

PLASTICS - TEST FOR AGING IN GASOLINE**Application**

This test method describes the procedure for evaluating the long term effects of gasoline on the tensile strength and elongation of plastics at elevated temperatures. This test is generally intended for initial qualification of plastic materials.

Scope

Standard tensile test bars, prepared in accordance with ASTM D 638 are placed in a stainless steel autoclave with a slurry of activated carbon and gasoline. At specified intervals, test bars are removed and tensile tests performed. The tensile strength and percentage elongation at break are measured.

Apparatus Required**Autoclave**

Type 316 stainless steel, 2 litre capacity, with threaded aperture in the head sealed by a stainless steel plug. Parr Instrument Number 4612, or equivalent.

Source: Parr Instrument Co.
Moline, Illinois

Oven

Bench model oven, gravity convection Precision-Freas Model 124A or equivalent.

Source: VWR Scientific
P.O. Box 187
Allen Park, Michigan 48101

Gasoline

ASTM Fuel "C" shall be used for all tests unless otherwise specified in the Engineering Materials Specification.

Activated Carbon

ESF-M99G117 activated carbon. To be obtained from the responsible Product Engineering Office. Activated carbon to be acid free (pH 6.0 to 8.0) and dry (moisture content less than 0.5 %). Extra activated carbon to be stored in desiccator.

Date	Action	Revisions
2001 03 20		Editorial – no technical change A. Cockman
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Page 1 of 3

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Beaker

Stainless steel, 4 litre capacity VWR Catalog No. 13977-166 or equivalent.

Desiccator

Cabinet or glass jar type, with desiccant.

Caution

All operations including preparation of carbon-gasoline slurry must be carried out under an exhaust hood, with appropriate safety precautions, i.e., no smoking, open flames, etc. Lights in hood must be explosion proof type. Oven must be placed in hood at all times during aging operation.

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.

Procedure

Preparation of Carbon - Gasoline Slurry

CAUTION: Addition of gasoline causes an exothermic reaction. Add fuel slowly and stir continuously.

Under exhaust hood, place approximately 2 litres of carbon in the 4 litre stainless steel beaker. Gradually add gasoline, with continuous stirring, until a slight excess of gasoline is obtained. Proper mixture will have consistency of wet gravel.

1. Perform tensile tests according to ASTM D 638, at a testing speed (crosshead speed) of 50 mm/minute +/- 10 %, on a minimum of three dry, as molded test bars. Measure the tensile strength and elongation at break.
2. Place 35 dry as molded 3.2 by 216 mm tensile test bars in autoclave.
3. Add sufficient slurry to cover the bars. Care must be taken to assure all bars are separated by slurry. When all test bars are properly placed in the slurry, carefully add slurry to completely fill the autoclave.
4. Seal autoclave and place in upright position in oven located in exhaust hood. Oven to be operating at 120 +/- 2 °C. Close oven.