

Electrical Properties of Marine Dock Hose Assemblies

Electrically Conductive Hose Assemblies

Low conductivity petroleum products and solvents such as gasoline & toluene become electrostatically charged when flowing through a pipeline and the pipeline itself acquires a charge of opposite polarity.

If the pipeline is earthed, the accumulated charge flows safely to ground. However, if the pipeline is not earthed, a charge could accumulate which may then be discharged instantaneously by an incendive spark to a nearby earthed conductor. If the spark has sufficient energy and an inflammable air/product mixture is present an explosion will result.

It is therefore normal practice for hoses generally to be specified that they be electrically conductive (with a maximum resistance of 10 ohms) so that the electrostatic charge is continuously drained away. Even so, it is common practice in the petroleum industry to specify a maximum flow velocity of 7m/sec when pumping low conductivity products to ensure that a charge is not generated more quickly than can be dissipated through normal arrangements.

Charges generated can be of many thousands of volts, but currents are of the order of a few microamps.

Insul-Flange: A Cast-Nylon Insulating Flange for use on Marine Docks and Terminals

If the piping system of a marine terminal is electrically conductive, an electrical charge flows along the piping because of dock/pier-side cathodic protection systems. With the potential inductive effect of the piping system, a spark could occur at the moment when the hose is disconnected.

Insul-Flange controls undesirable electrical currents. The Insul-Flange prevents the heavy electrical flow in the piping system and eliminates the risk of an electrical arc when the hose is disconnected.

Construction: Insul-Flange is constructed of cast Nylon and is resistant to most common solvents, lubricants, hydrocarbons, esters, key tones and aqueous solutions of acids and alkalis at pH5 to pH 11. For more severe chemical service, PTFE lining is an option. Melting Point: 428°F/220°C. Elect. Resistivity: 1012 ohm/cm.

- » Insul-Flange retains the properties of insulating flange gasket kits, but they are much easier to install and inspect for the properties of non-conductivity.
- » Provides greater electrical resistance than regular insulating gasket kits.
- » Prevents any possibility of an electric arc upon disconnection of the hose.
- » Eliminates the need for separate bonding wire.
- » Complies with several standards:
 - California State Lands Commission, M.F.D. § 2380
 - U.S.C.G. 154.810 Vapor Line Connections, Section G - Facility Vapor Connections
 - ISGOTT Chapter 6 - Electrical Insulation



INSUL-FLANGE: ANSI CLASS 150 DRILLING						
Bore	O.D.	Length	No. of Bolts	Bolt Hole Diam.	Test Pressure (psi)	Longitudinal Stress (psi)
4	9	4¾	16	¾	750	600
6	11	9½	16	7/8	750	1221
8	13½	11¾	16	7/8	750	1333
10	16	14¼	24	1	750	1408
12	19	17	24	1	750	1273
16	23½	21¼	32	1⅛	750	1608

Other flange ratings or standards available on request