

3M Science.
Applied to Life.™



Bonding composite parts to multiple materials

3M™ Scotch-Weld™ Structural Adhesives

Bonding for the future

Solving the challenge of bonding composites and multiple materials.

Advantages of adhesives for composite and multi-material assembly

Designing with composites and multiple materials allows you to use thinner, lighter substrates to create products with improved flexibility and higher resistance to vibration and movement. Joining these parts within your assembly requires new methods of bonding beyond mechanical fasteners and welding, and recent advances in structural adhesives (such as epoxies, acrylics and urethanes) are enabling designers to create products that meet structural integrity requirements.

Structural adhesives are simply one of the most versatile and reliable solutions for joining composites and multi-materials. They offer application ease and convenience, and with faster throughput, adhesives can also help you meet higher production standards.

Adhesive performance advantages

- ▶ High performance strength, plus impact and energy absorption
- ▶ Maximum durability by distributing stress across the entire bonded area
- ▶ Excellent weather and chemical resistance
- ▶ Prevention of galvanic corrosion between dissimilar metals

- ▶ Bond Low Surface Energy (LSE) plastics, such as thermoplastic polyolefin (TPO), polypropylene (PP), and polyethylene (e.g. HDPE)
- ▶ Bond high performance composites, from carbon fibre to polyester sheet molding compound (SMC)
- ▶ Fast cure times for process improvement
- ▶ Many adhesive options with little to no surface preparation
- ▶ Manage thermal expansion and temperature resistance

Design advantages of adhesives

- ▶ Increased design flexibility
- ▶ Enhance aesthetics with cleaner bonded joints
- ▶ Lightweight, high strength seal with load distribution across the entire bonding area
- ▶ Bond multiple materials including plastics, metals, and composites
- ▶ Lower overall costs than traditional fastening methods



Structural adhesives – general characteristics

All structural adhesives provide at least 1,000psi (7MPa) of overlap shear strength. Epoxy, acrylic and urethane adhesives feature the following specific properties.



Epoxy adhesives generally have the highest strength and overall performance. They also provide the best resistance to high temperatures, solvents and outdoor weathering. They adhere well to metals, ceramics, wood, and thermoset plastics, and usually require clean, abraded surfaces to obtain maximum bond strength.



Acrylic adhesives provide excellent bond strength and durability, although slightly lower than epoxy adhesives. However, they provide faster cure speed, higher tolerance for oily or unabraded bonding surfaces, and the ability to bond a wide variety of plastics and composites, as well as metals.



Urethane adhesives tend to have excellent impact resistance and good adhesion to most plastics and composites, as well as ceramics, metal and wood. They are relatively flexible when cured, making them a good choice for bonding materials with different coefficients of thermal expansion when temperature cycling is foreseen. They tend to have reduced strength high temperatures.

Selecting the optimal adhesive solution

When selecting an adhesive, it's important to consult with a 3M application specialist. Preliminary adhesive selection can be done by matching end use requirements to the processing and performance characteristics of 3M structural adhesives. The key process factors to consider include:

Substrates

- ▶ What materials will be bonded?

Environment

- ▶ What are the expected conditions during end use: temperature, humidity, UV exposure?
- ▶ Is chemical resistance required: fluids (motor oil, gasoline, diesel fluid, jet fuel), cleaning solutions (weak acids and bases), specialised chemicals which may contact the bonded part?

Stress

- ▶ What types of joints are in the design – are there joint designs that put the adhesive bond under shear, tension, or compression forces?
- ▶ What are the mechanical challenges: impact, vibration, stress type and magnitude?

Production factors

- ▶ Do you require manual or automated application?
- ▶ Do you need fast or slow adhesives?
- ▶ Will the parts be dirty or clean?
- ▶ What are the cleanliness/environmental issues during production and end use: outgassing, ionics, corrosion potential, toxicity, disposal?

The specific answers to these questions will help determine which the most appropriate products to begin to test and evaluate for suitability of your end product and application.

3M™ Scotch-Weld™ structural adhesives selector guide

Choose your substrate combination and identify the recommended 3M™ Scotch-Weld™ structural adhesive options.

