

LMK TECHNOLOGIES

INSIGNIA[™]
HYDROPHILIC
SEALING SYSTEM

COMPREHENSIVE REPORT

Technical Data:

The Insignia™ product line comprising of O-Rings, Hydrophilic Connection Hat and End Seals are manufactured with a specific, formulated Hydrophilic Neoprene Compound.

Characteristic	Unit	Value	Test Method
Tensile Strength	psi/Bar	1177/81.15	ASTM D2412
Elongation at Break	%	523	ASTM D2412
Specific Gravity		1.2	ASTM D297
Swell Capacity in Water (unrestrained)	%	200	GRCS

Neoprene compound was designed for use in static seal underground applications. Water contact causes this compound to swell up to 200%. This forms a flexible and long-term compression seal. These hydrophilic expansion characteristics make this compound an excellent selection for sealing rough or smooth surfaces.

LMK Technologies has developed molded swelling gaskets for:

1. Mainline CIPP at Manhole Penetrations, known as Insignia™ End Seals
2. Main to Lateral Connection Seals, known as Insignia™ Hydrophilic Connection™ Hat
3. Lateral CIPP Linings, known as Insignia™ O-Rings

The sealing gasket systems are compatible with all pipe and CIPP pipelining materials.

Chemical Resistance:

The following results have been obtained through chemical resistance tests completed in accordance with ASTM Test Method D543.

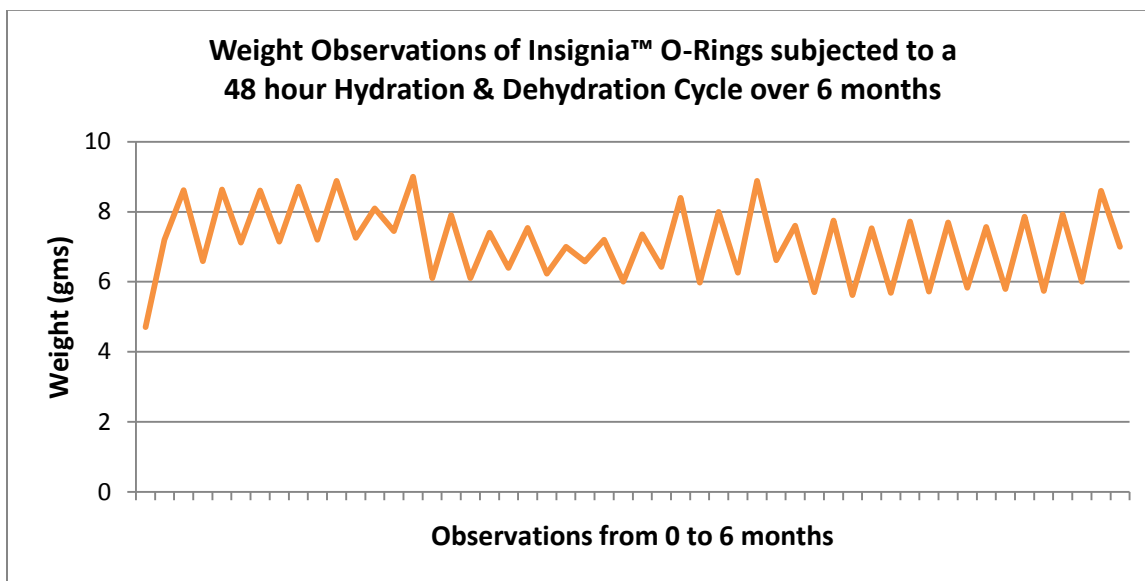
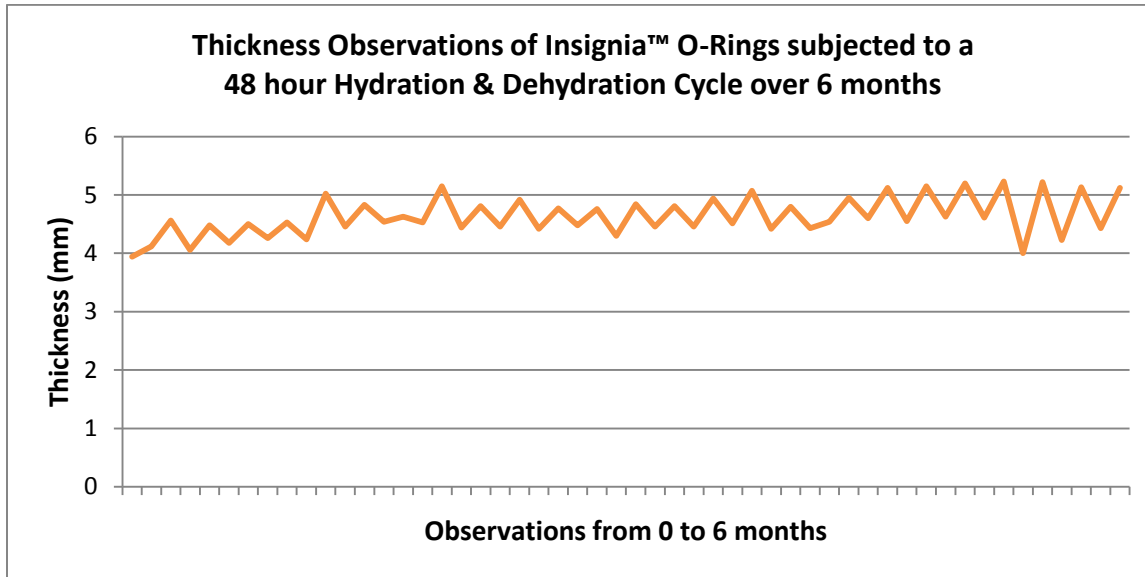
Legend:

- E = Excellent
- G = Good
- F = Fair
- N = Not recommended

Table:

Product	Concentration (%)	Chemical Resistance
Tap water (pH 6–9)	100	G
Nitric acid	5	N
Phosphoric acid	10	F
Sulfuric acid	10	F
Gasoline	100	N
Vegetable oil	100	F
Detergent	0.1	G
Soap	0.1	G

Expansion Data:



Observations:

- There is no flaking or disintegration of material when the seals are subjected to alternate hydration/dehydration cycles.
- Based on the 48 hour duration of the Hydration & Dehydration cycles the seals exhibit thickness growth of anywhere between 15 to 55% and weight increase of anywhere between 36 to 250%.
- The Insignia™ Seals retain expansion even when they are dehydrated, with the seals demonstrating a dry to dry thickness increase of between 7 to 10% and dry to dry weight increase of 12 to 20%.
- It is important to note that the Insignia Seals take a minimum of 48 hours to demonstrate significant growth.