



# Scotch-Weld™

## Water Based Liquid Adhesive 4235

## Moderate Tack Pressure Sensitive Adhesive

### Product Data Sheet

Updated : March 2001  
Supersedes : July 1997

#### Product Description

4235 is a water dispersed, pressure sensitive adhesive with moderate tack to allow for immediate repositioning. Strength builds to a high level within 24 hours. Due to its excellent tack and flexibility of bonding range the product can improve many production processes e.g. packaging, labelling, furniture manufacture, insulation bonding, air conditioning manufacture and automotive furnishing.

It bonds to many substrates such as glass, paper, cardboard, galvanised and stainless steel, bare and clad aluminium, polystyrene crystal, PVC, ABS, plexiglass, light materials, rubbers etc. This product offers a high level of clarity when dry and is particularly suited for lightweight bonding to clear plastics.

#### Physical Properties

Not for specification purposes

<b>Base</b>	Acrylate	
<b>Solvent</b>	Water	
<b>pH</b>	6.5	
<b>Viscosity</b> Brookfield RVF at 26°C. (spindle 4 at 20 rpm)	4,000 mPa.s	
<b>Consistency</b>	Heavy Syrup	
<b>Solids Content</b>	55%	
<b>Specific Gravity</b>	1.07	
<b>Flash Point</b>	None	
<b>Colour</b>	Wet - White Dry - Clear Translucent	
<b>Bonding Range</b>	40 minutes (75 microns wet) to 30 days + (if the surface is protected from dust and contamination).	
<b>Shelf Life</b>	15 months from date of despatch by 3M when stored in the original carton at 21°C (70°F) & 50 % Relative Humidity	

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**Performance Characteristics**  
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<b>Shear Strength</b>	Alcohol wiped (IPA) + abraded P180 + alcohol wiped. Adhesive brushed on both substrates. Bonded when dry with assembly pressure of 3kg/cm <sup>2</sup> minimum.	25 x 25 mm overlap shear specimens were prepared and let to dry for 7 days at 23°C and 50% RH and tested at a separation rate of 10mm/min.
<b>Substrate</b>	<b>Value (MPa)</b>	
Polyethylene	0.13	
Polypropylene	0.20	
EPDM Rubber	0.03	
PMMA Plastic	0.20	
Polycarbonate	0.17	
PVC Plastic	0.13	
ABS Plastic	0.17	
Polystyrene	0.10	
Pine Wood	0.13	
Oak Wood	0.23	
Plywood	0.10	
Glass	0.10	
Aluminium	0.10	
Steel	0.10	

<b>Peel Strength</b> 180° peel (N/25mm)	Aluminium degreased with MEK, glass and plastics wiped with IPA.	180° peel specimen rigid substrate to cotton duck, 25mm width, dried for 7 days at 23°C, 50% RH before being tested or aged. Testing speed 150mm/min.		
<b>Substrate</b>	<b>Control (23°C, 7 days)</b>	<b>70°C, 30 days</b>	<b>40°C, 95% RH, 30 days</b>	<b>UV Exposure 30 days</b>
Glass	20.8	22.8	20.4	22.3
Polypropylene	14.4	14.1	15.0	
PVC	17.9	30.6	27.1	
Aluminium	33.5	30.8	33.7	
Plywood	19.9	24.7	21.5	

<b>T-Peel</b> (N/25mm)	Aluminium degreased with MEK, glass and plastics wiped with IPA.	180° peel specimen rigid substrate to cotton duck, 25mm width, dried for 7 days at 23°C, 50% RH before being tested or aged. Testing speed 150mm/min.
<b>Substrate</b>	<b>Control (23°C, 7 days)</b>	
Cotton / Cotton	25.7	

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<b>Heat Resistance</b> Deal Load Test (500g): 160°C maximum.	Service Temperature Range: the recommended service temperature is from - 40°C to +110°C constant. Exposure to temperatures of up to 130°C are acceptable for short periods.	Surface Preparation: MEK + abraded P180 + MEK. Rate of testing 10mm/min.  Steel to cotton duck, 25 x 25 x 25 mm overlap, weight of 500g. 3 dead load specimens placed in an oven at 50°C. Temperature is then increased by 10°C every 15 minutes. Temperature when the last specimen fails is recorded as the maximum temperature.
<b>Test Temperature</b>	<b>Shear Alu/alu (MPa)          7 days at 23°C/50% RH</b>	
- 55 °C + 23 °C + 60 °C + 90 °C	2.37 0.33 0.10 0.02	

#### Application Characteristics

Can be applied by brush,  
 roller, knife coat or sprayed  
 with the following spray  
 equipment suggestions.

All material hoses should be  
 nylon lined.

**Do not use PVA hoses.**

Spray gun	Air cap	Fluid Tip	Recommended Air Pressure (bars)	Fluid Flow L/min
Kremlin SKM 18	G1	15	0.4 mini	0.3 to 0.5
DeVilbiss JGA	45	E	0.7 - 1.0	0.3 to 0.5
Binks 18	66S	66	0.7 - 1.0	0.3 to 0.5

#### Additional Product Information

This product is non  
 flammable in the wet state.

Because the adhesive  
 contains water, pumping  
 equipment should be  
 stainless steel for maximum  
 durability. All material hoses  
 should be nylon lined.

**Do not use material hoses  
 previously used with  
 solvent based adhesive  
 since residual solvent will  
 destabilise the water  
 dispersion.**

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### Directions for Use

#### Surface Preparation:

For optimum results, all surfaces should be free of dirt, oil, grease and other contaminants. Metal surfaces can be cleaned by first washing with Toluene and then Acetone. Plastic and rubber can be cleaned with alcohol. When using solvents for surface preparation, observe proper precautionary measures.

#### Application:

For optimum results, a smooth uniform coat of adhesive should be applied. The adhesive must be free of solvent before bonding, especially if the parts to be bonded are impervious.

#### Drying Time:

This will depend on the adhesive film thickness and drying temperature. Generally, when the adhesive film has turned to a clear and odourless state, drying can be considered complete. A minimum drying time of 20 minutes is considered to be an average. General bonding range = 30 days+.

**N.B.** Avoid contamination of surfaces by dust etc.

#### Coverage:

Approximately 15m<sup>2</sup>/litre (0.025mm dry film).

#### Clean Up:

Liquid adhesive may be cleaned up using water or soapy water. When dry, 3M Industrial Cleaner, aromatic or ketone solvents are recommended, e.g. 3M Solvent No. 2.

**NOTE:** When using solvents for clean up, it is essential that the safety precautions are observed.

### Storage Conditions

Store product at 16/25°C for maximum storage life. Higher temperatures reduce the normal storage life.

Water dispersed products will become unusable with prolonged storage below +4°C.

**PROTECT FROM FREEZING!**

### Health and Safety Information

#### Precautions:

May cause eye and skin irritation. Avoid contact with the eyes. Avoid prolonged or repeated contact with the skin.

#### First Aid:

##### Eye Contact:

Rinse immediately with plenty of water and seek medical advice.

##### Skin Contact:

Wash with soap and water.

For further Health and Safety information, please contact the Toxicology Department at Bracknell Technical Centre on (01344) 858000.

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Values presented have been determined by standard test methods and are average values not to be used for specification purposes. Our recommendations on the use of our products are based on tests believed to be reliable but we would ask that you conduct your own tests to determine their suitability for your applications. This is because 3M cannot accept any responsibility or liability direct or consequential for loss or damage caused as a result of our recommendations.



### Tapes & Adhesives Group

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