ENGINE COOLANT IMMERSION TEST

Application

This test method is used to determine the effect of various water based fluids, such as ethylene glycol based engine coolants, at elevated temperatures, on the mechanical properties of elastomeric compounds and automotive parts.

Apparatus Required

Erlenmeyer Extraction Flasks
100 mL, 500 mL, 250 mL - with tapered ground glass neck.

Water Cooled Condenser

Ground Glass Joint Adapters

Hot Plate

Boiling Chips or Glass Boiling Beads

Specimen Hanger
1 mm dia stainless steel wire.

Glass Beads
6 mm dia with 1 mm dia hole. To be used to separate specimens on wire hanger.

Graduates
1 x 500 mL; 1 x 10 mL

Specimen Preparation

A. **Slab Stock. Thickness 2.00 mm +/- 0.1 mm per ASTM D 15**

1. Prepare three tensile specimens from one flat vulcanized sheet using Die C per ASTM D 412. Remove approx 3 mm from each end giving a total length of 100 mm. Punch 2 mm hole approx 5 mm from both ends to permit assembly on wire hanger.

Date	Action	Revisions
2001 08 22	Revised	Editorial – no technical change A. Cockman
1994 02 28		

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2. Prepare three volume specimens from same sheet as in Step 1 above using a 25.4 x 50.8 mm die cutter per ASTM D 471. Punch 2 mm hole approx 5 mm from one end to permit assembly on wire hanger.

3. Volume of each tensile specimen is approx 2.82 cm^3 and each volume specimen is approx 2.50 cm^3. This total volume of three tensile plus three volume specimens is approx 16 cm^3.

B. **Large Diameter Hoses such as Upper and Lower Radiator Hoses**

1. Separate tube from remainder of hose. Lay flat and buff smooth to remove braid marks per ASTM D 15.

2. Prepare three tensile and three volume specimens from same section of hose as in Section A above.

C. **Small Diameter Hoses such as Heater Hoses**

1. Separate tube per Section B-1 above.

2. Prepare three tensile and three volume specimens from consecutive lengths of hose as in Section A.

D. **Automotive Parts such as Water Pump Seal Boots**

1. A minimum of three parts shall be selected and sectioned if necessary to obtain a total volume of 16 +/- 1 cm^3 (equivalent to the volume of three tensile and three volume specimens). If the volume of these parts are below 15 cm^3, additional parts may be added or the volume of solution used may be reduced proportionately and tested in alternate containers as described in Procedure, Part B, below.

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

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