



SURFACE VEHICLE STANDARD

J20™

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Coolant System Hoses

RATIONALE

Tables 6a and 6b revised for nominal size mm; changed to nominal hose size and clarified note for in-between hose sizes. Added 3.6.4. Added Section 14 for fatigue resistant designator which defines the pressure cycle requirements and wave form.

1. SCOPE

This SAE Standard covers reinforced and flexible hoses intended for use in water and ethylene glycol-based engine-coolant system applications.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of the 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 J1231	Beaded Ends for Hose Connections and Hose Fittings
SAE J1508	Hose Clamp Specifications
SAE J1610	Test Method for Evaluating the Sealing Capability of Hose Connections with a PVT Test Facility
SAE J1638	Compression Set of Hoses or Solid Discs
SAE J1684	Test Method for Evaluating the Electrochemical Resistance of Coolant System Hoses and Materials
SAE J2370	Geometric Dimensions and Tolerancing for Curved Hose
SAE J2387	Dimensions and Tolerances for Coolant System Hoses
SAE J2605	Non-Contact Hose Measurement Study 1

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For more information on this standard, visit
https://www.sae.org/standards/content/J20_202202/

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 D380	Methods of Testing Rubber Hose
ASTM D395	Test Methods for Rubber Property Compression Set
ASTM D412	Test Method for Rubber Properties in Tension
ASTM D413	Test Methods for Rubber Property Adhesion to Flexible Substrate
ASTM D471	Test Method for Rubber Property Effect of Liquids
ASTM D573	Test Method for Rubber Deterioration in an Air Oven
ASTM D1149	Test Method for Rubber Deterioration Surface Ozone Cracking in a Chamber (Flat Specimens)
ASTM D2240	Test Method for Rubber Property Durometer Hardness

2.1.3 Military Specification Publications

Available from Department of Defense Specification, Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094, Tel: 215-697-2179, <http://assist.daps.mil> or <http://stinet.dtic.mil>.

MIL-HDBK-695 Rubber Products: Recommended Shelf Life

2.1.4 ARPM Publications

Available from Association for Rubber Products Manufacturers, 7321 Shadeland Station Way, Suite 285, Indianapolis, IN 46256, Tel: 317-863-4072, www.arpminc.com.

IP-2 Hose Handbook

2.1.5 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>.

ISO 9001 Quality Systems - Model for Quality Assurance in Design, Development, Production, Installation and Servicing

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 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 J20-1	Coolant Hose (Supplement to SAE J20 for Government Use Replacing Part of MS52130)
SAE J20-2	Coolant Hose - Normal Service Type Convolutd, Wire Support Hose (Supplement to SAE J20 for Government Use Replacing Part of MS51008)

3. DEFINITIONS OF HOSE TYPES

3.1 SAE 20R1

Heavy-duty type for service in heavy-duty application. This type is available in two wall thicknesses as indicated in 6.3.

3.2 SAE 20R2

Flexible heavy-duty wire embedded type for the same service as SAE 20R1.

3.3 SAE 20R3

Heater hose for normal service.

3.4 SAE 20R4

Radiator hose for normal service.

3.5 SAE 20R5

Convuluted wire supported type for normal service.

3.6 HOSE SPECIAL DESIGNATORS FOR SAE 20RXY

X refers to the hose type. Y designators may be used for hoses with special features. Multiple Y designators may be used if needed.

3.6.1 HT

This high temperature designation is for any hose type, SAE 20R1 to SAE 20R5, which is required to operate in an environment above 125 °C. (See Section 11.)

3.6.2 EC

This electrochemical designation is for any hose type, SAE 20R1 to SAE 20R5, which is required to have electrochemical resistance as defined by SAE J1684. (See Section 12.)

3.6.3 LT

This low temperature designation is for any hose type, SAE 20R1 to SAE 20R5, which is required to operate in an environment down to -55 °C. (See Section 13.)

3.6.4 FR

This fatigue resistant designation is for any pre-shaped hose type SAE 20R1, 20R3, or 20R4 which is required to operate in a high-fatigue pressure cycling environment. (See Section 14.)

3.7 HOSE CLASSES

Compounds based on different synthetic rubber grades are specified and designated (see 5.2 for test methods):

Class A—High-temperature resistant

Class B—High oil resistant

Class C—Medium oil resistant

Class D-1—Low oil resistant, improved service

Class D-2—Low oil resistant, standard service

Class D-3—Low oil resistant, high-temperature resistant, premium service

Class E—Low oil resistant, fiber elastomer composite