Nitrile (NBR), Hydrogenated Nitrile (HNBR/HSN) and Carboxylated Nitrile (XNBR)

NBR	HNBR/HSN	XNBR
Nitrile Butadiene Rubber (NBR)	Hydrogenated Nitrile Butadiene Rubber (HNBR) or Highly Saturated Nitrile (HSN)	Carboxylated Nitrile Butadiene Rubber (XNBR)
Temperature Range: (Buna-N) between -40°C and +135°C (Low-temperature) between -65°C and +120°C	**Temperature Range:** between -26°C and +160°C	**Temperature Range:** between -54°C and +135°C
Key Uses: • Aircraft fuel systems • Automotive fuel systems • Can be used with petroleum oils, water and hydraulic fluids • Low-temperature military uses • Marine fuel systems • Off-road equipment • Oil resistance applications of all types	**Key Uses:** • All oil resistant applications, including exposure to such oil additives as detergents, anti-oxidants and anti-wear agents • Automotive and Oil industries • Automotive fuel handling systems • Can be used with petroleum oils and water, H2S and CO2 • Exposure to oil soured with metal sludge • Seals for oil well applications	**Key Uses:** • Can be used with petroleum oils and water • Hoses • Reciprocating oil seals • Rubber belts • Sealing parts • Special purpose articles in oil well • Dynamic assemblies, such as seals and rod wipers
Limitations: • Compounds are attacked by Ozone in small quantities. Phthalate plasticizers, which are used in compounding Nitrile rubber, migrate out and cause issues with some other plastics • Not recommended for exposure to ketones, phosphate esters, H2S, ether and chlorinated hydrocarbons • Do not use with brake fluid	**Limitations:** • Not recommended for exposure to ethers, esters, ketones or chlorinated hydrocarbons • Avoid using with brake fluid	**Limitations:** • Compounds are attacked by Ozone in small quantities • Not recommended for exposure to phosphate esters, ketones, ozone, weathering and strong acids • Do not use with brake fluid
Chemical Resistance: Acids, dilute — Good Acids, Organic (dilute) — Good Alcohols — Good Alkalis, dilute — Good Amines — Poor Ammonia — Good Animal & Vegetable oils — Excellent Brake fluids — Poor Diester oils — Good Esters — Poor Ethers — Poor Fuel, Aliphatic Hydrocarbon — Excellent Fuel, Aromatic Hydrocarbon — Good Fuels — Excellent Hydraulic fluids — Excellent Hydrocarbon — Fair Ketones — Poor LP Gasses & Fuel oils — Excellent Mineral oils — Excellent Oil resistance — Excellent Petroleum based oils & fluids — Excellent Silicone oils & greases — Good Solvents — Excellent Water — Excellent	**Chemical Resistance:** Acids, dilute — Good Acids, Organic (dilute) — Good Alcohols — Excellent Alkalis, dilute — Good Amines — Good Ammonia — Poor Animal & Vegetable oils — Excellent Biological oils — Good Brake fluids — Fair Diester oils — Good Esters — Poor Ethers — Poor Fuel, Aliphatic Hydrocarbon — Excellent Fuel, Aromatic Hydrocarbon — Good Fuels — Excellent Hydraulic fluids — Excellent Hydrocarbon — Poor Ketones — Poor LP Gasses & Fuel oils — Excellent Mineral oils — Excellent Motor oils — Excellent Oil resistance — Excellent Ozone — Good Petroleum based oils & fluids — Excellent Silicone oils & greases — Excellent Solvents — Poor Sour Gas — Good Water — Excellent	**Chemical Resistance:** Acids, dilute — Good Acids, Organic (dilute) — Good Alcohols — Good Alkalis, dilute — Good Amines — Poor Ammonia — Poor Animal & Vegetable oils — Excellent Brake fluids — Poor Diester oils — Good Esters — Poor Ethers — Poor Fuel, Aliphatic Hydrocarbon — Excellent Fuel, Aromatic Hydrocarbon — Good Fuels — Excellent Hydraulic fluids — Excellent Hydrocarbon — Poor Ketones — Poor LP Gasses & Fuel oils — Excellent Mineral oils — Excellent Oil resistance — Excellent Petroleum based oils & fluids — Excellent Silicone oils & greases — Good Solvents — Good Water — Good

continued on page 2

J-FLEX Innovative Rubber Solutions

Units 1 & 2, London Road Business Park, Retford, Nottinghamshire, DN22 6HG, United Kingdom

tel: +44 (0) 1777 712400 fax: +44 (0) 1777 712409 email: sales@j-flex.com web: www.j-flex.com

