Scotch-Weld™
Specialty Cylinder Spray Adhesives
70 • 74 • 74 NF • 78 ET • 78 HT

Technical Data **September, 2009**

Product Description

3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives are industrial grade, versatile bulk spray adhesives formulated for specific substrates and market needs (soft foams – polystyrene foams). The adhesive is packaged in convenient, portable, no maintenance aerosol cylinders.

Key Features

- High solids, high coverage adhesive.
- Fast drying formulas to help speed assembly.
- Good moisture resistance to help protect bonds.
- Temporary or permanent bonds on substrates like fabrics, soft foams, polystyrene foam, heavy papers, wood, metal, glass and most plastics.
- One or two surface bonding capabilities.
- Non-Flammable solvent and propellant adhesive.
- High temperature resistance.

Typical Physical Properties

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

Product	3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives									
	70		74		74 NF		78 ET		78 HT	
Base:	Synthetic Elastomer		Synthetic Elastomer		Synthetic Elastomer		Synthetic Elastomer		Synthetic Elastomer	
Solids Content of Adhesive – propellant removed (by wt.):	40.6%		36%		28%		30.5%		27%	
Solids Content – aerosol (by wt.):	20.9%		22%		22.3%		16.8%		14.9%	
Color(s):	Clear		Clear, Orange		Clear		Clear, Green		Blue	
Volatile Organic Compounds (VOC):	546 g/L		563 g/L		162 g/L		570 g/L		602 g/L	
Compatible With Polystyrene Foam:	Yes		No		No		Yes		Yes	
Hazardous Air Pollutants (HAPS) % wt. (calculated):	0%		0%		55-65%		36.2%		0%	
MACT Compliant:	Yes		Yes		No		No		Yes	
Flammability:	Solvent	Propellant	Solvent	Propellant	Solvent	Propellant	Solvent	Propellant	Solvent	Propellant
	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes

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Available Sizes and Expected Coverage

3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives	Cylinder Size Availability	Cylinder Adhesive Net. Wt. (lbs.)	Sq. Ft. Coverage per Wet lb. of Adh @ 1 gm./sq. ft. (dry wt.):	Sq. Ft. Coverage @ 1 gm./sq. ft. (dry wt.):	Sq. Ft. Coverage @ 2.5 gms./sq. ft. (dry wt.):
70	**Large** - Disposable	27.3	95	2,590	1,036
	Intermediate - Disposable	139	95	13,189	5,276
	Jumbo - Returnable	288	95	27,327	10,931
74	**Large** - Returnable	30.3	100	2,996	1,199
	Intermediate - Returnable	150	100	14,832	5,933
	Jumbo - Returnable	297	100	29,664	11,866
74 NF	**Mini** - Disposable	10.5	101	1,063	425
	Large - Disposable	37	101	3,746	1,498
	Intermediate - Returnable	185.6	101	18,791	7,516
	Jumbo - Returnable	371.7	101	37,362	15,053
78 ET	**Large** - Disposable	29.3	76	2,235	894
	Intermediate - Returnable	139	76	10,606	4,244
	Jumbo - Returnable	298	76	22,729	9,092
78 HT	**Mini** - Disposable	8.5	68	575	230
	Large - Disposable	28.5	68	1,928	771
	Intermediate - Returnable	138.6	68	9,376	3,750
	Jumbo - Returnable	287.1	68	19,421	7,768

Handling/ Application Information

Surface Preparation:
For best results, all surfaces to be bonded must be clean, dry and free from dirt, dust, oil, loose paint, wax or grease, etc.

Application Temperature:
For best results, the temperature of the adhesive and the surfaces being bonded should be between 60°-80°F (16°-27°C). Temperatures outside this range may affect bonding range and sprayability.

Equipment Setup:
Attach the larger flare fitting end to the spray applicator and tighten the nut securely. Check to see that the applicator gun trigger stop/adjusting nut is fully locked against the trigger. Attach the other end of the hose, a smaller flare fitting, to the cylinder valve and tighten securely.

Directions For Use:
1.) Slowly open the cylinder valve and inspect the connections for any leaks. Tighten if needed.
2.) Fully open the valve.
3.) Unscrew the trigger stop/adjusting nut away from the trigger 3-4 turns and spray a test pattern. For more adhesive output, continue to screw the nut away from the trigger. For less adhesive output, screw the nut back towards the trigger.
4.) Hold the applicator 3-10 inches away from the surface to be sprayed and apply a uniform coat of adhesive. (The smaller the spray pattern chosen in step 3, the closer the applicator gun will need to be to the surface and vice versa for larger patterns.)
5.) Apply 1-3 even coats of adhesive. (This will depend on the needed coverage for the bonding application.)
6.) Allow adhesive to dry until tacky and then apply sufficient pressure to ensure complete contact.

