multi-seals inc

Product Sheet

F05 FLEXIBLE ADHESIVE

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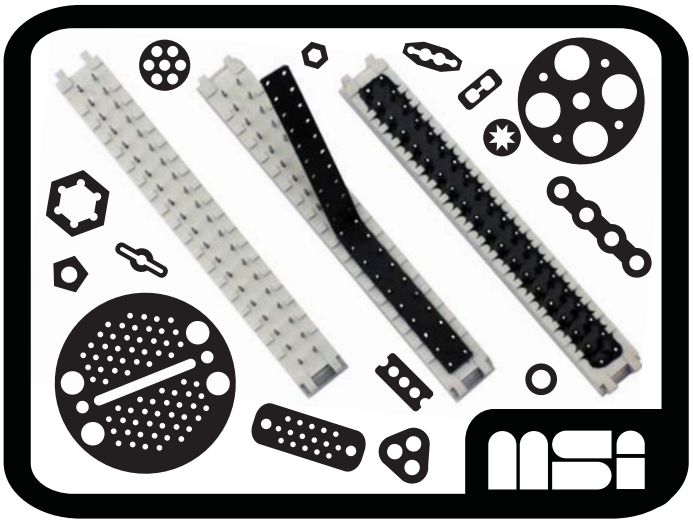
MULTI-SEALS F05 POLY-FORMS are flexible pre-shaped adhesives designed for bonding diverse materials, including metals, plastics, and glass. F05 has negligible vertical flow, which keeps the adhesive contained in precisely defined areas. The pre-shaped copolymer prevents drips and dispensing inconsistencies typical of liquid adhesives. Adhesive placement is highly consistent from bond to bond. The durability and flexibility of F05 Poly-Forms facilitates manual and automated handling and increases production rates. F05 can be pre-shaped in multiform configurations to accommodate a broad range of applications.



PROCESSING INSTRUCTIONS

The temperature and time required to process F05 depend upon component materials, design, bond requirements, and operating environment. Adding pressure and increasing oven temperature and time improves adhesion. The minimum processing temperature is 225°F/107°C . A typical processing schedule is 275°F/135°C for 10 minutes under 5 psi. The properties identified below are based on a processing schedule of 325°F/163°C for 30 minutes under 5 psi. For most applications, shorter schedules may be followed. Processing profiles for applications requiring lower bond strength are shown on the reverse side. Minimum processing profiles are based on bonding stainless steel to stainless steel. F05 should be stored in a cool, dry environment. Substrates should be cleaned of contaminants, including oils and mold release. If components require cleaning after sealing, limited exposure to mineral spirits or aqueous solvents is recommended.

	MINIMUM PROCESSING TIME FOR OPTIMUM BOND STRENGTH				
	Applied Pressure:				
	5 psi	10 psi	15 psi	25 psi	50 psi
225°F/107°C	nr	nr	nr	nr	3 h
250°F/121°C	nr	nr	nr	2 h	30 m
275°F/135°C	3 h	1 h	1 h	1 h	10 m
300°F/149°C	30 m	10 m	10 m	10 m	10 m
325°F/163°C	30 m	10 m	10 m	10 m	10 m

(nr = not recommended)

TYPICAL PROPERTIES of F05		
MSI Test Method	Softening Temperature	103°F/40°C
MSI Test Method	Tack Temperature	220°F/104°C
prepared at 325°F/163°C for 30 min.		
ASTM D-638-03	Ultimate Strength (PSI)	1,250
ASTM D-638-03	Modulus (MSI)	0.087
ASTM D-638-03	Poisson's Ratio	0.475
MSI Test Method	Water Absorption (weight %)	0.60 max.
ASTM D-150-98	Dielectric Constant	3.1
ASTM D-3418-03	Glass Transition by DSC	113°F/45°C Tg
ASTM E-831-06	Coefficient of Thermal Expansion by TMA	162.5 µm/m°C
ASTM E-1952-01	Thermal Conductivity by Modulated DSC @ 73°F /23°C	0.16 λ (W/ K m)
MSI Test Method	Shore D Hardness @ 70°F/21°C	50
MSI Test Method	Shore D Hardness @ 103°F/40°C	40