bsi. ISO 9001:2015 Quality Management

Certificate No. RS 27920

Nitrile (NBR), Hydrogenated Nitrile (HNBR/HSN) and Carboxylated Nitrile (XNBR)

continued from page 2

NBR	HNBR/HSN	XNBR
Nitrile Butadiene Rubber (NBR)	Hydrogenated Nitrile Butadiene Rubber (HNBR) or Highly Saturated Nitrile (HSN)	Carboxylated Nitrile Butadiene Rubber (XNBR)
Physical and Working Properties:	**Physical and Working Properties:**	**Physical and Working Properties:**
Abrasion Resistance: Excellent	Abrasion Resistance: Excellent	Abrasion Resistance: Excellent
Adhesion to Metal: Excellent	Adhesion to Metal: Excellent	Adhesion to Metal: Excellent
Adhesion to Rigid Materials: Excellent	Adhesion to Rigid Materials: Excellent	Adhesion to Rigid Materials: Excellent
Compression Set: Excellent	Compression Set: Excellent	Compression Set: Good
Elongation Range: 350% - 650%	Elongation Range: 90% - 550%	Elongation Range: 250% - 600%
Flame Resistance: Poor	Flame Resistance: Poor	Flame Resistance: Poor
Flex Cracking Resistance: Good	Flex Cracking Resistance: Good	Flex Cracking Resistance: Fair
Gas Permeability: Good	Gas Permeability: Good	Gas Permeability: Good
Hardness Range: 20 - 95 Shore A	Hardness Range: 30 - 95 Shore A	Hardness Range: 50 - 90 Shore A
Impact Resistance: Good	Impact Resistance: Excellent	Impact Resistance: Excellent
Oxidation Resistance: Good	Oxidation Resistance: Excellent	Oxidation Resistance: Good
Ozone Resistance: Fair	Ozone Resistance: Excellent	Ozone Resistance: Fair
Radiation Resistance: Good	Radiation Resistance: Good	Radiation Resistance: Good
Resilience: Good	Resilience: Good	Resilience: Good
Steam Resistance: Good	Steam Resistance: Good	Steam Resistance: Good
Tear Resistance: Excellent	Tear Resistance: Excellent	Tear Resistance: Excellent
Tensile Strength Range: 200 - 3,500 PSI	Tensile Strength Range: 1,500 - 3,500 PSI	Tensile Strength Range: 1,000 - 3,500 PSI
Water Resistance: Excellent	Water Resistance: Excellent	Water Resistance: Good
Weather Resistance: Good	Weather Resistance: Excellent	Weather Resistance: Fair
Additional Information: • Economical elastomer, very popular and extensively used • Presents a great balance of desirable qualities • Medium Nitrile compound with Nitrile (ACN) content of approximately 32%, most popular and broadly used • High Nitrile compound with Nitrile (ACN) content of approximately 50%, commonly recommended for use with Hydrocarbon fuels • Low Nitrile compound with Nitrile (ACN) content of approximately 18%, mostly defined for use in low-temperature applications • Industries served: Water, Pump & Gas, Agriculture, Food & Drink, Rail, Automotive, and Bus, Truck and Trailer	**Additional Information:** • Hydrogenated Nitrile is an outcome of the hydrogenation of Nitrile, effecting in fluctuating quantities of saturation of the polymeric sequence, together with a span of extended physical strength and chemical resistance characteristics • Also known as Saturated Nitrile, which is acquired by initiating Hydrogen into the Nitrile in order to saturate the hydrocarbon sequences in the elastomer • HNBR presents improved wear and extrusion resistance than Nitrile and has a good chemical compatibility • Enhanced resistance to heat, ageing and ozone, which makes it ideal for mechanical applications • Properties in Hydrogenated Nitrile elastomers makes them ideas for industries that use oil resistant and high-powered applications • Industries served: Petrochemical, Offshore Drilling, Agriculture, Earth Moving and Construction, and Automotive	**Additional Information:** • Nitrile with a Carboxyl added to the formulation • Use of Carboxylated Nitrile elastomer can have improved abrasion resistance, while still retaining improved oil resistance • XNBR compounds present good physical qualities at high temperatures and a high tensile strength • Industries Served: Water, Gas, Agriculture, Automotive, and Bus, Truck and Trailer

J-FLEX Innovative Rubber Solutions

Units 1 & 2, London Road Business Park, Retford, Nottinghamshire, DN22 6HG, United Kingdom

tel: +44 (0) 1777 712400 fax: +44 (0) 1777 712409 email: sales@j-flex.com web: www.j-flex.com

bsi. ISO 9001:2015 Quality Management

Certificate No. RS 27920