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ASSOCIATION
OF AMERICAN
RAILROADS

Bureau of Explosives



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AEROSOL FLAME PROJECTION TESTS

Section 173.300(b) subparagraphs (2), (3), and (4) of Title 49 to the Code of Federal Regulations referenced the Bureau of Explosives' Flame Projection Apparatus, Open Drum Apparatus and Closed Drum Apparatus to be used when examining aerosol products.

The following are descriptions of the equipment and testing procedures to be used when conducting the tests. Any further questions relating to this testing should be addressed to the Director at the above address.

FLAME PROJECTION TEST

Equipment - The test equipment consists of a base four inches wide and two feet long. A thirty inch rule (with inches marked) is supported horizontally on the side of the base and about six inches above it. A plumber's candle of such height that the top third of the flame is at the height of the horizontal rule is placed at the zero point in the base.

Procedure - The test is conducted in a draft-free area that can be ventilated and the atmosphere cleared between each test. The self-pressurized container is placed at a distance of six inches from the ignition source and the spray jetted into the top third of the flame with valve opened fully for periods of 15-20 seconds. The length of the flame projection from the candle position is read on the horizontal scale. Three or more readings are taken on each sample and average is taken as the result. Samples are also tested with valve in partially open positions to test for "burning back" to valve.

DRUM TESTS

Equipment - The equipment consists of a 55-gallon open-head steel drum or similar container which is placed on its side and fitted with a hinged cover over the open end that will open at a pressure of 5 p.s.i. The closed or solid end is equipped with one shuttered opening at the top. This is for the introduction of the spray. The opening is approximately two inches from the edge of drum head and is two inches in diameter. There is a safety glass or plastic window six inches square in the center of the solid end. A lighted plumber's candle is placed inside the drum on the lower side and midway between the ends.

Procedure - The tests are conducted in the open and when temperature is between 60°F and 80°F.

OPEN DRUM TEST

This test is conducted with hinged end in a completely open position and with the shutter closed. The spray from the dispenser, with opened fully, is directed into the upper half of the open end and above the ignition source for one minute. Any significant propagation of flame through the vapor-air mixture away from the ignition source shall be considered a positive result -- but -- any minor and unsustained burning in the immediate area of the ignition source shall not be considered a positive result.

CLOSED DRUM TEST

This test is conducted with the hinged cover dropped into position to rest freely against the end and to close the open end of the drum to make a reasonably secure but not necessarily a completely air-tight seal. The shutter is opened and the spray is jetted into the drum through this shutter with valve fully opened for one minute. After clearing the atmosphere in the drum, the jetting is repeated similarly three times. Any explosion or rapid burning of the vapor-air mixture sufficient to cause the hinged cover to move is considered a positive result.