

API CJ-4 / Seal Compatibility

ASTM D 7216

SPECIFICATIONS

This test is approved for API CJ-4.

SIGNIFICANCE AND USE

This test evaluates the compatibility of automotive engine oils with four reference elastomers typical of those used in sealing materials in contact with the oils. Compatibility is evaluated by determining the changes in volume, hardness, and tensile properties when specimens are immersed in for at specified temperature for specified time.

APPARATUS

Any commercially available balance capable of weighing to the nearest 0.1 mg can be used. The balance should be equipped with a suspension hook and platform to locate a hydrostatic-weighing beaker above the balance pan. A tension-testing machine must also be available. A heated immersion test bath or block that is capable of maintaining the test oil in the glass tube to within $\pm 1^\circ\text{C}$ of the test temperature should be used. The bath or block should contain a rack or holes that will accept the glass tubes and hold them in a vertical position.

TEST METHOD / SUMMARY

Measurements of initial volume, tensile properties, and hardness are made on specimens of specified dimensions of material cut from sheets of elastomers. The specimens are immersed in non-reference oil and reference oil and are aged for 336 hours at pre-determined temperatures. The effects of the test oils on the elastomers are determined by measuring the changes in volume, hardness, and tensile properties resulting from the immersion in the oil.

PASS / FAIL CRITERIA (Unadjusted)

Nitrile	
Volume change	+5 / -3
Hardness	+7 / -5
Tensile strength	+10 / -TMC 1006
Elongation	+10 / -TMC 1006
Silicone	
Volume change	+TMC 1006 / -3
Hardness	+5 / -TMC 1006
Tensile strength	+10 / -45
Elongation	+20 / -30
Polyacrylate	
Volume change	+5 / -3
Hardness	+8 / -5
Tensile strength	+18 / -15
Elongation	+10 / -35
FKM	
Volume change	+5 / -2
Hardness	+7 / -5
Tensile strength	+10 / -TMC 1006
Elongation	+10 / -TMC 1006
Vamac G	
Volume change	+TMC 1006 / -3
Hardness	+5 / -TMC 1006
Tensile strength	+10 / -TMC 1006
Elongation	+10 / -TMC 1006



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