



**MR – Moisture Resistant Cyanoacrylates**

Pacer Technology MR Series cyanoacrylate adhesives are formulated to retain high tensile shear strength in moist, humid conditions and to maintain high strength under thermal cycling. Excellent performance on most substrates, including metals, ceramics, rubbers and plastics. Three viscosity ranges are available to meet most application requirements.

<b>LIQUID STATE</b>	<b>MR-10</b>	<b>MR-290</b>	<b>MR-3000</b>
Base Chemical	Ethyl Hybrid Cyanoacrylate		
Color	Clear, Transparent liquid		
Viscosity, cP	6-12	250-350	2500-3500
Flashpoint, F (COC)	185	185	185
Vapor Pressure, mm Hg @ 70C	6	6	6
Specific Gravity (@20C)	1.05	1.05	1.05
Soluble In:	Acetone, MEK, Nitromethane		
<b>CURED STATE</b>	<b>MR-10</b>	<b>MR-290</b>	<b>MR-3000</b>
Temperature Use Range	-65F to +260F (-54C to +127C)		
Outgassing (@ 10 <sup>-6</sup> mmHG, 72 <sup>0</sup> F)	0	0	0
Softening Point, <sup>0</sup> F ( <sup>0</sup> C)	310 (155)	300 (149)	296 (147)
Melting Point, <sup>0</sup> F ( <sup>0</sup> C)	366 (186)	361 (183)	356 (180)
Typical Gap, inches	.002	.012	.020
Tensile Strength, steel (psi)	4500	4500	4500
Rockwell Hardness, M	73	67	64
Soluble In:	Pacer X-9 Debonder, Acetone, Nitromethane		
<u>Tensile Shear Strength, (psi)</u>			
Steel	2800 (±10%)	2800 (±10%)	2900 (±10%)
Aluminum	1950 (±10%)	2100 (±10%)	2200 (±10%)
ABS	SF*	SF*	SF*
Rigid PVC	SF*	SF*	SF*
EPDM	100 (±10%)	100 (±10%)	100 (±10%)
Nylon	SF*	SF*	SF*
SBR	SF*	SF*	SF*
<u>Tensile Shear, Hot Water Immersion</u> (steel, psi) Initial	2800 (±10%)	2800 (±10%)	2900 (±10%)
7 days @ 104F (40C)	1700 (±10%)	1800 (±10%)	2060 (±10%)
14 days @ 104F (40C)	1500 (±10%)	1600 (±10%)	1900 (±10%)
30 days @ 104F (40C)	1400 (±10%)	1500 (±10%)	1850 (±10%)
<u>Tensile Shear, Cold/Heat Cycling</u> (steel, psi) Initial	2800 (±10%)	2800 (±10%)	2900 (±10%)
(1 cycle: -22F/3hr to 158F/3hr)			
10 cycles	2600 (±10%)	2700 (±10%)	2700 (±10%)
20 cycles	2600 (±10%)	2700 (±10%)	2700 (±10%)

\* Substrate failure

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	<b>MR – Moisture Resistant Cyanoacrylates</b>

**APPLICATION AND CURE CHARACTERISTICS:**

For best results, parts should be clean, free from oil and grease or other contaminants. Apply adhesive to one surface to be bonded and mate the other surface to it carefully and without delay. For best results, use a minimal amount of adhesive. In general, one free-falling drop covers one square inch of bond area. Avoid over-application, as excess adhesive is difficult to remove from unwanted areas. Fixture time occurs in 1-5 minutes with 80% of full strength developing in 15-30 minutes. Fixture time and full cure rates are dependent upon temperature, relative humidity, bondline thickness, and substrates being bonded. To speed full cure through larger gaps, Pacer accelerators for instant adhesives are compatible and can be used. Post application of accelerators to exposed adhesive may cause a white frosting (chlorosis) of the exposed adhesive onto parts, which can usually be removed using Pacer X-9 Debonder and a cotton swab. Overall cure strength can be decreased as a result of using accelerators. Testing on actual parts is recommended.

<b>Specification Compliance</b>	<b>MR-10</b>	<b>MR-290</b>	<b>MR-3000</b>
MIL-A-46050C (Type/Class)	II/1	II/2	II/3
A-A-3097 (Commercial Spec)	II/1	II/2	II/3

**STORAGE AND SHELF LIFE:**

Refrigerate unopened cyanoacrylate @ 40F (4C) for optimum results. Allow adhesive to reach room temperature before opening. Once opened, store in a cool, dry location. Stored under these conditions, a one year shelf life can be expected.

**SAFETY AND HANDLING PRECAUTIONS:**

Cyanoacrylate adhesives bond skin in seconds. In case of skin contact, flush with water. If skin becomes bonded, peel (not pull) apart after immersion in warm, soapy water. In case of eye or mouth contact, flush with water and get immediate medical attention. Use with adequate ventilation. Vapors can irritate eyes and mucous membranes. Symptoms disappear after removal of individual from vapors. For more information, refer to Material Safety Data Sheet, available upon request.

In case of emergency, call CHEMTREC at (800) 424-9300 or call Pacer Technology at (800)-538-3091 (outside CA only), or 909-987-0550.

<b>Size</b>	<b>MR-10</b>	<b>MR-290</b>	<b>MR-3000</b>
5 g		FG04455	
20 g	FG04440	FG04450	FG04460
1 lb	FG04443	FG04453	FG04463

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