



## Technical Data Sheet

# Resin

## DOLPHON® CB-1109

- **Two-Part, Black Polybutadiene Resin**
- **Flexibility - remains flexible at temperatures from -72°C to 200°C**
- **Thermal shock resistance - Olyphant washer test, passes over 30 cycles**
- **Hydrolytically stable - 100°C @ 95% RH & low moisture vapor transmission**
- **Low shrinkage, low embedment stress**
- **Chemical and abrasion resistance - resists degreaser solvent**
- **Excellent adhesion properties**

### Description

DOLPHON® CB-1109 is a unique, flexible resin that is an alternative to silicone, urethane and epoxy resins. Being a two-part, low viscosity resin with a room temperature, low exotherm cure allows for many applications. It can be used for potting, casting and coating electrical and electronic device applications where flexibility is required. In thick sections or thin layers, it can be used as a stress relief layer. Excellent adhesion properties allow the resin to bond to most material used in electronic devices. The cured resin maintains excellent electrical properties with minimal change through a wide temperature range.

### Application

DOLPHON® CB-1109 can be used in a wide variety of applications such as casting, potting of sensors, transformers, connectors, relays, amplifiers, junction boxes, coils, ground fault interrupters, cable repair, ferrite cores, electronic assemblies, and motors. Another added benefit of the material's flexibility is that it is repairable, part can be removed and replaced as needed. The low viscosity allows for easy mix and pour by hand or in an automatic system.

### Processing guidelines

Preparation of Unit:

1. When potting with CB-1109, the case or shell must be clean and free of grease to ensure good adhesion.
2. For casting applications, clean the mold and coat with mold release.
3. Part may be preheated at 225°-250°F (107°C-121°C) to ensure the removal of moisture and cure any thermosetting materials.
4. Cool parts to 125°F (52°C).

Preparation and use of Resin System:

1. Thoroughly stir CB-1109 in the container prior to measuring.
2. Measure resin and reactor in proportion shown in the table on page one.
3. Slowly pour reactor into resin and mix thoroughly, making sure to scrape sides and bottom of containers to assure that the mixture is uniform.

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**CB-1109 + RE-2018**

BG 08/17/2021



4. The resin mixture may be deaerated to obtain a void-free casting.
5. Slowly pour the resin along the side or edge of the mold, being careful not to entrap air.
6. For maximum penetration of resin, a vacuum only or vacuum and pressure cycle can be used.

**Curing Process:**

1. For maximum penetration, warm parts or molds to 100°-110°F (38°C-43°C) before pouring resin.
2. Pour mixed resin and reactor into mold.
3. Keep in a warm, dry place until resin has set.
4. CB-1109 will set up in 2-4 hours at 70°F (21°C) and fully cure in 24 hours. For faster final cure and improved properties, CB-1109 can be post-cured at 150°F (65.5°C) for 4 hours after initial cure.

Physical Properties	Test norm	Unit	CB-1109	RE-2018	Mixed
Color / appearance			Black	Dark Amber	Black
Density @ 77°F (25°C)		lb/gal	9.0 - 9.3	9.1 - 9.2	9.0 – 9.2
Viscosity Brookfield @ 77°F (25°C)	Spindle # 1, 10 RPM	cps	2,750 – 3,850	120	2,500 – 3,800
Mix Ratio	Weight		100	15	
Pot Life @ 77°F (25°C)		hours			1.0
Cure Time @ 77°F (25°C) [full cure]		hours			2.0 – 4.0 [24]
Shrinkage		%		0.7	0.09
Mechanical Properties	Test norm	Unit			Mixed
Tensile Strength	ASTM D638	psi			300
Hardness (after 7 days @ RT)	Shore “A”				40 - 45
Elongation, Ultimate	ASTM D638	%			180
Tear Strength	Weight	P.L.I.			14
Low Temperature Flexibility		°C (°F)			-50 (-58)
Thermal Conductivity		W/m·K			0.35
Coefficient of Thermal Expansion	< T <sub>g</sub>	ppm/°C			76
Coefficient of Thermal Expansion	>T <sub>g</sub>	ppm/°C			217
Water Vapor Transmission, over 14-day test period		grains/ft2/hr			0
Electrical Properties	Test norm	Unit			Mixed
Dielectric Strength	ASTM D115	volts/mil			665



Electrical Properties	Test norm	Unit	25°C	105°C	130°C	155°C
Dielectric Constant, 100 Hz	ASTM D150		3.21	3.23	3.26	3.32
Dielectric Constant, 1000 Hz	ASTM D150		3.20	3.21	3.27	3.37
Dissipation Factor, 100 Hz	ASTM D150		0.031	0.036	0.038	0.043
Dissipation Factor, 1000 Hz	ASTM D150		0.030	0.031	0.036	0.041
Volume Resistivity	ASTM D257	ohm-cm	$3.0 \times 10^{16}$	-	$1.2 \times 10^{14}$	$1.2 \times 10^{14}$
Surface Resistivity	ASTM D257	ohms	$8.9 \times 10^{15}$	-	$6.7 \times 10^{15}$	$6.9 \times 10^{13}$

### Storage and Shelf Life

The shelf life of DOLPHON® CB-1109 is 12 months from date of shipment from our plant, when stored in the original closed containers at 70°F/21°C or below. Store in a cool, dry place that is protected from direct sunlight and other sources of heat. RE-2018 is sensitive to moisture and it should be stored in tightly closed containers at room temperature (70°F/21°C) in a dry location. Shelf life of RE-2018 stored under these conditions is 12 months.

### Health and safety

Safety Data Sheets defining the known hazards and describing safety precautions appropriate for this product are available upon request from Von Roll USA, Inc., Schenectady, NY, (518) 344-7100 and/or [www.vonroll.com](http://www.vonroll.com). Similar information for solvents and other chemicals to be used with this product may be obtained from the appropriate supplier and used accordingly. We recommend following all hygiene and safety standards while processing material.

### Liability

The information on this data sheet and the chart above is to be understood as a guideline and has general information. It is not binding for Von Roll and it justifies in no case any liability. Von Roll reserves the right to change the information at any time. The product properties set forth in this data sheet are based on the results of testing of typical material produced by the affiliated companies of Von Roll Holding Ltd. (underneath referred as Von Roll). Some variation in product properties is typical. Comments or suggestions relating to any subject other than product properties are offered only to call the end-user's or other person's attention to considerations which may be relevant in the independent determination of the use and/or manner of use of product. Von Roll does not claim or warrant that the use of its product will have the results described in this data sheet or that the information provided is complete, accurate or useful. The user should test the product to determine its properties and its suitability for the intended use. Von Roll expressly disclaims any liability for any damage, harm, injury, cost or expense to any person resulting directly or indirectly from that person's reliance on any information contained in this data sheet. Nothing contained in this data sheet constitutes representation or warranty as to any matter whatsoever. Von Roll makes no warranties whatsoever in this data sheet, expressed or implied, including any implied warranty or fitness for a particular use or purpose. Von Roll shall in no event be liable for incidental, exemplary, punitive or consequential damages