

BR® 6747-INC, BR® 6747-INCB

BR® 6747-INC and BR® 6747-INCB are one-part, non-chromated, modified epoxy primers which contain no volatile organic compounds (VOCs). Primers are 100% water-based and do not rely on exempt solvents to achieve zero VOC level rating. They exceed all US state and federal VOC emission regulations for structural adhesive bonding primers and offer mechanical properties and corrosion resistance equal to that of solvent-based primer systems. BR® 6747-INCB contains an alternate biocide that is compliant with EU regulations.

BR® 6747-INC and BR® 6747-INCB provide outstanding performance with most 250°F (121°C) - 350°F (177°C) curing adhesive systems. Service temperature is from -67°F (-55°C) to 350°F (177°C).

BR® 6747-INC and BR® 6747-INCB offer wide application/processing latitude, simple processing with High Volume Low Pressure (HVLP) or standard air atomizing spray equipment and is insensitive to spray booth conditions - temperatures from 65°F - 90°F (18°C - 32°C) and relative humidity from 30% - 70%.

Typical applications include bond primer for aluminum components where corrosion protection is critical, corrosion inhibiting paint primer for aluminum substrates, and effective adhesion promoter for other metals (stainless steel, titanium, and nickel).

Features and Benefits

- Zero V.O.C., 100% water-based
- Service temperature from -67°F to 350°F (-55°C to 177°C)
- MEK wipe resistant after 60 minute cure at 250°F (121°C)
- Can be cured from 250°F to 350°F (121°C to 177°C).
- Excellent corrosion resistance
- Non-Chromated
- Recommended use with FM® 73M, METLBOND® 1515-3M, METLBOND® 1515-4M, FM® 300K, FM® 300-2M, or FM® 377S

PHYSICAL PROPERTIES (Liquid Primer)

Property	Result
Color	Yellow
Solids (ASTM D2369)	20%
Density	8.68 lb/gal (1.04 g/cc)

PRODUCT AVAILABILITY AND VARIATIONS

Primer is available in the following variants:

- **BR® 6747-INC**
- **BR® 6747-INCB** Alternate biocide compliant with EU regulations. Equivalent performance to BR 6747-INC.

Package size: 1 gallon can



STORAGE

Shelf life will depend on storage conditions and frequency of use

Shipping/transport temperature	15 days maximum at 35°F to 90°F (2°C to 32°C)
Shelf life	12 months at 40°F to 55°F (4°C to 13°C) from date of shipment 6 months at 56°F to 75°F (13°C to 24°C) from date of shipment DO NOT FREEZE
Shop life	30 days maximum at 75°F to 90°F (24°C to 32°C)
Inhibitor	None (Non-chromated)

PHYSICAL PROPERTIES (Properties of Cured Coating)

Property	Method	Result
Pencil Hardness	ASTM D3363	8H+ after a standard 60 minute 250°F (121°C) cure cycle. 8H+ hardness rating is maintained after 7 day exposure to 75°F (24°C) deionized water, Skydrol® D4, MIL-H-5606 fluid, MIL-L-7808 jet engine oil, Jet Fuel A and Methyl Ethyl Ketone (MEK).
MEK Resistance	ASTM D5402	A properly cured coating of BR® 6747-INC will withstand 20+wipes with a shop towel saturated with MEK
Salt Spray Resistance	ASTM B117, D1654	A properly cured coating of BR® 6747-INC will pass 40 day, 5% salt spray exposure test per ASTM B117
Filiform Corrosion	ASTM D2803	A properly cured coating of BR® 6747-INC which has been top coated with Polyurethane Enamel, scribed to expose bare aluminum and then exposed to 12 normal Hydrochloric Acid vapor for one hour will have no blistering of the top coat after 30 day exposure to 95°F (35°C) and 85% relative humidity.