Substrate 1	Substrate 2					
	Metals - Aluminium - Cold rolled steel - Galvanised steel	Fibre-reinforced epoxy - Carbon fibre (CFRP) - Glass fibre	Fibre-reinforced thermosets - Polyester (FRP) - Phenolic - SMC	Thermoplastics - Polyolefin - PET	Other thermoplastics - Acrylic/PMMA - Polycarbonate (PC) - Rigid PVC and HIPS	Fibre-reinforced nylon
Metals - Aluminium - Cold rolled steel - Galvanised steel	DP8825NS DP490 DP125 Grey	DP490 DP125 DP8825	DP125 DP8825 DP190	DP8010 Blue DP8005	DP8410NS DP125 DP190	DP6310NS DP125 DP190
Fibre-Reinforced Epoxy - Carbon fibre (CFRP) - Glass fibre		DP125 DP490 DP8825	DP6310NS DP8410NS DP125	DP8010 Blue DP8005	DP8410NS DP190 DP125	DP6310NS DP125 DP810 DP190
Fibre-Reinforced Thermosets - Polyester (FRP) - Phenolic - SMC			DP8410NS DP125 DP190	DP8010 Blue DP8005	DP8410NS DP6310NS DP125	DP6310NS DP125 DP8410NS DP190
Thermoplastics - Polyolefin - PET - HDPE				DP8010 Blue DP8005	DP8005 DP8010 Blue	DP8005 DP8010 Blue
Other thermoplastics - Acrylic/PMMA - Polycarbonate (PC) - Rigid PVC and HIPS					DP8005 DP8010 Blue	DP125 DP8410NS DP190 DP8010 Blue
Fibre-reinforced nylon						DP125 DP8425NS DP190 DP6310NS

3M™ Scotch-Weld™ structural adhesives

Multi-material composite bonding adhesive road map



For more detailed selection options please visit our website 3M.com/compositebonding

3M™ Scotch-Weld™ Structural Adhesive

Application and market examples

Transportation

– truck, bus, trailer, RV, emergency vehicles, vehicle interiors, high end automotive



Manufacturing of commercial buses, boats and specialty vehicles can utilise multiple bonding options to help withstand the loads applied to the panels during use, and to accommodate movement created by vibration and differential thermal expansion. 3M™ Structural Adhesives are used in many applications to build these vehicles.

Sporting goods

– golf clubs, tennis racquets, hockey sticks, recreational sporting equipment



Sporting goods was one of the first industries to utilise composite materials in the manufacturing of their products. Sports equipment needs to be very high performance, and the sporting goods industry has relied on 3M™ Structural Adhesives to take their design and performance to the next level.

General industry

– signage, pumps & tanks, electronics, construction, plus many more



The use of composite materials in all industries is growing. The proven reliability and benefits of these materials, along with the ability of adhesives to provide optimal bonding and assembly solutions, are making it easier than ever to work with composite materials. You can rely on 3M™ Structural Adhesives to bring your design to reality!

New



3M™ Scotch-Weld™ Multi-Material Composite Urethane Adhesive

High performance

- ▶ Outstanding structural strength
- ▶ Durable life long bonds
- ▶ Flexible to distribute load
- ▶ Excellent in most environments

Productivity

- ▶ Fast time to handling strength and cures
- ▶ Little to no surface preparation – unique for a urethane adhesive
- ▶ Various open times to meet your needs
- ▶ Easy to dispense & control, 1:1 mix ratio – eliminate mixing failures!

Versatility

- ▶ Bonds multiple materials – ideal for metal to composites
- ▶ Bonds metals, plastics and composites
- ▶ Now you can use one adhesive for multiple applications

Savings





- ▶ Cheaper than traditional fastening methods like welding, nuts and bolts
- ▶ Speed = cost savings!
- ▶ Quality at the right price – eliminate your product failures



Specifications

Product	Colour	Mix ratio volume B:A	Open time	Handling strength in minutes	Flow behaviour	Tensile strength in MPa	Elongation %
DP6310NS	Green	1:1	10	45	Non-sag	34.9	8%
DP6330NS	Green	1:1	30	120	Non-sag	27.9	69%

Applicators and accessories

Cartridge size	Product description	Code	
48.5 ml cartridge	Manual applicator 1:1 / 1:2 plunger	7000033012	
	1:1 mixing nozzle square	7100104991	
400 ml cartridge	Pneumatic applicator 400ml	7000110542	
	Mixing nozzle square Gold 400ml	7000028616	

