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Fluid Compatibility

The fluid compatibility chart on the following page is intended as a guide only and is not to be considered as a sole selection criteria to use Parker Tube Fittings in a specific application or with a specific fluid. Other factors that must be considered include, but are not limited to: Fluid temperature, ambient temperature, system pressure (both operating and peak) and applicable standards or regulations. For media not listed, please contact your Parker representative or the Tube Fittings Division.

Protective Coatings on Steel

Protective coatings such as electroplated zinc and cadmium[1)] and zinc phosphate are usually applied to steel fittings for extending their useful service life in corrosive environments. Cadmium and zinc corrode sacrificially, protecting the steel substrate from normal atmospheric rusting due to the common presence of oxygen, moisture and acidic gases. They are, however, rapidly attacked by many fluids including those containing acidic hydrogen and reactive fluorine, chlorine, bromine, iodine, and nitrogen. Zinc plating will further be attacked by strong bases or water with pH > 12. **Zinc reacts with glycol based fire resistant fluids and forms a gelatinous compound that can plug up filters and be harmful otherwise, in a system with many zinc plated tube and hose fittings.** Steel fittings with zinc phosphate coating or stainless steel fittings, along with brass fittings in low pressure applications, are viable options.

The other option is to run the fluid through the system, without components with moving parts in it, with an auxiliary power source, to generate and flush the gelatinous compound. Then re-connect all components, change filters and charge the system with new fluid.

The corrosion resistance of the Chromium-6 Free standard surface treatment is a minimum of 25% improved over traditional zinc gold (hexavalent) chromate surface. Additionally, the Chromium-6 Free surface meets the EU end of life vehicle directive and ROHS compliance.

Zinc phosphate coatings protect steel by covering its surface and will retard rusting as long as the inhibiting barrier is not broken.

Caution: Where low toxicity and low corrosion are required, as in food or beverage applications, steel coated with any form of zinc or other protective coatings is not recommended.

Notes:

1) Cadmium is not allowed by SAE and ISO stardards for general industrial and commercial use. Some military applications still require cadmium plating. These requirements are met with special (non-standard) processing at extra cost.

Choosing the Tube Material and Type

Selection of tube material depends on the fluid, corrosive nature of the service environment, the operating temperature range and the maximum operating pressure. The tube O.D. and wall thickness selection depends on these four parameters.

A simple method of selecting the proper tube type and material is described below.

Table U7 lists several common tube types with their recommended operating temperature ranges, general application, and fitting compatibility. Based on the fluid system parameters and media, select the appropriate tube type and material.

If media and/or service environment is different from the commonly used ones listed in the general application column, please consult the Fluid Compatibility chart on the following page or contact the Tube Fittings Division.

For selecting proper tube O.D. and wall thickness use the procedure given on page U15.

Caution: When working with highly corrosive media, always consult the Tube Fittings Division.