

# Technical data sheet



Product: DP8407NS

Manufacturer: 3M DEUTSCHLAND GMBH

Product group: KLEBSTOFF

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## 3M™ SCOTCH-WELD™ DP8407NS METAL BONDER

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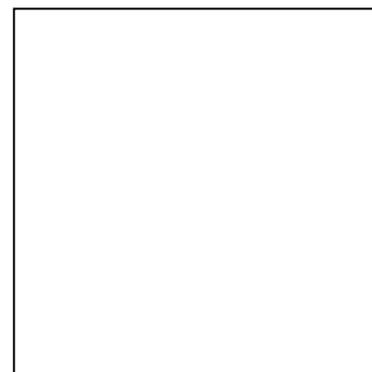
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# 3M™ Scotch-Weld™ Metal Bonder Acrylic Adhesive DP8407NS



## Product Description

3M™ Scotch-Weld™ Metal Bonder Acrylic Adhesive DP8407NS Gray is a high performance, two-part acrylic adhesive that offers good shear, peel and impact performance. This toughened product provides adhesion to many plastics and metals, including those with slightly oily surfaces. This special formulation provides durability on metal substrates (including bare steel, copper, brass, bronze, and galvanized steel), even when exposed to high temperature and humidity environments.



## Product Features

- Strength and durability on bare metals, plastics, and other materials
- Toughened
- High peel and impact strength
- 10:1 mix ratio
- Increased cure speed with applied heat
- Contain glass beads (250 μ diameter) to control bond line thickness
- Tested according to EN 45545-2

The data in this sheet were generated using the 3M™ EPX™ Applicator System equipped with an EPX static mixer, according to manufacturer's directions.

Unless otherwise indicated, all properties measured at 22 °C.

This adhesive has relatively low adhesion to low surface energy plastics (such as polypropylene, polyethylene, TPO, acetal, and PTFE). Applications involving any of these materials should be carefully evaluated by the end user for suitability.



## Typical Physical Properties

### Uncured

Property	Values	Temperature	Notes
Base Color	Brown		
Accelerator Color	Dark Gray		
Base Density	0,98 g/cm <sup>3</sup>	23 °C	Using a pycnometer
Accelerator Density	1,08 g/cm <sup>3</sup>	23 °C	Using a pycnometer
Viscosity	Non-sag paste		
Base Viscosity	15.000 mPas	23 °C	Viscosity measured using a cone and plate viscometer at 3,8/sec
Accelerator Viscosity	50.000 mPas	23 °C	Viscosity measured using a cone and plate viscometer at 3,8/sec
Mix Ratio by Volume (Base: Accelerator)	10:1		

### Mixed

Property	Values	Notes	Temperature
Open Time	6- 8 min	Maximum time allowed after mixing adhesive before bond must be closed and fixed in place. Cure times are approximate and depend on adhesive and substrate temperature.	23 °C
Time to Handling Strength	22- 26 min	Minimum time required to achieve 0,35 MPa of overlap shear strength. Cure times are approximate and depend on adhesive temperature.	23 °C
Final cure time	24 h @ Room temperature		
Density	0,99 g/cm <sup>3</sup>		
Color	Gray		



## Typical Performance Characteristics

### Overlap Shear acc. to ASTM D1002

Substrate	Surface Preparation	Cure Time	Conditioning/ Aging	Test Temperature	Result [MPa]	Failure Mode
Aluminium	SAS	24h @ 23°C	None	23°C	31,3	CF
Cold Rolled Steel	SAS	24h @ 23°C	None	23°C	24,4	CF
Copper	SAS	24h @ 23°C	None	23°C	13,7	AF
Brass	SAS	24h @ 23°C	None	23°C	12,3	AF
ABS	SAS	24h @ 23°C	None	23°C	7,4	SF
PC	SAS	24h @ 23°C	None	23°C	8,1	SF
PMMA	SAS	24h @ 23°C	None	23°C	11,4	SF
Epoxy FRP	SAS	24h @ 23°C	None	23°C	28,8	CF
Polyester FRP	SAS	24h @ 23°C	None	23°C	9,3	SF
PVC	SAS	24h @ 23°C	None	23°C	13,2	SF
Polystyrene	SAS	24h @ 23°C	None	23°C	3,1	SF

