TECHNICAL UPDATE - TU-2005

SUBJECT: Dual Certification of Austenitic Stainless Steel Tubing

A recent development for Austenitic Stainless Steel Tubing is tubing that can be dually certified. Dual certified tubing is tubing that meets the mechanical and chemical requirements of more than one type of steel.

The most common dual certification for Dekoron Unitherm bundles is tubing that can be certified as both Type 316 and Type 316L stainless steel under the ASTM A-269 Specification.
The chemical specification for for stainless steel is identified by its type (see TU-2004).
The mechanical requirements are called out in the construction specification, such as ASTM A-269 (see TU-1004).

To be dually certified, a steel type must be allowed by the construction specification. It then must meet all the chemical requirements of the alternate material.
It must then also meet the mechanical and testing requirements of the alternate material.
For example:

Type 316 and Type 316L stainless steel tubing are both allowed materials under ASTM A-269 "Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service".

The only difference in the chemical makeup of these two material types are shown in the table below:

Grade ⟶	Type 316	Type 316L
Constituent		
Carbon, maximum %	0.08	0.035[1]
Nickel	11.0-14.0[2]	10.0-15.0

[1]For small diameter or thin walls or both, the maximum carbon content must be 0.04%. Small diameter tubes are those with an OD of 0.500 inches or less, thin walls are those less than 0.049 inches.
[2]For welded T316 tubes, the nickel range is 10.0-14.0%.

If a stainless steel tube has a carbon content less than 0.035% and a nickel content between 10.0 and 14.0%, and meets all the mechanical requirements for T316 stainless steel tubing in ASTM A-269 and ASTM A-450; then it could be certified as either T316 or T316L tubing under ASTM A-269.

To recap, to be dually certified a tubing must meet three criteria:
1. The material type must be allowed by the ASTM construction specification (A-269, A-213, etc.).
2. The material chemistry must meet the requirements of both material types.
3. The tubing mechanical properties must meet the requirements of both material types in that ASTM Specification.

Please note that a tubing material type may be dually certified under one ASTM Specification, but not under another.