

**CRETEX HYDRATITE™ INTERNAL SEALING SYSTEM**  
**Specifications for Stainless Steel Retaining Bands**

**Scope**

This specification provides the requirements for stainless steel (SS) banding used in the Cretex HydraTite™ Seal System.

**Reference Specifications**

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

**Key Engineering Attributes & Design Considerations**

The **HydraTite™ Internal Joint Seal** undergoes loading imparted during both installation and normal system operation. The following parameters are considered as applicable.

- The retaining band shall not buckle under installation loading.
- The maximum stress in the push tab welds shall conform to AWS D.1.1-88.
- The maximum stress in the push tab welds shall not exceed the ultimate tensile strength in the weld wire or stick.
- The compressive force created in the retaining band due to thermal expansion shall not buckle under installation loading.
- The hydrodynamic pressure shall not exceed the minimum friction force created by the hydraulic expander under installation loading.

**Materials**

1. The stainless steel retaining bands UNS S30400 (type 304), UNS S31603 (type 316L), or UNS N08367 (AL-6XN) shall conform to ASTM A 240 96a.
2. The weld wire E308, E316L shall conform to AWS A5.4 – 92 and alloy 625 (ERNiCrMo-3) shall conform to AWS A5.14-89.
3. All materials such as push tabs, shims, and wedges shall be made compatible with the base metal.
4. Alternate materials can be substituted with written direction from Cretex on a project-to-project basis.
5. In the process of selecting the base metal for retaining bands, it is important that the chemical properties are compatible with the weld wire, such as the table listed below.

<b>Retaining Band</b>	<b>Weld Wire</b>
UNS S30400	E308
UNS S31603	E316L
UNS N08367	ERNiCrMo-3

6. The retaining bands shall be rolled to the radius of the pipe that is being repaired. The radius shall be taken from the measurement data collected from the inspection report and each retaining band shall be checked on the fixed radius gauge.

7. The push tabs shall be manufactured from the same manufacturer lot number as the band.
8. All shop and field welds shall be made by certified welders. The welds shall be made with a stick or wire of T-308 alloy as mentioned above in the table.
9. Welding shall be accomplished by using either gas metal arc welding or shielded metal arc welding.
10. All material specifications shall be certified.
11. Shims shall;
  - a. Be manually chamfered.
  - b. All edges deburred.

**Physical Requirements**

<b>Physical Properties</b>	<b>Type 304</b>	<b>Type 316L</b>	<b>Type AL-6XN</b>
UNS Designation	S30400	S31603	N08367
Tensile Strength (min.)	75,000 psi	70,000 psi	100,000 psi
Yield Strength (min.)	30,000 psi	25,000 psi	45,000 psi
Elongation in 2 in. (min.)	40%	40%	30%
Brinell Hardness (max)	201	217	233
Rockwell B 94	(94)	(96)	
Weld Wire TS	80,000 psi	70,000 psi	110,000 psi