SAS: Solvent-Abrade-Solvent; IPA: Isopropanol; SF: Substrate Failure; CF: Cohesive Failure; AF: Adhesive Failure

### Floating Roller Peel acc. to ASTM D3167

Substrate	Surface Preparation	Cure Time	Conditioning/ Aging	Test Temperature	Result [N/mm]
Aluminium	Etched	24h @ 23°C	None	23°C	56,5

CF: Cohesive Failure

### Temperature Stress; Overlap Shear acc. to ASTM D1002

Substrate	Surface Preparation	Cure Time	Conditioning/ Aging	Test Temperature	Result [MPa]	Failure Mode
Aluminium	SAS	24h @ 23°C	None	-40°C	23,9	CF
Aluminium	SAS	24h @ 23°C	None	80°C	9,8	CF

SAS: Solvent-Abrade-Solvent; CF: Cohesive Failure; AF: Adhesive Failure



## After Aging; Overlap Shear acc. to ASTM D1002

Substrate	Surface Preparation	Cure Time	Conditioning/ Aging	Test Temperature	Result [MPa]
Aluminium	SAS	24h @ 23°C	500h @ 50 °C / 80%rH	23°C	0,67
Aluminium	SAS	24h @ 23°C	500h @ 65°C/ 80 %rH	23°C	0,58
Aluminium	SAS	24h @ 23°C	500h @ 85°C/ 85%rH	23°C	0,59
Aluminium	SAS	24h @ 23°C	500h salt water (5 wt.%)	23°C	0,66
Aluminium	SAS	24h @ 23°C	500h water	23°C	0,65
Aluminium	SAS	24h @ 23°C	500h water @ 32°C	23°C	0,60
Aluminium	SAS	24h @ 23°C	500h water @ 50°C	23°C	0,60
Aluminium	SAS	24h @ 23°C	500h Gasoline	23°C	0,50
Aluminium	SAS	24h @ 23°C	500h Diesel fuel	23°C	0,72
Aluminium	SAS	24h @ 23°C	500h Motor Oil	23°C	0,72
Aluminium	SAS	24h @ 23°C	500h Antifreeze (50% in water)	23°C	0,69
Aluminium	SAS	24h @ 23°C	500h Isopropyl alcohol	23°C	0,53
Aluminium	SAS	24h @ 23°C	500h Bleach (10 wt. % in water)	23°C	0,65
Aluminium	SAS	24h @ 23°C	30 min @ 200°C	23°C	0,64

Substrate	Surface Preparation	Cure Time	Conditioning/ Aging	Test Temperature	Result [MPa]
Cold Rolled Steel	SAS	24h @ 23°C	500h @ 150 °C	23°C	0,69
Cold Rolled Steel	SAS	24h @ 23°C	500h @ 50°C water	23°C	0,51
Cold Rolled Steel	SAS	24h @ 23°C	500h @ 50°C / 80% rH	23°C	0,64
Cold Rolled Steel	SAS	24h @ 23°C	500h @ 65°C / 80% rH	23°C	0,58
Cold Rolled Steel	SAS	24h @ 23°C	500h @ 85°C / 85% rH	23°C	0,43
Cold Rolled Steel	SAS	24h @ 23°C	30 min @ 200°C	23°C	0,63

Substrate	Surface Preparation	Cure Time	Conditioning/ Aging	Test Temperature	Result [MPa]
PVC	SAS	24h @ 23°C	500 h @ -40°C	23°C	0,68
PVC	SAS	24h @ 23°C	500h @ 50°C / 80% rH	23°C	0,66
PVC	SAS	24h @ 23°C	500h @ 65°C / 80% rH	23°C	0,65
PVC	SAS	24h @ 23°C	500h @ 85°C / 85% rH	23°C	0,57
PVC	SAS	24h @ 23°C	Water	23°C	0,68
PVC	SAS	24h @ 23°C	Salt water (5wt. %)	23°C	0,67
PVC	SAS	24h @ 23°C	Hydrochloric acid (16 wt. % in water)	23°C	0,68
PVC	SAS	24h @ 23°C	Sodium Hydroxide (10 wt. % in water)	23°C	0,68

