 in/min) rubber.

Substrate thickness: steel 1.5 mm (60 mil), other metal 1.3-1.6 mm (50-64 mil), rubber and plastic 3.2 mm (125 mil)
Cohesive Failure (CF), Adhesive Failure (AF), Mixed Failure (MF), Substrate Failure (SF)

| Attribute Name | Test Method | Value |
|---|---|---|
| Tensile Strength | ASTM D638 | 1,300 lb/in² |

## Electrical and Thermal Properties

| Attribute Name | Test Condition | Value |
|---|---|---|
| Coefficient of Thermal Expansion | Below Tg | 116 m/m/°C |
| Coefficient of Thermal Expansion | Above Tg | 245 m/m/°C |
| Glass Transition Temperature (Tg) | Mid-Point | 61 °C [1] |

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

Temperature: 22 °C (72 °F)

| Attribute Name | Test Method | Test Condition | Value |
|---|---|---|---|
| Dielectric Constant | ASTM D150 | 1 KHz | 4.36 |
| Dissipation Factor | ASTM D150 | 1 KHz | 0.068 |
| Volume Resistivity | ASTM D257 | | 4.1E+11 Ω-cm |

Temperature: 22 °C (72 °F)

| Attribute Name | Test Method | Value |
|---|---|---|
| Surface Resistivity | ASTM D257 | 80,000,000,000 Ω |

## Handling/Application Information

### Directions for Use

1. To obtain the highest strength structural bonds, paint, oxide films, oils, dust, mold release agents, and all other surface contaminants must be completely removed. The amount of surface preparation depends on the required bond strength and environmental aging resistance desired by user. For suggested surface preparations on common substrates, see the section on surface preparation.
2. Mixing
For Duo-Pak Cartridges
Store cartridges with cap end up to allow any air bubbles to rise towards the tip. To use, simply insert the cartridge into the EPX applicator and start the plunger into the cylinders using light pressure on the trigger. Then remove the cap and expel a small amount of adhesive to ensure material flows freely from both sides of cartridge. For automatic mixing, attach an EPX mixing nozzle to the cartridge and begin dispensing the adhesive. For hand mixing, expel the desired amount of adhesive and mix thoroughly. Mix approximately 15 seconds after obtaining a uniform color.
Mix thoroughly by weight or volume in the proportion specified on the product label or in the typical uncured properties section. Mix approximately 15 seconds after obtaining a uniform color.
3. Apply adhesive and join surfaces within the open time listed for the specific product. Larger quantities and/or higher temperatures will reduce this working time.
4. Allow adhesive to cure at 60°F (16°C) or above until completely firm. Applying heat up to 150°F (66°C) will increase cure speed.
5. Keep parts from moving during cure. Apply contact pressure or fixture in place if necessary. Optimum bond line thickness ranges from 0.005 to 0.020 inch; shear strength will be maximized with thinner bond lines, while peel strength reaches a maximum with thicker bond lines.
6. Excess uncured adhesive can be cleaned up with ketone type solvents.
*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer’s precautions and directions for use.

### Surface Preparation

3M™ Scotch-Weld™ Structural Plastic Adhesives are designed to be used on metal, wood, and most plastic surfaces. The following cleaning methods are suggested for common surfaces:
**Steel:**
1. Wipe free of dust and dirt with pure solvent such as acetone or isopropyl alcohol.*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with clean solvent to remove loose particles.*
**Aluminum:**
1. Wipe free of dust and dirt with pure solvent such as acetone or isopropyl alcohol.*
2. Sandblast or abrade using clean fine grit abrasives.
3. Wipe again with clean solvent to remove loose particles.*
4. When using a primer, apply adhesive within 4 hours of primer application.
Plastics/Rubbers:
1. Wipe with isopropyl alcohol.*
2. Abrade using fine grit abrasives.
3. Wipe with isopropyl alcohol.*
**Glass:**
1. Solvent wipe surface using acetone or MEK.*
2. Apply a thin coating of a silane adhesion promoter to the glass surfaces to be bonded and allow to dry completely before bonding.
*Note: When using solvents, extinguish all ignition sources, including pilot lights, and follow the manufacturer's precautions and directions for use.

## Storage and Shelf Life

Store product at 0 to 4°C (32 to 40°F) in the original, unopened packaging. Do not freeze. Allow product to reach room temperature prior to use. For best performance, use cartridges within 18 months, bulk pails within 9 months, and 55 gallon drums within 3 months of date of manufacture.

## 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, call 1-800-364-3577

## 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.

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