

COMMON RUBBER CHARACTERISTIC REFERENCE GUIDE (PART I)



Performance Rating: ◎ Excellent ○ Good △ Fair x Poor - N/A

Standard: ASTM / JIS

Property / Elastomer	NBR	HNBR	Silicone	FKM (Viton)	EPDM	CR (Neoprene)	PU
Primary Characteristics	Outstanding oil, wear & aging resistance. Stable thermal properties. Poor to polar solvents.	Enhanced thermal, ozone, chemical resistance & mechanical properties.	Excellent heat, cold, ozone resistance, good elasticity & electrical insulation, non-toxic. Lower tensile & tear strength.	Superior chemical, solvent, heat & oil resistance. Poor to ketones, esters & nitro compounds.	Superior weathering, aging, ozone, wear, alcohol/ketone & water resistance. Not for food use.	Good elasticity, sunlight, ozone & weather resistance. Excellent oil/chemical resistance & flame retardancy.	Excellent mechanical properties, high hardness, high elasticity, superior wear, aging, ozone & oil resistance. Low high-temp limit.
Physical Properties							
Specific Gravity	1.00–1.20	0.95–1.08	0.95–0.98	1.80–1.82	0.86–0.87	1.15–1.25	1.00–1.30
Mooney Viscosity	30–100	50–130	Liquid	65–180	50–150	45–120	25–60 / Liquid
JIS Hardness Range	15°–100°	60°–90°	30°–90°	50°–90°	30°–90°	30°–90°	60°–100°
Max. Operating Temp (°C)	130°C	170 °C	280°C	300 °C	150°C	130°C	80°C
Low Temp / Embrittlement (°C)	-10 to -20	-20 to -40	-70 to -120	-10 to -50	-40 to -60	-35 to -55	-30 to 60
Operating Temp Range (°C)	-10 to 100	-25 to 130	-40 to 200	-15 to 220	-25 to 120	-30 to 100	-35 to 70
Tensile Strength (Kg/cm²)	50–250	50–400	40–100	70–200	50–200	50–250	200–450
Elongation (%)	800–100	800–100	500–50	500–100	800–100	1000–100	800–300
Environmental & Mechanical Durability							
Rebound Resilience	○	○	◎	△	○	◎	◎
Tear Strength	○	◎	x-△	○	△	○	◎
Abrasion Resistance	◎	◎	x-△	◎	○	○-◎	◎
Flex Cracking Resistance	○	○	x-○	○	○	○	◎
Aging Resistance	◎	◎	◎	◎	◎	◎	○
Light Resistance	○	○	◎	◎	◎	○	◎
Ozone Resistance	x	x	◎	◎	◎	◎	◎
Flame Resistance	x-△	△-○	x-○	◎	x	○	x-△
Electrical Insulation (Ωcm)	10 ² –10 ¹⁰	10 ² –10 ⁰	10 ¹¹ –10 ¹⁵	10 ¹⁵ –10 ¹⁸	10 ¹² –10 ¹⁵	10 ¹⁰ –10 ¹²	10 ⁹ –10 ¹²
Gas Permeability Resistance	○	○	△	◎	○	○	○
Radiation Resistance	△-○	△-○	△-◎	△-○	x	△-○	○
Lubricating Oils & Fluids							
Engine Oil	◎	◎	◎	◎	x	△	○
Gear Oil	◎	◎	△	◎	x	△	△
Motor Oil	◎	◎	○	◎	x	△	◎
Spindle Lubricating Oil	◎	◎	△	◎	x	x	◎
Refrigeration Oil	○	○	△	◎	x	△	◎

COMMON RUBBER CHARACTERISTIC REFERENCE GUIDE (PART II)



Performance Rating: ◎ Excellent ○ Good △ Fair x Poor - N/A

Continuation: Fluid, Chemical & Gas Compatibility

Property / Elastomer	FLS	SBR	ACM	NR	CSM (Hypalon)	IIR (Butyl)	-
Primary Characteristics	Silicone-like properties with improved fuel & mineral oil resistance. Poor to brake fluids & ethers.	Wear resistance, aging & water resistance. High hardness retains shape, but poor to strong acids, ozone, oils & hydrocarbons.	High temp oxidation, ozone & weather resistance; low temp water resistance and chemical resistance are poorer.	High elasticity, tension & friction resistance. Not for water, strong acids, oxygen, ozone; poor weathering.	Heat, weather, ozone & acid resistance; common for oxidizing chemicals and water sealing.	Exceptional chemical resistance, polar solvent resistance, superior electrical insulation & ozone resistance.	-
Physical Properties							
Specific Gravity	1.23–1.50	0.93–0.94	1.09–1.10	0.92	1.11–1.18	0.91–0.93	-
Mooney Viscosity	30–60	45–60	90–150	30–55	45–75	-	-
JIS Hardness Range	25°–80°	30°–100°	40°–90°	30°–100°	50°–90°	20°–90°	-
Max. Operating Temp (°C)	250°C	120 C	180°C	120°C	150°C	150°C	-
Low Temp / Embrittlement (°C)	-50 to -70	-30 to -60	0 to -30	-50 to -70	-20 to -60	-30 to -55	-
Operating Temp Range (°C)	-50 to 200	-20 to 90	-15 to 150	-40 to 100	-45 to 120	-30 to 110	-
Tensile Strength (Kg/cm²)	50–200	50–200	70–120	30–300	70–200	50–150	-
Elongation (%)	600–200	600–100	600–100	1000–100	500–100	800–100	-
Environmental & Mechanical Durability							
Rebound Resilience	◎	○	△	◎	○	△	-
Tear Strength	x–△	△	△	◎	○	○	-
Abrasion Resistance	△	◎	○	◎	◎	○	-
Flex Cracking Resistance	○	○	○	◎	○	◎	-
Aging Resistance	-	○	◎	○	◎	◎	-
Light Resistance	-	○	◎	○	◎	◎	-
Ozone Resistance	-	x	◎	x	◎	◎	-
Flame Resistance	-	x	x–△	x	-	x	-
Electrical Insulation (Ωcm)	-	10 ¹⁰ –10 ¹⁵	10 ⁸ –10 ¹⁰	10 ¹⁰ –10 ¹⁵	10 ¹⁴	10 ¹⁶ –10 ¹⁸	-
Gas Permeability Resistance	-	△	○	○	◎	◎	-
Radiation Resistance	-	○	x–△	△–○	△–○	x	-
Lubricating Oils & Fluids							
Engine Oil	◎	x	◎	x	○	x	-
Gear Oil	△	x	◎	x	○	x	-
Motor Oil	○	x	◎	x	○	x	-
Spindle Lubricating Oil	△	x	○	x	○	x	-
Refrigeration Oil	△	x	○	x	○	x	-