Tech Bulletin

Replacing Fluorosilicone Seals with Low Temperature Buna-Nitrile Seals

Per customer requests', Reelcraft has released new Low Temperature Buna-Nitrile (LT Buna) seals to replace the current Fluorosilicone seals on 1 ½" fluid paths (with 2", 3", and 4" versions to follow in the second half of 2010). The proprietary Low Temperature Buna-Nitrile material relative to Fluorsosilicone provides superior wear resistance, equivalent chemical resistance, and lower operating temperature ranges.

Lab tests have shown a 10:1 increase in seal life when replacing Floursilicone material with LT Buna material seals. In accelerated life testing the LT Buna seals exceeded 200,000 cycles compared to the Floursilicon seals, which failed at approximately 20,000 cycles.

Temperature ranges for both LT Buna and Floursilicon are equivalent from a low of -50°F (-45°C) to a maximum temperature of 225°F (107°C).

The new LT Buna seal is also designed using an O-Ring energizer as opposed to a traditional machined aluminum ring. This provides a more positive method of energizing the seal as it is designed to fit the ID configuration of the seal and the O-Ring will not cause any damage to the seal in the event of inadvertent over-pressurization. The O-Ring also eliminates the possibility of sharp edges and burrs as may occur on aluminum ring which may damage the seal and shorten its usable life.

The chart below shows a comparison of the two elastomers' properties:

Elastomer Properties Comparison

P - Poor F - Fair G - Good E - Excellent

Elastomer Type	Fluorosilicone	LT Nitrile (Buna-N)
Abrasion Resistance	P	G
Acid Resistance	FE	F
Chemical Resistance	E	FG
Cold Resistance	GE	GE
Dynamic Properties	P	E
Heat Resistance	E	G
Impermeability	P	G
Oil Resistance	G	E
Set Resistance	GE	GE
Tear Resistance	P	FG
Tensile Strength	F	GE
Water/Steam Resistance	F	FG
Weather Resistance	E	E

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The chart below shows a comparison of chemical compatibility for some typical materials:

Material Compatibility Comparison

1 - Satisfactory 2 - Fair 3 - Doubtful 4 - Unsatisfactory X - Insufficient Data

Media	Fluorosilicone	LT Nitrile (Buna-N)
Water	1	1
Sea Water	1	1
Steam	4	4
Sewage	1	1
Petroleum Base Grease	1	1
Fuel Oil, #6	1	1
Fuel Oil, 1 and 2	1	1
Fuel, Oil Acidic	1	1
Hydrualic Oil (petroleum base)	1	1
Hydrualic Oil (synthetic base)	2	2
Gasoline	1	1
Jet Fuel A	2	2
JP - 10	1	3
JP - 3	X	1
JP - 4	2	1
JP - 5	2	1
JP - 6	2	1
JP - 8	2	1
Crude Oil	2	2
Diesel Oil	1	1