TYPICAL ADHESIVE STRENGTHS for F05 prepared at 325°F/163°C for 30 min. under 5 psi. (measured at instantaneous break point)		
ASTM D3163-01	Lap Shear, Aluminum to Aluminum @ 70°F/21°C	1,500
ASTM D3163-01	Lap Shear, Aluminum to Aluminum, Abraded @ 70°F/21°C	2,100
ASTM D3163-01	Lap Shear, Stainless Steel to Stainless Steel @ 70°F/21°C	1,800
MSI Test Method	Facewise Tensile, Stainless to Stainless @ -110°F/-79°C	8,300
MSI Test Method	Facewise Tensile, Stainless to Stainless @ -40°F/-40°C	8,200
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 50°F/10°C	4,500
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 70°F/21°C	3,500
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 90°F/32°C	2,800
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 110°F/43°C	1,700
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 170°F/77°C	400
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 200°F/93°CP	140

MINIMUM PROCESSING TIME FOR MODERATE BOND STRENGTH					
	Applied Pressure:				
	5 psi	10 psi	15 psi	25 psi	50 psi
225°F/107°C	nr	nr	nr	2 h	1 h
250°F/121°C	1 h	1 h	1 h	30 m	10 m
275°F/135°C	10 m	10 m	10 m	10 m	10 m
300°F/149°C	10 m	10 m	10 m	10 m	10 m
325°F/163°C	10 m	10 m	10 m	10 m	10 m

(nr = not recommended)

MINIMUM PROCESSING TIME FOR BASIC BOND STRENGTH					
	Applied Pressure:				
	5 psi	10 psi	15 psi	25 psi	50 psi
225°F/107°C	1 h	30 m	30 m	30 m	10 m
250°F/121°C	10 m	10 m	10 m	10 m	10 m
275°F/135°C	10 m	10 m	10 m	10 m	10 m
300°F/149°C	10 m	10 m	10 m	10 m	10 m
325°F/163°C	10 m	10 m	10 m	10 m	10 m

(nr = not recommended)

TYPICAL ADHESIVE STRENGTHS for F05 prepared at 275°F/135°C for 10 min. under 5 psi. (measured at instantaneous break point)		
ASTM D3163-01	Lap Shear, Aluminum to Aluminum @ 70°F/21°C	500
ASTM D3136-01	Lap Shear, Aluminum to Aluminum, Abraded @ 70°F/21°C	1,000
ASTM D3136-01	Lap Shear, Stainless Steel to Stainless Steel @ 70°F/21°C	1,000
MSI Test Method	Facewise Tensile, Stainless to Stainless @ -110°F/-79°C	5,500
MSI Test Method	Facewise Tensile, Stainless to Stainless @ -40°F/-40°C	5,200
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 50°F/10°C	2,500
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 70°F/21°C	2,000
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 90°F/32°C	1,600
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 110°F/43°C	1,100
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 170°F/77°C	200
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 200°F/93°C	80

TYPICAL ADHESIVE STRENGTHS for F05 prepared at 250°F/121°C for 10 min. under 5 psi. (measured at instantaneous break point)		
ASTM D3163-01	Lap Shear, Aluminum to Aluminum @ 70°F/21°C	200
ASTM D3136-01	Lap Shear, Aluminum to Aluminum, Abraded @ 70°F/21°C	800
ASTM D3136-01	Lap Shear, Stainless Steel to Stainless Steel @ 70°F/21°C	600
MSI Test Method	Facewise Tensile, Stainless to Stainless @ -110°F/-79°C	3,500
MSI Test Method	Facewise Tensile, Stainless to Stainless @ -40°F/-40°C	3,500
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 50°F/10°C	2,100
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 70°F/21°C	1,500
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 90°F/32°C	1,300
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 110°F/43°C	700
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 170°F/77°C	140
MSI Test Method	Facewise Tensile, Stainless to Stainless @ 200°F/93°C	50

Free Evaluation Offer

Multi-Seals, Inc. invites you to inspect our Poly-forms for yourself. Simply send us 10 to 20 un-bonded samples or prototypes of your components along with your application requirements. We will return your parts bonded along with appropriate Poly-form samples and our recommendations to help you achieve the greatest benefit from high-quality, cost-effective bonding with Poly-forms.