

SPARK TESTING OF RUBBER LINED VESSELS

Before and after rubber lining is cured, it must be tested with a spark tester. The purpose of the test is to determine the presence of pinhole leaks, punctures, cuts, etc., that expose passages to base metal.

1. TEST EQUIPMENT

There are various models of spark testers used to test for leaks in rubber. The commonly used ones consist of a generator with a Tesla coil added to the circuit or a direct current tester that uses a battery for the power supply. Output voltage can be fixed or variable depending on the particular test equipment. A variety of electrode accessories are available, but normally a T or L-shaped electrode is used on large surfaces. It is recommended that the end of the probe be used on overlapped or skived joints.

2. PROCEDURE FOR DETERMINING OUTPUT VOLTAGE OF SPARK TESTER

A conventional volt meter cannot be used to register the voltage output from a spark tester. In order to adjust the applied output voltage, it is necessary to measure the length of the spark in air.

Models that have adjustable spark gap assemblies can have their output voltage adjusted by the following method:

- a) Make proper plug in connections with spark gap attachment.
- b) Move the electrode in the spark gap attachment to a gap width simulating the required spark length. This spark length will depend on thickness of linings to be tested. **The spark length should be at least twice the thickness of the rubber.**
- c) Adjust the output control on spark tester until sparking is just obtained across the gap.
- d) Remove the spark gap setter from the tester and refit the proper shaped electrode.

Models that have fixed voltage probes should use the probe that will yield a spark length at least twice the thickness of the rubber.

3. TEST PROCEDURE

Keep electrode in light contact with rubber and move back and forth at the rate of approximately 1 ft/sec. It is important that the electrode be kept moving without stopping too long in one position; otherwise, there may be a chance of dielectrically breaking down the rubber.

During testing, the spark will be bluish and the sound will be an even buzzing. If fault or pinholes are present, the corona discharge will start to fade and the spark will change to a white color. The white spark will then be concentrated in a line to the pinhole, etc., and the sound will change to a sputtering and cracking noise.

No moisture should be present at the time of testing and all surfaces must be free of grit, dirt or foreign matter.

Caution:

The spark test will not find any leak where the path to the steel is longer than the spark length. A visual inspection of overlaps is critical to assure a leak free lining.

Contact POLYCORP for more information about spark testers and where to buy them.