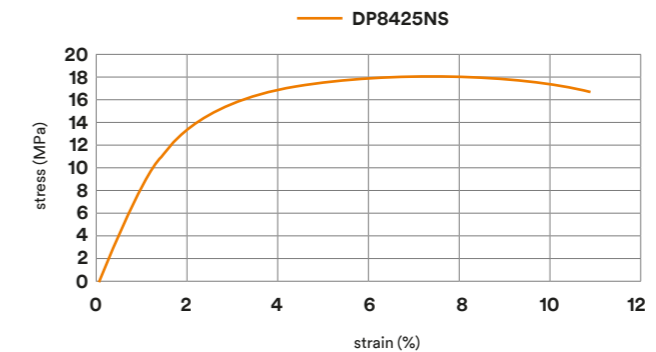


3M™ Scotch-Weld™ Acrylic Adhesive DP8425NS



3M™ Scotch-Weld™ Acrylic Adhesive DP8425NS is a green, two-part, non-sag, toughened, MMA-based adhesive.

10:1 mix ratio, 25-minute work life and handling strength in approximately 25 minutes.



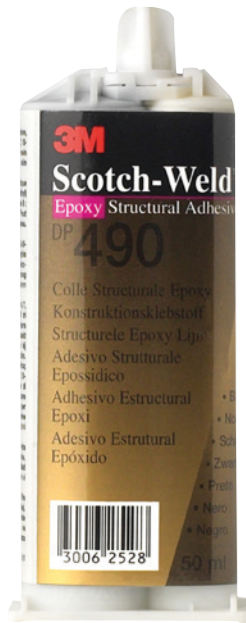
	DP8425NS
Mix Ratio (Volume) B:A	10.01
Approximate Viscosity (mPa·s) 75°F (24°C)	70,000
Approximate Mixed Work Life 75°F (24°C)	25 minutes
Approximate Time to Handling Strength 75°F (24°C)	50 minutes
Floating Roller Peel (N/mm) 75°F (24°C)	8.8
Overlap Shear Aluminium (MPa) -67°F (-55°C)	N/A
Overlap Shear Aluminium (MPa) 75°F (24°C)	26
Overlap Shear Aluminium (MPa) 180°F (82°C)	6
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	N/A
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	21 AF/CF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	9 SF

KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

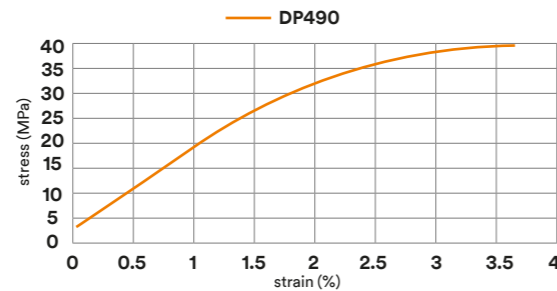
*Aluminium was acid etched before bonding.

*Composite materials were prepped with an IPA wipe/abrade/IPA wipe surface preparation method.

3M™ Scotch-Weld™ EPX™ Epoxy Adhesive DP490



3M™ Scotch-Weld™ EPX™ Epoxy Adhesive DP490 is a black, thixotropic, gap-filling, two-component epoxy adhesive with particularly good application characteristics. It is designed for use where toughness and high strength are required. Features include high temperature resistance up to 120°C, high resistance to impact, and outstanding stability under static and dynamic loads. Very good strength and aging characteristics.



	DP490
Mix Ratio (Volume) B:A	2:1
Approximate Viscosity (mPa-s) 75°F (24°C)	180,000
Approximate Mixed Work Life 75°F (24°C)	180 minutes
Approximate Time to Handling Strength 75°F (24°C)	4 to 6 hours
Floating Roller Peel (N/mm) 75°F (24°C)	4.4
Overlap Shear Aluminium (MPa) -67°F (-55°C)	31
Overlap Shear Aluminium (MPa) 75°F (24°C)	28
Overlap Shear Aluminium (MPa) 180°F (82°C)	13
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	27 SF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	23 SF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	7 SF

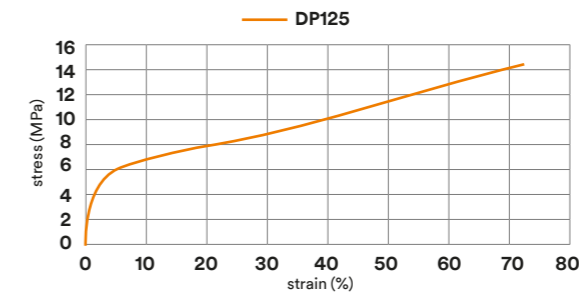
KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

3M™ Scotch-Weld™ Epoxy Adhesive DP125 Grey



3M™ Scotch-Weld™ Epoxy Adhesive DP125 is a low odour, two-part epoxy that creates strong structural and flexible bonds on metal, ceramics, wood and many plastics. It provides the reliability and strength needed to maintain productive, cost effective results.

