



SURFACE VEHICLE STANDARD

J2140™**MAY2025**

Issued 2000-07
Reaffirmed 2014-06
Revised 2025-05

Superseding J2140 JUN2014

(R) General Requirement for Preformed Hoses for Air Induction on Heavy-Duty Engines

RATIONALE

The industry has changed since this specification was originally written for how to specify a hose material. Originally, the procurer was required to specify a heat aging test temperature (see 3.3), a cold flex test temperature (see 3.4), and an oil resistance grade (see 3.5) which hopefully can be met by an available polymer. Most customers prefer to select and specify the polymer only, based on a list of typical properties. It is therefore recommended to list one temperature and oil swell number for each polymer, and let the procurer specify any different test parameters.

1. SCOPE

This SAE Standard outlines the requirements for a preformed thermosetting hose intended for use in heavy-duty vehicle engines, such as air cleaner inlet, crank case vent, or air cleaner to turbo or to engine inlet.

2. REFERENCES

2.1 Applicable Documents

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

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J20 Coolant System Hoses

SAE J200 Classification System for Rubber Materials

SAE J2370 Geometric Dimensions and Tolerancing for Curved Hose

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2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D395 Test Methods for Rubber Property - Compression Set

ASTM D412 Test Methods for Rubber Properties in Tension

ASTM D471 Test Method for Rubber Property - Effect of Liquids

ASTM D573 Test Methods for Rubber-Deterioration in an Air Oven

ASTM D1149 Test Method for Rubber Deterioration - Surface Ozone Cracking in a Chamber (Flat Specimens)

ASTM D2137 Test Methods for Rubber Property - Brittleness Point of Flexible Polymers and Coated Fabrics

ASTM D2240 Test Method for Rubber Property - Durometer Hardness

3. PHYSICAL TESTS AND SPECIFICATIONS

Physical tests and specifications shall be obtained from finished hoses where possible, or as agreed between manufacturer and procurer.

3.1 Hardness

Hardness, determined in accordance with the procedure in ASTM D2240 test method. Standard durometer hardness for each polymer type shown in Section 5. If another hardness is needed, it should be specified by procurer.

3.2 Tensile Strength and Elongation at Break

Tensile strength and elongation at break, determined in accordance with the procedure in ASTM D412 test method. Standard tensile and elongation specifications are shown in Section 5. If other tensile and elongation requirements are needed, they should be specified by procurer.

3.3 Change in Properties after Heat Aging

Heat aging shall be carried out in accordance with ASTM D573 test method for 168 hours at the High Temp value listed in Table 3 for the selected polymer, based on application requirement. The change in hardness, tensile strength retention, and absolute elongation at break shall fall within the values shown in Table 1.

Table 1 - Material requirements

Paragraph	Characteristic	Unit	Requirement
3.3	Accelerated aging		
	Change in hardness, max	Points	±15
	Tensile retained, min	%	70
	Absolute elongation at break, min	%	100
3.4	Low temperature flexibility		No cracks
3.5	Resistance to oil IRM903		
	Volumetric change, max	%	See Table 3
3.6	Vacuum resistance		Pass

Note: Not all combinations of the previous properties, 3.3 to 3.6, are available.