

TABLE 1 - APPLICATION SELECTION GUIDE

SAE Spec	ID Sizes (mm)	Rated External Temperature	ASTM Reference Test Fuel	Burst Press		Permeation g/m ² /day	Low Temp
				ID (mm)	(MPa)		
30R2	3 to >30	100 °C	48 h @ RT Fuel B	Type 1 - 3.5 to 4.8 Type 2 - 1.7 to 4.8 Type 3 - 8.3 to 13.8		None	5 h @ -40 °C Fuel B Aged
30R3	4 to 11	100 °C	48 h @ RT Fuel B		6.2 to 13.8	None	5 h @ -40 °C Fuel B Aged
30R5 (Filler with wire)	19 to 65	100 °C	48 h @ RT Fuel B		0.6	None	5 h @ -40 °C Fuel B Aged
30R6	3 to >64	100 °C	48 h @ RT Fuel C 70 h @ RT Fuel G	< = 9.53 >9.53 to 25.4 > 25.4	1.72 1.20 0.5	600 Fuel C @ RT	5 h @ -40 °C Fuel C Aged
30R7	3 to >64	125 °C	48 h @ RT Fuel C 70 h @ RT Fuel G 14 day @ 40 C Sour Gas # 1	< = 9.53 > 9.53 to 25.4	1.72 1.20	550 Fuel C @ RT	5 h @ -40 °C Fuel C Aged
30R8	3 to >64	135 °C, intermittent to 150 °C	48 h @ RT Fuel C 70 h @ RT Fuel G	< = 9.53 > 9.53 to 25.4	1.72 1.20	200 Fuel C @ RT	5 h @ -40 °C Fuel C Aged
30R9 (Fuel Injected)	6 to 13	135 °C intermittent to 150 °C	48 h @ RT Fuel C 70 h @ RT Fuel G 14 day @ 40 C Sour Gas # 1	< = 9.53 > 9.53	6.2 3.4	15 Fuel C @ RT	24 h @ -40 °C Fuel C Aged
30R10 (In Tank, uncoupled)	6 to 13	100 °C, intermittent to 125 °C	48 h @ RT Fuel C 70 h @ RT Fuel I	3.4 to 2.8 MPa as size increases		Not Required	24 h @ -40 °C Fuel C Aged
30R11	3 to >64	100 °C T1 125 °C T2 (Can be selected)	48 h @ RT Fuel C Fuel I Extended Test		1.2	100 to 25 max Fuel I @ 40°C	24 h @ -40 °C after Fuel C Aging
30R12	6 to 13	100 °C T1 125 °C T2 135 °C T3 150 °C T4 (Can be selected)	48 h @ RT Fuel C 168 h @ RT Fuel I 168 h @ RT Fuel K Fuel I Extended Test		8	100 to 25 max Fuel I @ 60°C	24 h @ -40 °C after Conditioning with Fuel C
30R13 (Under Development)							
30R14	3 to >64	T1 = 100 °C T2 = 125 °C	48 h @ RT Fuel C 70 h @ RT Fuel G 14 day @ 40 C Sour Gas # 1 (T2 only)	< = 9.53 > 9.53 to 25.4	1.72 1.20	15 max, Fuel CE10 @ RT, 21 day, after 28 day presoak	5 h @ -40 °C Fuel C Aged

NOTE: This guide is intended to be a quick reference guide to assist the user in selection of the proper type of hose for the application. There are more requirements than are shown on this page. Please see the appropriate sections of this specification for the detailed complete requirements for that type of hose.

4. HOSE CONSTRUCTION

4.1 Coupled and Uncoupled Synthetic Rubber Tube and Cover (SAE 30R2)

4.1.1 Type 1

The construction of this hose embodies a smooth bore tube of suitable synthetic rubber material, reinforced with one ply of braided, knit, spiral, or woven fabric, and finished with a suitable oil- and ozone-resisting synthetic rubber cover.

4.1.2 Type 2

The construction of this hose embodies a smooth bore tube of suitable synthetic rubber material, reinforced with two braided plies or multiples of woven fabric, and finished with a suitable oil- and ozone-resisting synthetic rubber cover.

4.1.3 Type 3

The construction of this hose embodies a smooth bore tube of suitable synthetic rubber material, a single braided ply of textile reinforcement, and finished with a suitable oil- and ozone-resisting synthetic rubber cover.

4.2 Lightweight Braided Reinforced Lacquer, Cement, or Rubber Covered Hose (SAE 30R3)

The construction of this hose embodies a smooth bore tube of suitable synthetic rubber material, reinforced with one braided ply of cotton or other suitable material and finished with a gasoline-, oil-, and water-resistant flexible coating of lacquer, cement, or synthetic rubber.

4.3 Wire Inserted Synthetic Rubber Tube and Cover (SAE 30R5)

A wire inserted hose for fuel and oil filler and vent use in mobile, stationary, or marine applications. The hose is furnished uncoupled in specific lengths and is secured in application by the use of suitable clamps. The hose is particularly useful in applications where it must be installed in a curved configuration and where resistance to collapse is desirable.