- ▶ Flexible for higher peel strength and better vibration resistance
- ▶ Maintains a strong bond under expansion, contraction and limited movement
- ▶ Medium viscosity helps minimise running, dripping or migration
- ▶ Flows smoothly for controlled dispensing
- ▶ Effective adhesive system for bonding, joining, gluing, attaching, assembling, encapsulating, potting, and sealing applications



	DP125 Grey
Mix Ratio (Volume) B:A	1:1
Approximate Viscosity (mPa-s) 75°F (24°C)	52,500
Approximate Mixed Work Life 75°F (24°C)	25 minutes
Approximate Time to Handling Strength 75°F (24°C)	2.5 hours
Floating Roller Peel (N/mm) 75°F (24°C)	15.8
Overlap Shear Aluminium (MPa) -67°F (-55°C)	23
Overlap Shear Aluminium (MPa) 75°F (24°C)	30
Overlap Shear Aluminium (MPa) 180°F (82°C)	3
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	31 SF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	20 CF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	7 AF

KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

*Aluminium was acid etched before bonding.

*Composite materials were prepped with an IPA wipe/abrade/IPA wipe surface preparation method.

3M™ Scotch-Weld™ Epoxy Adhesive DP190 Grey

3M™ Scotch-Weld™ Epoxy Adhesive DP190 is a two-part epoxy adhesive that delivers exceptional performance with high shear and peel strength.

Extremely compatible, this epoxy adhesive bonds to a wide range of materials, including metals, ceramics, wood, fibreboard, glass, rubber and many plastics.

- ▶ Provides tough, strong bonds with high shear and peel strength
- ▶ Capable of bonding to a wide variety of different materials
- ▶ Delivers extended work life, providing additional time for adjustment
- ▶ Formulated with low viscosity for easy dispensing



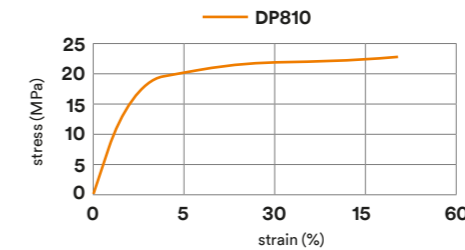
	DP190 Grey
Mix Ratio (Volume) B:A	1:1
Approximate Viscosity (mPa·s) 75°F (24°C)	80,000
Approximate Mixed Work Life 75°F (24°C)	90 minutes
Approximate Time to Handling Strength 75°F (24°C)	10 hours
Floating Roller Peel (N/mm) 75°F (24°C)	8.8
Overlap Shear Aluminium (MPa) -67°F (-55°C)	10
Overlap Shear Aluminium (MPa) 75°F (24°C)	17
Overlap Shear Aluminium (MPa) 180°F (82°C)	3
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	15 CF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	18 CF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	10 SF

KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

3M™ Scotch-Weld™ Low Odour Acrylic Adhesive DP810

3M™ Scotch-Weld™ Low Odour Acrylic Adhesive DP810 is our toughened two-part, room temperature curing acrylic adhesive specially formulated to bond oily metals, plastics, and other surfaces. At 3M we pioneered the bonding of surfaces which have traditionally been seen as 'hard-to-bond', such as oily metal and low surface energy plastics like polyethylene and polypropylene.

- ▶ Low odour adhesive is ideal for any setting where harsh fumes or flammability are an issue
- ▶ Provides high shear and peel strength and is toughened for impact resistance
- ▶ Bonds oily metals with minimal surface prep
- ▶ Bonds most plastics
- ▶ Effective system for joining, gluing, adhering, attaching, repairing, potting, panel bonding, adhering, and structural bonding



	DP810
Mix Ratio (Volume) B:A	1:1
Approximate Viscosity (mPa·s) 75°F (24°C)	20,000
Approximate Mixed Work Life 75°F (24°C)	10 minutes
Approximate Time to Handling Strength 75°F (24°C)	20 minutes
Floating Roller Peel (N/mm) 75°F (24°C)	5.3
Overlap Shear Aluminium (MPa) -67°F (-55°C)	8.3
Overlap Shear Aluminium (MPa) 75°F (24°C)	25
Overlap Shear Aluminium (MPa) 180°F (82°C)	3.5
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	23 AF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	27 SF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	6 AF

KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

*Aluminium was acid etched before bonding.