SAS: Solvent-Abrade-Solvent;



For Packaging size	Application equipment	Nozzle
45 ml Cartridge	Manual EPX Applicator	Static Mixing nozzle, B-System, 10:1, orange
490 ml Cartridge	Manual EPX Applicator 490 ml 10:1	Static Mixing nozzle,
490 ml Cartridge	Pneumatic EPX Applicator 490 ml 10:1	F-System, 10:1, orange



## Tests and tools

### Further Test Reports and Certifications

3M can offer extended data for different test conditions and substrates, as well as certifications. Please get in touch with your 3M Sales Rep or Application Engineer. Please contact your local 3M Office, you can click or scan QR code to see contact detail or visit [www.3M.com](http://www.3M.com)

### 3M™ Material Data Card (MDC) for Finite Element Analysis (FEA)

FEA modelling is a tool that helps design engineers determine the right adhesive system for the application requirements. 3M can offer elastic-plastic modeling data at different strain rates for most of our structural adhesives. We also recognize and support other modeling conditions and methods. Please click or scan QR code to request 3M Material Data Card for your modellings.

### 3M™ Dispensing Guide for Automation

Dispensing guide is a tool that helps process engineers determine the right equipment and dispensing system for the automated applications. Information such as viscosity/ rheology, pure recommendation, packaging, cleaning and dispensing accessories can be found on dispensing guide. Please click or scan QR code to see available 3M™ Dispensing Guide for structural adhesives.

### 3M™ Bonding Process Center

3M™ Bonding Process Centers around the world can address application challenges. Please click or scan QR code to schedule in person or virtual visit to try new innovations in dispensing and automation to find customized solutions for production challenges.



## Information / Directions for Use

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.

Allow adhesive to cure at 15 °C or above until completely firm. Applying heat up to 70 °C will increase cure speed. Keep parts from moving during cure. Apply contact pressure or fixture in place if necessary.

Optimum bond line thickness ranges from 0,15 – 0,3 mm; shear strength will be maximized with thinner bond lines, while peel strength reaches a maximum with thicker bond lines.

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.

Larger quantities of mixed adhesive may generate heat due to the exothermic reaction. Excess uncured adhesive can be cleaned up with ketone type solvents. \*

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



## Mixing

### For Duo-Pack Cartridges

Store cartridges with cap end up allowing any air bubbles to rise towards the tip. To use, simply insert the cartridge into the EPX applicator, remove the cap and start the plunger into the cylinders using light pressure on the trigger. 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.

### For Bulk Containers

Mix thoroughly by weight or volume in the proportion specified on the product label or in the typical uncured properties section and according to the settings of your mixing and dosing equipment.



## Surface Preparation

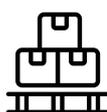
The following cleaning methods are suggested for common surfaces:

### Steel/Aluminum

Wipe free of dust and dirt with pure solvent such as Acetone or isopropyl alcohol. Sandblast or abrade using clean fine grit abrasives. Wipe again with clean solvent to remove loose particles. \*

### Plastics/Rubbers/Paints/Coatings:

Wipe with suited solvent\*



## Storage and Shelf Life

Store under normal conditions of 16°-27°C and 40%-60% relative humidity in the original packaging, out of direct sunlight. Refrigeration at 4°C will help extend shelf life. Do not freeze. Allow product to reach room temperature prior to use.

3M™ Scotch-Weld™ Metal Bonder Acrylic Adhesive DP8407 Gray in a cartridge has a shelf life of 12 months from date of manufacture in unopened, original cartridge kept at recommended storage conditions.

The shelf life of pail or drum versions for Part-A is 12 months and Part-B is 9 months from the date of manufacture in unopened original containers kept at the recommended storage conditions.

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



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**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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