The construction of this hose embodies a fuel- and oil-resistant tube, a helical high-carbon steel wire embedded in the convoluted section of this hose and running out into the plain 1 ends and an ozone- and oil-resistant cover. A ply of fabric or cord may be applied between the tube or cover and the helical wire. A ply of fabric must be used to reinforce the ends.

4.4 Low-Pressure Coupled and Uncoupled Synthetic Rubber Tube and Cover (SAE 30R6), (SAE 30R7), (SAE 30R8)

Hose which may be supplied either coupled or uncoupled for use with gasoline, diesel fuel, lubrication oil, or the vapor present in either the fuel system or in the crankcase of internal combustion engines in mobile, stationary, and marine applications. Exposure of these hoses to gasoline or diesel fuel which contain high levels, greater than 5% by volume, of oxygenates, i.e., ethanol, methanol, or MTBE (methyl tertiary butyl ether), may result in significantly higher permeation rates than those listed for 30R6, 7, or 8. This hose is for maximum working pressures of 0.34 MPa (50 psi) up to and including 9.53 mm (3/8 in) ID and 0.24 MPa (35 psi) for over 9.53 mm (3/8 in). For 30R6 hose in excess of 25.40 mm (1 in), the working pressure is 0.11 MPa (16 psi). The hose may be furnished in long lengths, specific cut lengths, or as a part preformed to a specific configuration. This hose is suitable for use in temperatures up to 100 °C (212 °F) for 30R6, 125 °C (257 °F) for 30R7, 150 °C (302 °F) intermittently and 135 °C (275 °F) continuously for 30R8.

The construction of this hose embodies a smooth bore tube of fuel- and oil-resistant synthetic rubber compound, suitably reinforced with textile fiber yarn, cord, or fabric, and a cover of suitable oil-, ozone-, and heat-resistant synthetic rubber compound.

4.5 Fuel Injection Hose Medium-Pressure Coupled and Uncoupled Synthetic Rubber Tube and Cover (SAE 30R9)

Hose primarily intended to meet the demands of fuel injection systems. These would include, for example, electronic fuel metering (EFM), electronic fuel injection (EFI), throttle body injection (TBI), and the like. Other areas of utility are those applications requiring fuel permeation resistance exceeding 30R8 and ones which require fuel resistance greater than that obtainable with 30R6, 7, and 8. Exposure of this hose to gasoline or diesel fuel that contains high levels, greater than 5% by volume, of oxygenates, i.e., ethanol, methanol, or MTBE may result in significantly higher permeation rates than realized with ASTM Fuel C. This hose may be supplied in either a coupled or uncoupled form, and is useful in the transportation of gasoline, ethanol extended gasoline, diesel fuel, lubrication oil, or the vapor present in either the fuel system or the crankcase of internal combustion engines in mobile, stationary, and marine applications. This hose has a maximum working pressure of 0.69 MPa (100 psi) up to and including 12.70 mm (1/2 in) ID. This hose may be furnished in long lengths, specific cut lengths, or as a part preformed to a specific configuration. This hose is suitable for use in normal operating temperatures of 34 to 135 °C (29 to 275 °F) and intermittent use at 150°C (302 °F).

The construction of this hose typically consists of a smooth bore tube or laminated tube(s) of a synthetic rubber compound(s) resistant to chemical attack, swelling, and permeation by gasoline, oxidized ("sour") gasoline, ethanol extended gasoline, diesel fuel, and oil or lubricants. It shall be suitably reinforced with a textile fiber, yarn, cord, or fabric, and a cover of a suitable oil-, ozone-, and heat-resistant elastomer.

4.6 In-Tank, Low-Pressure, Uncoupled Fuel Hoses (SAE 30R10)

Hose intended primarily for use in fuel injection systems where the hose may be submerged in the fuel tank. The hose is capable of handling gasoline, alcohol-extended gasoline or diesel fuel used in mobile, stationary, and marine applications.

This hose has a maximum working pressure of 0.69 MPa (100 psi) up to and including 12.7 mm ID. This hose may be furnished in long lengths, specific cut lengths, or as a part preformed to a specific configuration. This hose is suitable for use in normal operating temperatures of 34 to 100 °C and intermittent use at 125 °C

The construction of this hose consists of a smooth bore tube and cover based on synthetic rubber compound(s) which are resistant to chemical attack or swelling by gasoline, oxidized ("sour") gasoline, alcohol extended gasoline, and diesel fuel. The hose shall be suitably reinforced with a textile fiber, yarn, cord, or fabric which is resistant to the same fuels as the tube and cover.

4.7 Low Permeation Fuel Fill, Vent, and Vapor Hose (SAE 30R11)

Low permeation hose (100 g/m²/day or less) for use as a low pressure (14.5 kPa) liquid or vapor carrying component for use in gasoline or diesel fuel filler, vent, and vapor systems. The construction shall be designed to be functional over a temperature range of -40 °C to 100 °C for T1 designation, or -40 °C to 125 °C for the T2 designation.