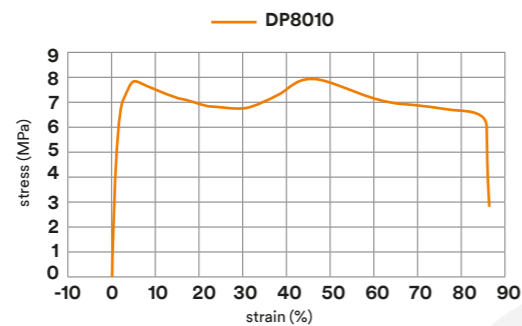
*Composite materials were prepped with an IPA wipe/abrade/IPA wipe surface preparation method.

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



3M™ Scotch-Weld™ Structural Plastic Adhesive DP8010 is a two-part, acrylic-based adhesive specially formulated to bond many low surface energy plastics, including many grades of polypropylene, polyethylene and thermoplastic elastomers (TPEs) without special surface preparation.

- ▶ Creates a strong bond on low surface energy plastics with minimal or no prep required
- ▶ Resists many chemicals, water, humidity, and corrosion
- ▶ Medium viscosity allows controlled dispensing
- ▶ Formulated to bond dissimilar substrates for multiple uses in the same application
- ▶ Strong adhesive can replace screws, rivets, plastic welding, and two step processes



	DP8010 Blue
Mix Ratio (Volume) B:A	10:1
Approximate Viscosity (mPa·s) 75°F (24°C)	20,000
Approximate Mixed Work Life 75°F (24°C)	10 minutes
Approximate Time to Handling Strength 75°F (24°C)	1 hour
Floating Roller Peel (N/mm) 75°F (24°C)	2.5
Overlap Shear Aluminium (MPa) -67°F (-55°C)	19
Overlap Shear Aluminium (MPa) 75°F (24°C)	19
Overlap Shear Aluminium (MPa) 180°F (82°C)	3
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	17 CF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	17 CF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	7 SF

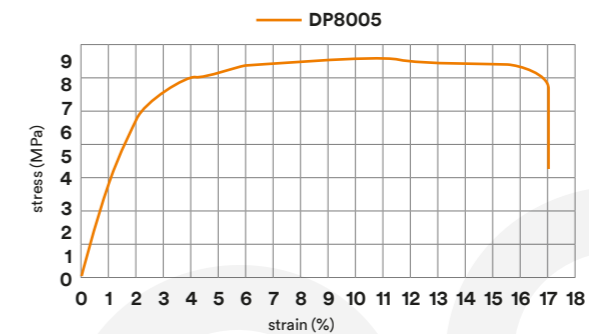
KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

3M™ Scotch-Weld™ Structural Plastic Adhesive DP8005



3M™ Scotch-Weld™ Structural Plastic Adhesive DP8005 is a 10:1 ratio, two-part, acrylic-based adhesive specially formulated to bond many low surface energy plastics. It will adhere many grades of polypropylene, polyethylene, and thermoplastic elastomers (TPEs) without special surface preparation.

- ▶ Ability to structural bond low surface energy plastics such as polyolefins, polypropylene, polyethylene, and TPEs
- ▶ Excellent resistance to water and humidity, combined with very good chemical resistance, results in a bond that can withstand a variety of applications and conditions
- ▶ Cures at room temperature without heat or other chemicals to eliminate complex adhesion processes
- ▶ One-step process results in a strong bond on low surface energy plastics, minimising or eliminating pre-treatment or preparation of the substrates prior to bonding
- ▶ Solvent-free adhesive system



	DP8005
Mix Ratio (Volume) B:A	10:1
Approximate Viscosity (mPa·s) 75°F (24°C)	25,000
Approximate Mixed Work Life 75°F (24°C)	3 minutes
Approximate Time to Handling Strength 75°F (24°C)	3 hours
Floating Roller Peel (N/mm) 75°F (24°C)	1.6
Overlap Shear Aluminium (MPa) -67°F (-55°C)	6
Overlap Shear Aluminium (MPa) 75°F (24°C)	14
Overlap Shear Aluminium (MPa) 180°F (82°C)	3
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	16 CF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	18 CF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	10 SF

KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

*Aluminium was acid etched before bonding.

