

# Polybutadiene Rubber (BR)

ASTM D1418 & ISO 1629 Designation: **BR**

ASTM D2000, SAE J200 Type/Class: **AA, BA**

Mil-R-3065 (Mil-Std 417) Class: **RN**



**Advantages:** Excellent low temperature properties; excellent resilience and abrasion resistance. A very high level of cure can be achieved. Used in tire applications but mainly blended with other polymers where it reduces heat build up and improves abrasion resistance.

**Limitations:** Not oil resistant and prone to ozone cracking; moderate heat resistance and high resilience results in low wet skid resistance in tire treads; can be difficult to process.

## **Physical & Mechanical Properties**

Durometer or Hardness Range: 45-80 Shore A  
Tensile Strength Range: 500 - 2,000 PSI  
Elongation (Range%): 450% - 650%  
Abrasion Resistance: Fair to Excellent  
Adhesion to Metal: Good  
Adhesion to Rigid Materials: Fair to Good  
Compression Set: Good to Excellent  
Flex Cracking Resistance: Fair to Excellent  
Impact Resistance: Poor to Good  
Resilience/Rebound: Fair to Excellent  
Tear Resistance: Poor to Good  
Vibration Dampening: Fair to Good

## **Thermal Properties**

General Temperature Range -150°F to 220°F  
Min. for continuous Use (Static): -90°F  
Brittle Point: -100°F  
Max. for Continuous Use (Static): 200°F

## **Environmental Performance**

Colorability: Good  
Flame Resistance: Poor  
Gas Permeability: Good  
Odor: Good  
Ozone Resistance: Poor  
Oxidation Resistance: Good to Excellent  
Radiation Resistance: Poor  
Steam Resistance Fair to Good  
Sunlight Resistance: Poor  
Weather Resistance: Poor to Good  
Water Resistance: Good to Excellent

## **Chemical Resistance**

Acids, Dilute: Fair to Good  
Acids, Concentrated: Fair to Good  
Acids, Organic (Dilute): Good  
Acids, Organic (Concentrated): Poor  
Alcohols: Fair to Good  
Aldehydes: Good  
Alkalies, Dilute: Fair to Good  
Alkalies, Concentrated: Fair to Good  
Amines: Poor to Good  
Animal & Vegetable Oils: Poor to Good  
Brake Fluids, Non-Petroleum Based: Poor to Good  
Diester Oils: Poor  
Esters, Alkyl Phosphate: Poor  
Esters, Aryl Phosphate: Poor  
Esters: Poor  
Fuel, Aliphatic Hydrocarbon: Poor  
Fuel, Aromatic Hydrocarbon: Poor  
Fuel, Extended (Oxygenated): Poor  
Halogenated Solvents: Poor  
Hydrocarbon, Halogenated: Poor  
Ketones (MEK, acetone): Good  
Lacquer Solvents: Poor  
LP Gases & Fuel Oils: Poor  
Mineral Oils: Poor  
Oil Resistance: Poor  
Petroleum Aromatic: Poor  
Petroleum Non-Aromatic: Poor  
Refrigerant Ammonia: Good  
Refrigerant Halofluorocarbons: R-12, R-13  
Refrigerant Halofluorocarbons w/ Oil: Poor  
Silicone Oil: Poor  
Solvent Resistance: Poor