SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J288

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Snowmobile Fuel Tanks

RATIONALE

Paragraph 3.6, 4.4 and 4.4.1 are deleted – The weight loss requirement has been made obsolete by the EPA requirement CFR40 1051.110. Paragraph 4.2 and 4.3.3 add wording – Addition of the text.

1. SCOPE

To provide minimum performance requirements for non-pressurized fuel tanks used on snowmobiles as defined in SAE J33.

2. REFERENCES

2.1 Applicable Publications

The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated the latest revision of SAE publications shall apply.

2.1.1 SAE Publication

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J33 Snowmobile Definitions and Nomenclature—General

2.1.2 ASTM Publications

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D 635 Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position

ASTM D 1525 Test Method for Vicat Softening Temperature of Plastics

3. REQUIREMENTS

3.1 The tank shall remain functional in a temperature range of –40 to +60 °C when tested in accordance with Section 4.

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3.2 The tank material specifications should indicate resistance to gasoline, lubricating oils, anti-icing, and other additives that may be used with snowmobile fuel.

3.3 "The plastic material of the fuel tank should be rendered essentially opaque by the addition of at least 0.5% by weight of a suitable pigment that will not affect, nor be affected by, the fuel. This requirement does not apply to tanks which are so mounted or stored that they are not exposed to sunlight.[1]

3.4 Non-metallic tank materials shall comply with the following specifications:

3.4.1 A maximum burning rate of 0.64 mm/s when tested per ASTM D 635.

3.4.2 A minimum vicat softening point of 110 °C when tested per ASTM D 1525, rate A.

3.5 Metal tanks shall not contain dissimilar metal or alloy joints that promote galvanic corrosion.

3.6 Tanks shall not leak after cycling per 4.5.

4. TESTS

4.1 Tests shall be conducted with tank cap and fittings in place. Tanks shall be filled to within 90% of overflow.

4.2 Pressure Test

Pressurize an empty tank, using a calibrated pressure gauge, along with its caps and fittings, to a minimum pressure of 35 kPa. Immerse the tank in water for 30 s, with the pressure applied. If no bubbles or other evidence of leaks are observed in the base material, seams, liquid fittings, fill neck or caps, this test is passed.

4.3 Impact Test

4.3.1 Conditioning

Fill three tanks to be tested with snowmobile fuel, allow them to remain at room temperature, for one week. Empty the tank, and refill with a non-flammable liquid having a specific gravity of not less than 0.7, and a freezing point of no more than –40 °C, and which does not attack the tank material.[2,3]

4.3.2 Cold Chamber Test

Place the filled tanks in a cold chamber at –40 °C ± 3 °C. Keep the tanks at this temperature for no less than 5 h after the tank and its contents have stabilized at this temperature.

4.3.3 Drop Test

Remove the tank from the cold chamber. Ensure that the fittings and caps are tightly installed. Ensure the fluid temperature is –40 °C ± 3 °C. Drop the surface of the tank which is supported in the snowmobile onto a hard smooth surface from a height of 1.25 m. Tanks attached by fasteners through integral bosses to mounting points on the snowmobile should be mounted in a fixture duplicating the mounting.

[1] Carbon black imparts maximum resistance to weathering. But if other colors are desired, cadmium pigments have also been found effective.

[2] A mixture of ethylene glycol and water usually is satisfactory, but should not be used without inquiry unless recommended by the manufacturer of the tank.

[3] If the filled tanks are stored indoors, care must be taken to insure the proper ventilation and the absence of any open flame or electrical discharge.