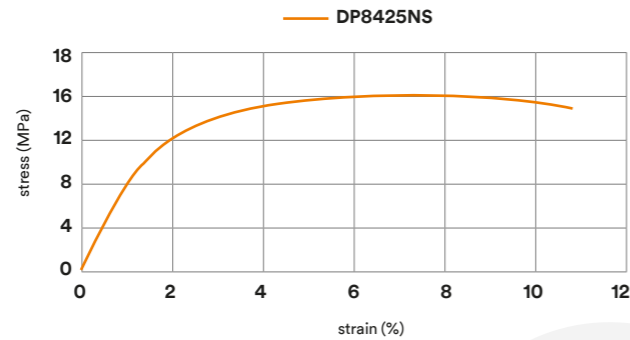
*Composite materials were prepped with an IPA wipe/abrade/IPA wipe surface preparation method.

3M™ Scotch-Weld™ Acrylic Adhesive DP8410NS



3M™ Scotch-Weld™ Acrylic Adhesive DP8410NS is a non-sag, toughened, two-part acrylic adhesive. It provides improved adhesion to many plastics and metals, including those with slightly oily surfaces. It's a durable adhesive that features a fast rate of strength build to provide structural strength in just minutes.

- ▶ Durable finished bond with excellent shear and high impact strength
- ▶ Bonds difficult surfaces such as powder coats and oily surfaces
- ▶ Fast adhesion reduces waiting and maximises work efficiency
- ▶ High strength, easy plastic bonding
- ▶ Glass bead technology to control bond line thickness and produce consistent quality



	DP8410NS
Mix Ratio (Volume) B:A	10:1
Approximate Viscosity (mPa-s) 75°F (24°C)	70,000
Approximate Mixed Work Life 75°F (24°C)	10 minutes
Approximate Time to Handling Strength 75°F (24°C)	20 minutes
Floating Roller Peel (N/mm) 75°F (24°C)	5.3
Overlap Shear Aluminium (MPa) -67°F (-55°C)	N/A
Overlap Shear Aluminium (MPa) 75°F (24°C)	25
Overlap Shear Aluminium (MPa) 180°F (82°C)	6
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	32 CF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	19 AF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	9 SF

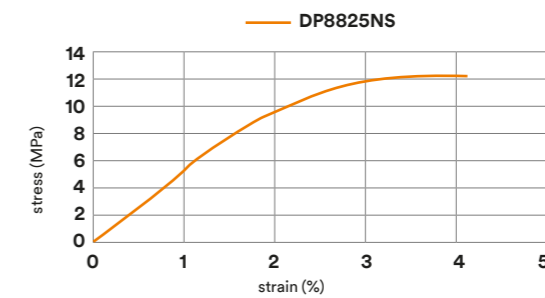
KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

3M™ Scotch-Weld™ Low Odour Acrylic Adhesive DP8825NS



3M™ Scotch-Weld™ Low Odour Acrylic Adhesive 8825NS is our standard low-odour, non-sag, toughened, two-part acrylic adhesive. This adhesive is an ideal choice for a wide variety of industrial and commercial applications since it cures twice as fast as most other competitive acrylic adhesives.

- ▶ Durable finished bond with excellent shear and high impact strength
- ▶ Low odour and non-flammable properties for a safer working environment compared to typical acrylic adhesives
- ▶ Bonds difficult surfaces such as powder coats and oily surfaces
- ▶ Fast adhesion and drying time reduces waiting and maximises work efficiency
- ▶ Features glass shimming beads to control bond line thickness to prevent excessive squeeze out



	DP8825NS
Mix Ratio (Volume) B:A	10:1
Approximate Viscosity (mPa-s) 75°F (24°C)	80,000
Approximate Mixed Work Life 75°F (24°C)	25 minutes
Approximate Time to Handling Strength 75°F (24°C)	50 minutes
Floating Roller Peel (N/mm) 75°F (24°C)	3.5
Overlap Shear Aluminium (MPa) -67°F (-55°C)	N/A
Overlap Shear Aluminium (MPa) 75°F (24°C)	22
Overlap Shear Aluminium (MPa) 180°F (82°C)	6
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	19 CF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	15 AF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	7 SF

KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

*Aluminium was acid etched before bonding.

