



ISO 10380 Summary

ISO

ISO or International Standards Organization was created to establish worldwide standards for industry. They are responsible for formulation of standards regarding quality assurance or specific products. The ISO 10380 standard was developed to help define the industry requirements for design, manufacture and testing of corrugated metal hose and hose assemblies. The following is a summary of the various sections covered in this standard.

MATERIALS

ISO 10380 specification lists the more popular materials used in the manufacture of corrugated metal hose, braid, ferrules and end fittings. Two of the most common materials utilized for corrugated metal hose are austenitic stainless steel and copper based alloys. The specification is very clear that the material used in manufacturing the corrugated metal hose shall be selected on the basis of their suitability for forming or welding and for the application conditions under which they will operate. Materials other than those listed above may be selected by agreement between the manufacturer and the user.

CRITICAL DIMENSIONS

Details and requirements specified in this section include hose diameter, bend radii and overall length tolerances. It is common for manufacturers to list their nominal hose diameter in published literature. ISO 10380 lists the requirement that the actual hose inside diameter will be at least 98% of the nominal hose size.

The bend radius covered in the specification includes nominal static and nominal dynamic bend radius. Dynamic bend radius is used in cycle life fatigue testing. There are type 1 and 2 dynamic bend radius values in the specification. SSB Hose uses the more stringent type 1 dynamic bend radius for cycle life fatigue testing. Overall length tolerances listed in the ISO 10380 are -1% to +3%.

DESIGN

Pressure: The specification lists the maximum permissible pressure ratings to be used in testing performed in accordance with ISO 10380.

Elevated Temperatures: Pressure reduction for elevated temperature conditions is critical in applying the proper metal hose for an application. This specification provides for a method of determining the maximum service pressure for a metal hose assembly under these conditions.

Low Temperatures: The materials listed in the specification, with the exception of carbon steel, do not need to be de-rated in low temperature applications down to -392°F or -200°C. Carbon steel material used for end fittings may be used to a minimum temperature of -68°F or -20°C.

Cycle Life: Corrugated metal hose bend radius and minimum acceptable cycle life design requirements are outlined. Values and test criteria for meeting static and dynamic bend radii are also listed.

CONSTRUCTION

Hose: Manufacturing and corrugation designs are addressed by the ISO 10380 specification. Seamless or longitudinally welded tube may be corrugated into annular or helical corrugation designs. Details of methods for joining or segmenting metal hose are also listed.

Braid: ISO 10380 specifications are broad for the design of the braid.

Methods of Assembly: Many different methods of fitting attachment and unacceptable weld characteristics are outlined by the ISO 10380 specification. The use of protective covers is also addressed.

TESTING

General Tests: Bend, fatigue and burst test requirements are defined by ISO 10380. SSB Hose performs each of these tests when designing or qualifying our products. The fatigue test is widely recognized in the metal hose industry as a standard for cycle life testing. While ISO 10380 lists the average number of cycles of 50,000 at their specified pressure ratings, SSB Hose performs testing at our published maximum working pressure.

Production Tests: Several types of non-destructive testing is addressed by the specification. These include pressure proof test by hydraulic pressure or pneumatic pressure and leakage test by pneumatic or vacuum testing. Cleaning and marking of metal hose assemblies is outlined.
