WEKO-SEAL® Nitrile Material Specifications

(Natural Gas Applications)

Manufactured in compliance with ASTM D3187 shall have designation of M2BG710A14B14EF11EO14EO34Z1Z2Z3 in accordance with ASTM D2000.

Suffix Z1: The stress relaxation shall not exceed 12% when tested form the time of 30 minutes to 24 hours in accordance with British Standard Method of Testing Vulcanized Rubber Part A42 determination of stress relaxation.

Nitrile "WEKO-SEAL" material:

Physical Properties	Specification
Durometer (pts) ASTM D-2240	65 ± 5
Tensile (psi) ASTM D-412	1,450 min.
Elongation (%) ASTM D-412	300 min.
Suffix A14 ASTM D-573	
Heat Aged 70h 100°C	
Durometer (pts)	± 15
Tensile change, (%)	± 30
Elongation change, (%)	- 50 max.
Suffix B14 ASTM D-395B	
Compression Set, 22h 100°C	
(%) Permanent set	25 max.
Suffix EF11 ASTM D-471	
Reference Fuel A, 70h at 23°C	
Durometer change (pts)	± 10
Tensile change, max (%)	- 25
Elongation change, max (%)	- 25
Volume change (%)	- 5 to +10

Physical Properties	Specification
Suffix EO14 ASTM D-471	
No. 1 Oil, 70 h at 100°C	
Durometer change, max (pts)	- 5 to +10
Tensile change, max (%)	- 25
Elongation change, max (%)	- 45
Volume change (%)	- 10 to +5
Suffix EO34 ASTM D-471	
No. 1 Oil, 70 h at 100°C	
Durometer change, max (pts)	- 10 to +5
Tensile change, max (%)	- 45
Elongation change, max (%)	- 45
Volume change (%)	0 to +25

Manufacturing Process:

a. Extrusion process used for belt material.
b. All joints to be transfer molded.
c. Vulcanization shall occur at 330°F with 2000-psi pressure.
d. Manufactured to Miller Pipeline requirements.
e. All material specifications must be certified.
f. Material Safety Data Sheet (MSDS) must be provided.

Carbon Steel Retaining Bands:

1. This specification references Amercian Society of Testing and Materials (ASTM) standards and American Welding Society (AWS) standards, which are made part thereof by such reference, shall be the latest edition, and revised.

2. All bands, wedges, and shims for securing rubber membrane across piping joints shall be UNS G10180 (Grade 1018), and UNS G10200 (Grade 1020) in accordance with AISI shall conform to ASTM A 29 – 93a and Marks' Standard Handbook for Mechanical Engineering. The welding wire ER70S-6 shall conform to AWS A5.18.

3. All material such as push tabs, shims, and wedges shall be made compatible with the base metal selected.

4. Welding wire used for selected base metal:

Retaining Band	Weld Wire
UNS G10180	ER70S-6
UNS G10200	ER70S-6

5. The retaining band shall be rolled to the radius of the pipe that being repaired. The radius shall

be obtained from measurement data acquired from the inspection report. Each band to be checked on a fixed radius gauge.

6. The cleated ends shall be manufactured from the same lot number as the band. Certified welders shall make all shop and field welds with a minimum of 2 years experience on this alloy (Grade 1020). The welds shall be made with wire of ER70S-6 alloy, as mentioned in the above table.

6. Welding shall be accomplished in using either gas metal arc welding or shielded metal arc welding.

7. All material specifications shall be certified.

8. All material sourcing and manufacturing is performed in the U.S.A.

9. All shims to be manufactured to the radius of the pipe and shall be 16-22 gauge x 2" x 6" composed of the same alloy selection as band material. All edges shall be de-burred.

10. All retaining bands to be manufactured from carbon steel materials with the following minimum physical properties:

Physical Properties	Grade 1018	Grade 1020
UNS Designation	G10180	G10200
Tensile Strength (min.)	73,000 psi	75,000 psi
Yield Strength (min.)	62,000 psi	63,700 psi
Elongation in 2in (min.)	22%	20%
Brinell Hardness (max.)	152	156
Weld Wire Tensile Strength (min.)	70,000 psi	70,000 psi

11. The retaining bands shall be made from the material selection above or designed from a material that will meet the customer's requirement. Typical selection is Grade 1018 for natural gas environments. These materials mentioned have been selected for their physical properties and its proven durability within the said environment.

Liquid Joint Lubrication:

Liquid joint lubricant to assist in installation of the WEKO-SEAL and retaining bands shall be a non-toxic vegetable based lubricating gel with the following required properties:

1. Will not deteriorate or decompose while in storage for a minimum of two years.
2. A soft pasty consistency suitable for use intended from 0°F to 120°F.
3. Does not have any deteriorating effect on natural or synthetic rubber gaskets.
4. Will not impart taste or odor to water.
5. Has no objectionable odor.

6. Is non-toxic and does not support the growth of bacteria.
7. PH – 9.6 minimum – 11 maximum (pH Meter)
8. Method of test, Modified ASTM-D562-55
9. Does not contain any petroleum based oils or grease.
10. Does not contain any material considered toxic.

Thread Sealing Compound:

Thread sealing compound shall be a non-toxic Paste Type with "Teflon"
Teflon Components Required Properties:

Physical Data	
Flash Point	410 degrees F closed cup
Density	1.4 – 1.42
Viscosity	200,000 – 275,000 centipoises
Temperature Range	-50 degrees F to 500 degrees F
Pressure Application	Maximum 10,000 psi