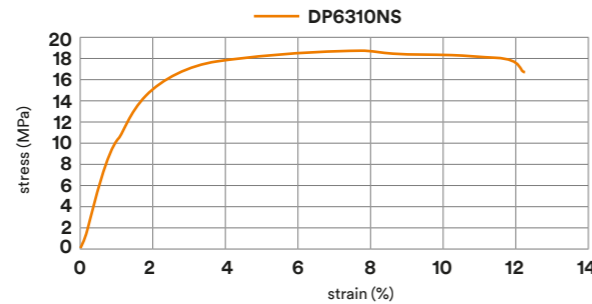
*Composite materials were prepped with an IPA wipe/abrade/IPA wipe surface preparation method.

3M™ Scotch-Weld™ Multi-Material Composite Urethane Adhesive DP6310NS



3M™ Scotch-Weld™ Multi-Material Composite Urethane Adhesive DP6310NS is a two-part urethane adhesive that is used to bond most types of composites, metals and multiple materials together. This product is fast drying, with a 10-minute work time. It is designed to bond multiple applications and is ideal for bonding composites.

- ▶ A high performance, two-component urethane adhesive
- ▶ Along with metals, bonds SMC and FRP (traditional fibreglass) materials to each other and to metal frames
- ▶ Easy dispensing system



	DP6310NS
Mix Ratio (Volume) B:A	1:1
Approximate Viscosity (mPa·s) 75°F (24°C)	Paste
Approximate Mixed Work Life 75°F (24°C)	10 minutes
Approximate Time to Handling Strength 75°F (24°C)	60 minutes
Floating Roller Peel (N/mm) 75°F (24°C)	4
Overlap Shear Aluminium (MPa) -67°F (-55°C)	13
Overlap Shear Aluminium (MPa) 75°F (24°C)	14
Overlap Shear Aluminium (MPa) 180°F (82°C)	2
Overlap Shear Carbon Fibre - reinforced Epoxy (MPa) 75°F (24°C)	22 AF
Overlap Shear Glass Fibre - reinforced Epoxy (MPa) 75°F (24°C)	17 AF/CF
Overlap Shear Sheet Molding Compound (SMC) (MPa) 75°F (24°C)	7 AF

KEY: SF - Substrate Failure / CF - Cohesive Failure / AF - Adhesive Failure

*Aluminium was acid etched before bonding.

*Composite materials were prepped with an IPA wipe/abrade/IPA wipe surface preparation method.

3M™ Hybrid Adhesive Sealant 760



3M™ Hybrid Adhesive Sealant 760 is a one component sealant without isocyanates which forms permanent elastic bonds. It cures rapidly under the effect of atmospheric humidity to form a flexible and resistant joint with very good adhesion on most materials.

Can also be used for bonding and caulking different materials used in the building industry: concrete, wood, aluminium, most lacquered metals, polyester, glass, concrete, brick, stone, ceramic, etc.

The product has good resistance to UV aging and will retain strength and flexibility over long-term exposure to UV light. The white product may show some yellowing with long term exposure to UV light.

	3M Hybrid Sealant 760
Skin formation time (min) (ISO 291, 23°C, 50% RH)	20min + 10min
Cure time, mm/24hr (ISO 291, 23°C, 50% RH)	3mm / 24h
Shore A Hardness (ISO 868-3 seconds)	Approx 55
Density (g/ml)	White and grey : 1,62 + 0,05 Black : 1,57 + 0,05
Elongation at break (ISO 37)	>300%
Modulus at 100%	>1MPa
Modulus at break	>1.8 MPa
Tensile strength at 100% elongation (ISO 8339)	0.62 MPa



3M Composite and Multi-Material Solution Centre

Finding the right science to match your application is key. 3M is here to help, bringing over 60 years of proven adhesive science leadership to composite bonding applications, and offering the expertise to apply them to the right materials for an unmatched bond quality. From the rugged strength of the first composite golf club to applying a powerful hold to aeroplane wings, 3M has brought the industry new solutions, making adhesive science what it is today, with progressive products formulated to solve the manufacturing challenges of the future.

Your next design starts here!

It's time to design with new materials and enhance your process efficiencies – with the help of 3M adhesives and the support of the 3M team. We offer technical service and testing to help you maximise your product designs. 3M is your go-to resource for application and adhesive expertise! Wherever you are in the process, we can help guide you with the advice and information you need.

What's your challenge? Solve it with a smarter bond.

For more information, speak with a 3M representative or visit 3M.com/structuraladhesives



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J392599. CJ1248