Note: Test the tackiness by gently touching the adhesive with your knuckle. If the adhesive transfers to your skin, it is too wet. If the adhesive is aggressively tacky and does not transfer to your skin, it is ready to bond. If the adhesive is too dry or only has a very light tack, it is too dry and another coat of adhesive should be applied to at least one of the surfaces.

Handling/Application Information *(continued)*

Product	3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives				
	70	74	74 NF	78 ET	78 HT
Dry Time (minutes):	1-4	1-5	1-5	1-5	1-5
Open Time (minutes):	1-60	1-15	1-60	1-60	1-20

One Surface Bonding: Less demanding applications. Spray the more non-porous surface and bond within Open Time (see Open Times in above table).

Two Surface Bonding: Permanent, more demanding applications. Spray both surfaces and bond within Open Time (see Open Times in above table).

Equipment Shut Down: For storage – screw the trigger stop/adjusting nut all the way to the trigger lock position. Turn the valve on the cylinder to the closed position.

Application Equipment Suggestions for Cylinder

Description	3M ID Number
3M™ Scotch-Weld™ Cylinder Adhesive Applicator (includes 9501 tip)	62-9880-9930-5
3M™ Scotch-Weld™ Cylinder Adhesive Applicator H (includes 4001 tip) – this applicator is for use with 3M™ Scotch-Weld™ Cylinder 94 CA	62-9880-9950-3
3M™ Scotch-Weld™ Cylinder Adhesive Applicator High Output (includes QSS tip) – this applicator is for use with 3M™ Scotch-Weld™ Cylinders 70, 78ET, 78HT	62-9880-9960-2
3M™ Scotch-Weld™ Cylinder Adhesive Applicator EX (with 18" Extension and 9501 Tip)	62-9880-9940-4
3M™ Scotch-Weld™ Cylinder Adhesive 6 Foot Hose	62-9880-0006-3
3M™ Scotch-Weld™ Cylinder Adhesive 12 Foot Hose	62-9880-0012-1
3M™ Scotch-Weld™ Cylinder Adhesive 25 Foot Hose	62-9880-0025-3
3M™ Scotch-Weld™ Cylinder Adhesive 50 Foot Hose	62-9880-0050-1
3M™ Scotch-Weld™ Cylinder Adhesive 250050 Spray Tip	62-9880-8133-7
3M™ Scotch-Weld™ Cylinder Adhesive 4001 Spray Tip	62-9880-4001-0
3M™ Scotch-Weld™ Cylinder Adhesive 650050 Spray Tip – this nozzle has half the output of the 6501 nozzle	62-9880-8173-3
3M™ Scotch-Weld™ Cylinder Adhesive 6501 Spray Tip	62-9880-6501-7
3M™ Scotch-Weld™ Cylinder Adhesive 730154 Spray Tip – this nozzle minimizes dripping on 3M™ Scotch-Weld™ Cylinder 60 CA	62-9880-7301-1
3M™ Scotch-Weld™ Cylinder Adhesive 9501 Spray Tip	62-9880-9501-4
3M™ Scotch-Weld™ Cylinder Adhesive QSS Spray Tip – this nozzle is needed for 3M™ Scotch-Weld™ Cylinder 70	62-9880-8148-5
3M™ Scotch-Weld™ Cylinder Adhesive T-Fitting	62-9880-8348-1
3M™ Scotch-Weld™ Cylinder Adhesive Hose Swivel	62-9880-7948-9

Applicator Suggestion: 3M™ Scotch-Weld™ Cylinder Adhesive Applicator (62-9880-9930-5) is suggested for all 3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives.

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Application Equipment Suggestions for Cylinder *(continued)*

Nozzle Suggestions:

	250050	4001	650050	6501	9501	QSS
Spray Pattern (inches): (see *Note below)	1-4	2-6	3-8	3-8	5-12	4-14
Applications:	Restricted output (General)	General laminating	Restricted output (General)	General laminating	General laminating	For use with 70, 78ET and 78HT

***Note:** Spray pattern widths will vary between products, due to formulation and pressure differences.

Spray Pattern Adjustments: Unscrew the trigger stop/adjusting nut away from the trigger 3-4 turns and spray a test pattern. For more adhesive output and a wider spray pattern, continue to unscrew the nut away from the trigger. For less output and smaller spray pattern, screw the adjusting nut back towards the trigger. Hold the applicator 3-10 inches away from the surfaces to be sprayed and apply a uniform coat of adhesive. (The smaller the spray pattern, the closer the applicator gun will need to be to the surface). The lace sprays form an elliptical pattern and should be sprayed at the patterns widest point.

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.

Overlap Shear Strength: 1 square inch bonds tested at 2 inches per minute separation rate at 75°F (24°). Results are reported in PSI - pounds per square inch.

