SURFACE VEHICLE STANDARD

J20	MAR2015

Issued 1944-01
Reaffirmed 2015-03

Superseding J20 JUN2006

Coolant System Hoses

RATIONALE

J20 has been reaffirmed to comply with the SAE five-year review policy.

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 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 PUBLICATIONS

Available from SAE, 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 J1231—Formed Tube Ends for Hose Connections and Hose Fittings
SAE J1508—Hose Clamp Specification
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

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 380—Methods of Testing Rubber Hose
ASTM D 395—Test Methods for Rubber Property Compression Set
ASTM D 412—Test Method for Rubber Properties in Tension
ASTM D 413—Test Methods for Rubber Property Adhesion to Flexible Substrate
ASTM D 471—Test Method for Rubber Property Effect of Liquids
ASTM D 573—Test Method for Rubber Deterioration in an Air Oven
ASTM D 1149—Test Method for Rubber Deterioration Surface Ozone Cracking in a Chamber (Flat Specimens)
ASTM D 2240—Test Method for Rubber Property Durometer Hardness

2.1.3 MILITARY SPECIFICATION PUBLICATION

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 RUBBER MANUFACTURERS ASSOCIATION (RMA) PUBLICATION

Available from RMA, 1400 K Street, NW, Suite 900, Washington, DC 20005, Tel: 202-682-4800, www.rma.org.

IP-2—Hose Handbook

2.1.5 ISO PUBLICATION

Available from ANSI, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 9001—Quality systems—Model for quality assurance in design, development, production, installation and servicing

2.1.6 AUTOMOTIVE INDUSTRY PUBLICATION

Available from AIAG, 26200 Lahser Road, Suite 200, Southfield, MI 48034-7100, Tel: 248-358-3570, www.aiag.org.

QS 9000—Quality System Requirements

2.2 Related Publications

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

2.2.1 SAE PUBLICATIONS

Available from SAE, 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 J20-1—Coolant Hose (Supplement to SAE J20 for Government Use Replacing Part of MS52130)
SAE J20-2—Coolant Hose—Normal Service Type Convoluted, 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

Convoluted 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.)

3.7 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

Physical characteristics for each hose class are shown in Table 1.