

§ 35.21

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test temperature for the 0.07 cc. sample.

(iii) The temperature shall be increased 50 °F. \pm 2 °F. above the first nonignition test temperature, and the ignition-temperature test procedure shall be repeated with a 0.10 cc. test sample injected into the heated test flask.

(iv) If the lowest temperature at which ignition occurs with the 0.10 cc. sample (in decrements of 5 °F.) is lower than that obtained with the 0.07 cc. sample, the ignition-temperature test procedure shall be repeated using a test sample of 0.12 cc., then 0.15 cc., and so on by increments of 0.03 cc. until the lowest ignition temperature is obtained.

(v) If the lowest temperature at which ignition is obtained with the 0.10 cc. sample is greater than that obtained with the 0.07 cc. sample, the ignition temperature test procedure shall be repeated by reducing the test sample to 0.05 cc. and then to 0.03 cc. until the lowest ignition temperature is obtained.

(d) *Appraisal of test.* A fluid shall be considered fire-resistant, according to the test requirements of this section: *Provided,* That in no instance of the ignition-temperature test procedure, as stated in this section, shall the ignition temperature of the test sample be less than 600 °F.

§ 35.21 Temperature-pressure spray-ignition tests.

(a) *Purpose.* The purpose of this test shall be to determine the flammability of a hydraulic fluid when it is sprayed over three different sources of ignition which are described in paragraph (b)(4) of this section.

(b) *Description of apparatus.* (1) A 3-quart pressure vessel, with the necessary connections, valves, and heating elements, shall be used for containing and heating the fluid under the test conditions as specified hereinafter.

(2) An atomizing round-spray nozzle, having a discharge orifice of 0.025-inch diameter, capable of discharging 3.28 gallons of water per hour with a spray angle of 90 degrees at a pressure of 100 p.s.i., shall be connected to the pressure vessel.

(3) A commercial pressurized cylinder, containing nitrogen with the customary regulators, valves, tubing, and connectors, shall be used to supply nitrogen to the pressure vessel described in paragraph (b) (1) of this section.

(4) Three igniting devices shall provide three different sources of ignition as follows:

(i) A metal trough with a metal cover in which cotton waste soaked in kerosene is ignited.

(ii) An electric arcing device in which the arc is produced by a 12,000-volt transformer.

(iii) A propane torch—Bernzomatic or equivalent.

(5) A means of measuring distances from the nozzle tip to the igniting device shall be provided.

(c) *Test procedures.* (1) A 2½-quart sample of the fluid shall be poured into the pressure vessel and heated to a temperature of 150 °F. The temperature shall be maintained at not less than 145 °F. or not more than 155 °F. during the test.

(2) Nitrogen shall be introduced into the vessel at 150 p.s.i.g.

(3) The fluid shall be sprayed at each igniting device, described in paragraph (b) (4) of this section, which is moved along the trajectory of the spray. Each igniting device shall be held in the spray at different distances from the nozzle tip for one minute or until the flame or arc is extinguished (if less than one minute) to determine this fire-resistant characteristic of the fluid.

(d) *Appraisal of tests.* If the test procedures in paragraph (c) of this section do not result in an ignition of any sample of fluid or if an ignition of a sample does not result in flame propagation for a time interval not exceeding 6 seconds at a distance of 18 inches or more from the nozzle tip to the center of each igniting device, it shall be considered fire resistant, according to the test requirements of this section.

§ 35.22 Test to determine effect of evaporation on flammability.

(a) *Purpose.* The purpose of this test shall be to determine the effect of evaporation on the reduction of fire resistance of a hydraulic fluid.