Substrate Bonded	3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives 70	74	74 NF	78 ET	78 HT
ABS to ABS (2 surface adhesive bond)	64	77	147	134	87
ABS to ABS (1 surface adhesive bond)	123	69	119	97	160
Acrylic to Acrylic (2 surface adhesive bond)	152	58	225	167	169
Aluminum to Aluminum (2 surface adhesive bond)	79	61	133	190	78
Birch to Birch (2 surface adhesive bond)	193	183	165	184	144
Birch to Birch (1 surface adhesive bond)	92	194	86	70	176
Galvanized to Galvanized (2 surface adhesive bond)	78	56	130	148	29
Galvanized to Galvanized (1 surface adhesive bond)	87	63	84	89	76
Polyethylene to Polyethylene (2 surface adhesive bond)	35	79	67	63	89
Polypropylene to Polypropylene (2 surface adhesive bond)	75	53	130	98	155
FRP (Fiber Reinforced Plastic) to FRP (2 surface adhesive bond)	96	63	125	158	82

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.

Tensile Strength Failure Temperature: 4 square inch bonds tested with 30 grams hanging in tensile. Temperature is held for 10 minutes and ramped at 10°F increments, until complete failure.

3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives	Failure Temperature (°F)
70:	190
74:	180
74 NF:	210
78 ET:	200
78 HT:	230

Cold Weather Warning

How Cold Weather Affects Cylinders:

1.) The bulk adhesive in the cylinder will thicken as temperatures get colder.

2.) The propellants used will decrease in pressure and, therefore, effectiveness:

a. Liquefied hydrocarbon propellants will condense and reduce the effective amount of available pressure on the cylinder. This will adversely affect the spray pattern and, consequently, the overall performance of the adhesive.

b. Compressed gas propellants will shrink dramatically in cold weather causing the system to have much less available force to push a thicker bulk adhesive out. The effect will be improper, less controlled spray properties with longer dry times needed.

How to Eliminate Cold Weather Problems:

1.) Store the cylinders in a controlled environment with temperatures between 60°-80°F (16°-27°C).

2.) Keep cylinders off of cold concrete floors and away from outside walls.

3.) Use heat belts or blankets, approved for use with flammable adhesives, to control the temperature of the cylinders.

4.) Allow additional time for solvents and propellants to flash off, when temperatures are below 60°F (16°C).

If Cylinders Get Too Cold:

If cylinders arrive cold or have been exposed to temperatures that are causing poor spray properties, move to an area that is heated above 70°F (21°C). The larger the cylinder, the longer it will take for the temperature to equilibrate. Mini (~11 lb.) and Large (~30 lb.) cylinders can be shaken or submerged in hot water to accelerate the warming process. Once the cylinders equilibrate back to at least 60°F (16°C), the products will perform as normal.

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Trouble Shooting – Applicator/Hose Clog

Applicator – Hose Clog Checklist for 3M™ Scotch-Weld™ Specialty Cylinder Spray Adhesives.

If the system sprays poorly or won't spray at all: The sequence below runs through a complete clog into the cylinder valve. If at any time during the sequence the problem is resolved, stop, clean the needed parts, put the system back together, and you are finished.

1. Make sure the cylinder is not empty.
2. Make sure the cylinder valve is open.
3. Close the applicator trigger stop adjusting nut and clean the nozzle tip. (Does it spray now?)
4. Take off the nozzle and try spraying. (Does it spray now?) Clean the nozzle.
5. Shut off the cylinder valve, CAREFULLY and SLOWLY – loosen the applicator gun/hose connection and look for adhesive to squirt out. If adhesive starts to leak out, allow it to slowly continue to do so until it stops. (This will be a little messy, but you will need to bleed off the pressurized adhesive to clean the applicator gun.) The applicator gun has a clog at the valve, stem or inlet area and needs to be cleaned.
6. If nothing leaks out after fully loosening the applicator gun, CAREFULLY remove applicator gun, realizing that the hose may be clogged but could be full of adhesive and pressure depending on where the clog is. (Secure the open end of the hose into a bucket in case the clog releases and the system flushes.)
7. CAREFULLY and SLOWLY loosen the hose connection at the cylinder valve. Look for adhesive to squirt out. If adhesive starts to leak out, allow it to slowly continue to do so until it stops. (This will be a little messy, but you will need to bleed off the pressurized adhesive in the hose). Clean or replace the hose.
8. With everything now isolated from the cylinder, place a bucket in front of the cylinder valve and slowly open it to see if any adhesive comes out. If it does, put the cleaned system parts back together. If it does not, there is something wrong with the cylinder or cylinder valve and it should be returned.

Solvents that can be used for cleaning nozzle, applicator gun and inside of hose: 3M™ Adhesive Remover, Cyclohexane, Toluene, MEK.*

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

Storage

Store product at 60°-80°F (16°-27°C) for maximum storage life. Higher temperatures reduce normal storage life. Lower temperatures may cause increased viscosity of a temporary nature. Rotate stock on a “first in-first out” basis.

Shelf Life

When stored at the recommended conditions in the original, unopened container, this product has a shelf life of 15 months from date of shipment.

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 or (651) 737-6501.

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.

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