MECHANICAL PROPERTIES OF BR® 6747-INC with FM® 73M 0.060 psf, 250°F (121°C) Cure Adhesive

Property	Test method	Test condition °F (°C)	Result	Units
Single Lap Shear Strength	AITM D1002	-67 (-55)	5200 (35.8)	psi (MPa)
		75 (24)	4900 (33.8)	
		180 (82)	3600 (24.8)	

Substrate: 2024-T3 bare aluminum, surface treatment: FPL + PAA. Adhesive cured 60 minutes at 250°F (121°C) under 30 - 45 psi (0.21-0.31 MPa) pressure.

MECHANICAL PROPERTIES OF BR® 6747-INC with Metlbond® 1515-3M or 1515-4M 0.050 psf, 350°F (177°C) Cure Adhesive

Property	Test method	Test condition °F (°C)	Result	Units
Single Lap Shear Strength	AITM D1002	-67 (-55)	3600 (24.8)	psi (MPa)
		75 (24)	4600 (31.7)	
		220 (104)	3700 (25.5)	
		250 (121)	3100 (21.4)	
		275 (135)	2700 (18.6)	

Substrate: 2024-T3 bare aluminum, surface treatment: FPL + PAA. Adhesive cured 90 minutes at 350°F (177°C) under 30 - 45 psi (0.21 - 0.31 MPa) pressure.

MECHANICAL PROPERTIES OF BR® 6747-INC with FM® 300 K 0.08 psf, 350°F (177°C) Cure Adhesive

Property	Test method	Test condition °F (°C)	Result	Units
Single Lap Shear Strength	AITM D1002	-67 (-55)	4600 (31.7)	psi (MPa)
		75 (24)	4800 (33.1)	
		220 (104)	4100 (28.3)	
		250 (121)	3900 (26.9)	
		275 (135)	3600 (24.8)	

Substrate: 2024-T3 bare aluminum, surface treatment: FPL + PAA. Adhesive cured 90 minutes at 350°F (177°C) under 30 - 45 psi (0.21 - 0.31 MPa) pressure.



MECHANICAL PROPERTIES OF BR® 6747-1NC with FM® 377 S 0.080 psf, 350°F (177°C) Cure Adhesive

Property	Test method	Test condition °F (°C)	Result	Units
Single Lap Shear Strength	AITM D1002	-67 (-55)	2800 (19.3)	psi (MPa)
		75 (24)	2600 (17.9)	
		350 (177)	1900 (13.1)	

Substrate: 2024-T3 bare aluminum, surface treatment: FPL + PAA. Adhesive cured 90 minutes at 350°F (177°C) under 30 – 45 psi (0.21 – 0.31 MPa) pressure.

PROCESSING
PRIMER STORAGE

BR® 6747-1 NC and BR® 6747-1 NCB may be stored at temperatures from 40°F to 55°F (4°C to 13°C) for up to 12 months, from 56°F to 75°F (13°C to 24°C) for up to 6 months and from 75°F to 90°F (24°C to 32°C) for up to 30 days. Specific care should be taken to prevent BR® 6747-1 NC from freezing or from being exposed to temperatures below 32°F (0°C) and above 90°F (32°C).

MIXING

It is not necessary to warm the container to room temperature before opening. Thoroughly mix the primer upon opening and agitate during application. NOTE: During transportation and storage conditions the primer may form a layer of soft settling solids at the bottom of the can. It may take more mechanical force to disperse the solids from the bottom if the settling is densely packed. To increase mixing efficiency, we recommend using mixing beads to aid agitation or using a mechanical propeller blade to disperse the settling solids before putting into a shaker or roller machine.

SURFACE PREPARATION

A clean, dry, grease-free surface is required for bonding. BR® 6747-1 NC and BR® 6747-1 NCB are used with standard cleaning techniques involving a four step procedure of solvent degreasing, alkaline cleaning, chemical deoxidizing (etching) and phosphoric acid anodizing*. General guidance for etching and phosphoric acid anodizing can be found in ASTM D 2651 and ASTM D 3933, respectively.

*Boeing patent 4,085,012 April 1978. Phosphoric acid anodizing is now being used by a large number of aircraft manufacturers due to the improved surface bond durability it provides.