The construction typically consists of a smooth bore or laminated tube of one or more synthetic rubber compound(s) and/or thermoplastic material(s) resistant to chemical attack, swelling, and permeation by gasoline, alcohol extended gasoline, or diesel fuel. It will be suitably reinforced with a textile fiber, yarn, cord, or fabric. It will also be covered with a suitable oil, ozone, and heat-resistant synthetic rubber compound and/or thermoplastic. The specific construction details are to be agreed between the supplier and the original purchaser.

4.8 Low Permeation Fuel Feed and Return Hose (SAE 30R12)

Low permeation reinforced hose suitable for use in fuel supply systems including fuel injection systems. Applies to hose with an elastomeric inner layer. Hose with a thermoplastic inner layer is specifically excluded.

Low permeation hose, for the purpose of SAE 30R12, is defined as hose having a permeation rate less than 100 g/m²/day by method SAE J1737 when tested with CM15 fuel at 60 °C.

This hose is intended for use as fuel feed and return hose in applications where low levels of evaporative emissions are required. This hose is useful in this and other applications for the transportation of gasoline, ethanol or methanol extended gasoline, reformulated gasoline (RFG), alcohol fuel, diesel fuel, lubrication oil, or the vapor present in either the fuel system or the crankcase of internal combustion engines in mobile, stationary, and marine applications. This hose has a maximum working pressure of 1.0 MPa (145 psi). Hose is suitable for use in four categories of operating temperature ranges. Category T1 hose is suitable for use in a normal operating temperature range from -40°C to 100°C ; Category T2 hose is suitable for use in a normal operating temperature range from -40°C to 125°C ; Category T3 hose is suitable for use in a normal operating temperature range from -40°C to 135°C ; and Category T4 hose is suitable for use in a normal operating temperature range from -40°C to 150°C . This hose may be furnished in long lengths, specific cut lengths, or as a part preformed to a specific configuration.

The construction of this hose typically consists of a smooth bore tube with an internal diameter below 13 mm which is resistant to chemical attack, swelling and permeation by gasoline, oxidized ("sour") gasoline, alcohol extended gasoline, reformulated gasoline (RFG), alcohol fuels, diesel fuel and oil or lubricants. The tube may be composed of a single elastomeric material or be a laminated construction of two or more synthetic rubber compounds and/or thermoplastic materials provided the innermost layer is an elastomeric layer. The tube shall be suitably reinforced with a textile fiber, yarn, cord or fabric and covered with an oil, ozone, and heat-resistant elastomer.

4.9 Diesel and Biodiesel Fuel Feed and Return Hose (SAE 30R13) Under Development

4.10 Low Permeation, Low Pressure Coupled and Uncoupled Synthetic Rubber Tube and Cover Hose for Small Engines (SAE 30R14)

Hose which may be supplied either coupled or uncoupled for use with gasoline, diesel fuel, lubrication oil, or the vapor present in either the fuel system or in the crankcase of internal combustion engines in small engine applications. Exposure of these hoses to gasoline or diesel fuel which contain high levels, greater than 5% by volume, of oxygenates, i.e., ethanol, methanol, or MTBE (methyl tertiary butyl ether), may result in significantly higher permeation rates than those listed for 30R14. This hose is for maximum working pressures of 0.34 MPa (50 psi) up to and including 9.53 mm (3/8 in) ID and for hose in excess of 25.40 mm (1 in), the working pressure is 0.11 MPa (16 psi). The hose may be furnished in long lengths, specific cut lengths, or as a part preformed to a specific configuration. This hose is suitable for use in temperatures up to 100°C (212°F) for 30R14 T1, 125°C (257°F) for 30R14 T2. The construction of this hose embodies a smooth bore tube of fuel- and oil-resistant synthetic rubber compound, suitably reinforced with textile fiber yarn, cord, or fabric, and a cover of suitable oil-, ozone-, and heat-resistant synthetic rubber compound. A permeation resistant elastomeric or thermoplastic layer may be used if needed to reduce the permeation through the hose wall, provided the innermost layer is an elastomeric layer. The specific construction details are to be agreed between the supplier and the original purchaser.

5. QUALIFICATION TESTS AND LOT ACCEPTANCE INSPECTION TESTS

5.1 Retests and Rejection

Any hose or assembly that fails in one or more tests shall be resampled and retested. Twice the number of specimens shall be selected from the lot in question for any retests, and failure of any of the retested samples shall be cause for rejection.

5.1.1 For SAE J30R2 and R3

5.1.1.1 Qualification Tests

For qualification tests, one 7.6 m length of bulk hose or 10 assemblies of each size to be qualified shall be furnished. In order to qualify under this standard, hose and hose assemblies must meet the requirements of the following tests: (a) change-in-length followed by (b) burst, (c) vacuum collapse, (d) cold flexibility, (e) tensile strength and elongation, tube and cover (if present), (f) dry heat resistance, (g) fuel resistance, (h) oil resistance, (i) ozone resistance, and (j) adhesion (if cover present).