EQUIPMENT

Primer may be sprayed using a variety of equipment including hand-held, automated, conventional air-atomizing, HVLP or electrostatic spray equipment. Parts may be racked for spray and cured in any position convenient for the process. Refer to Tables 8 and 9 for specific equipment set-up recommendations.



PRIMER THICKNESS

Spray a dry primer thickness of 0.0001 to 0.0003 inches (0.0025 to 0.0076 mm) for optimum mechanical properties. Spray technique consists of applying smooth and even coats. The primer should be applied using two to three thin box coats (4 - 6 cross coats) to obtain the final film thickness. Additional coats of primer may be sprayed and cured onto previously cured areas without loss of properties.

SPRAYING

For uniform coating, apply one thin coat of primer to cover the entire part and allow it to dry completely (primed part color will change to lighter yellow when dry). Then spray additional box coats on top to achieve the desired primer thickness. Allow 30 to 60 seconds drying between each box coat.

SPRAY GUN CLEANING

If using a gun in which a solvent-based material has been used, the spray gun must be rinsed and sprayed for at least 1 minute with deionized water prior to loading the gun with BR® 6747-1 NC primer.

Clean the gun immediately after use by rinsing and spraying with deionized water.

DRY TIME

15 to 60 minutes at 75°F (24°C) and less than 55% relative humidity is recommended.

PRIMER CURE CYCLE

Dry primer coatings are recommended to be cured at 250°F (121°C) for 60 minutes to obtain a surface which is scratch and MEK wipe resistant. The primer may also be cured at temperature up to 350°F (177°C) for 60 minutes to obtain similar properties. Assemblies primed with BR® 6747-1 NC or BR® 6747-1 NCB and then cured can be stored for six months and longer without degradation of the final bond strength. Assemblies that have been primed and cured should be protected from dust and oil by wrapping in protective sheeting such as Kraft paper. Stored assemblies should be wiped with a suitable solvent prior to bonding.

BONDING CYCLES

BR® 6747-1 NC and BR® 6747-1 NCB may be used with most epoxy based thermoset adhesives that cure between 250°F and 350°F (121°C and 177°C). Primed details may be exposed to up to three 60 minute 250°F (121°C) cure cycles with no significant loss of primer properties.

SPRAY GUN SETTINGS

BR® 6747-1 NC and BR® 6747-1 NCB may be used with most epoxy based thermoset adhesives that cure between 250°F and 350°F (121°C and 177°C). Primed details may be exposed to up to three 60 minute 250°F (121°C) cure cycles with no significant loss of primer properties.



Settings for Accuspray Spray gun (HVLP) Series 10

Parameter	Setting
Fan Adjustment	1 counter-clockwise turn
Fluid control (needle adjustment screw)	2 counter-clockwise turns
Needle size	0.036 in (0.091 cm)
Air cap model	#11
Cup pressure	4 psi (0.02 MPa)
Atomization pressure	6 psi (0.04 MPa)
Spraying distance (nozzle to panel)	14 in – 16 in (36 cm – 41 cm)
Room temperature	70°F – 90°F (21°C - 32°C)
Humidity	< 65%
Air supply pressure	Minimum 80 psi (0.55 MPa)

Settings for Devilbiss Spray Gun (HVLP) Model JGHV-531

Parameter	Setting
Fan Adjustment	1 counter-clockwise turn
Fluid control (needle adjustment screw)	1/2 – 3/4 counter-clockwise turns
Needle size	0.034 in (0.086 cm)
Air cap model	46 MP
Cup pressure	4 psi (0.02 MPa)
Atomization pressure	38 psi (0.26 MPa)
Spraying distance (nozzle to panel)	14 in – 16 in (36 cm – 41 cm)
Room temperature	70°F – 90°F (21°C - 32°C)
Humidity	< 65%
Air supply pressure	Minimum 80 psi (0.55 MPa)



HEALTH & SAFETY

Please refer to the product SDS for safe handling, personal protective equipment recommendations and disposal considerations.

