

GENERAL INFORMATION

Organizations Having Regulations or Specifications for Hose

U.S. Government Agencies

DOD	Department of Defense
DOT	Department of Transportation
FDA	Food and Drug Administration
MSHA	Mine Safety and Health Administration
NHTSA	National Highway Traffic Safety Administration
OSHA	Occupational Safety & Health Administration
PHA	Public Health Administration
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture

Canadian Agencies and Organizations

CGA	Canadian Gas Association
CGSB	Canadian Government Specifications Board
RAC	Rubber Association of Canada
CSA	Canadian Specifications Association

Other Organizations

ABS	American Bureau of Shipping
ANSI	American National Standards Institute
API	American Petroleum Institute
ASTM	American Society for Testing and Materials
BIA	Boating Industry Association
BSI	British Standards Institute
CARB	California Air Resource Board
CGA	Compressed Gas Association
DIN	Duetsches Institut for Normung - German Standards
DNV	Det Norske Veritas
EN	European Norms
FM	Factory Mutual Research
FPS	Fluid Power Society
ISO	International Organization for Standardization
JIC	Joint Industrial Council (now defunct)
JIS	Japanese Industrial Standards
NAHAD	National Association of Hose and Accessories Distributors
NFPA	National Fire Protection Association National Fluid Power Association
RMA	Rubber Manufacturers Association
SAE	Society of Automotive Engineers
TFI	The Fertilizer Institute
UL	Underwriters Laboratories

RMA Oil Resistance Data

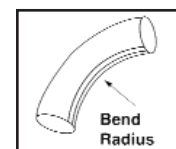
The effects of oil on rubber depend on a number of factors that include the type of rubber compound, the composition of the oil, the temperature and the length of exposure. The RMA (Rubber Manufacturer's Association) has developed a classification of hose performance based on simple immersions in ASTM No. 3 oil (High Swell) at 212° F for 70 hours. Oil resistance classifications for rubber stocks are shown in the table below.

Hose Physical Properties After Exposure to Oil

Classification	Volume Change MAX.	Tensile Strength Retained
Class A (High Oil Resistance)	+25%	80%
Class B (Medium-High Oil Resistance)	+65%	50%
Class C (Medium Oil Resistance)	+100%	40%

Minimum Hose Bend Radius Data (MBR)

The Bend Radius is the radius of the bent section of a hose measured to the innermost surface of the curved portion. It is important because the minimum bend radius is the maximum amount the hose can be bent without being kinked or damaged.



General formula to determine bend length:

$$\frac{\text{Angle of Bend} \times 2\pi}{360^\circ} = \text{minimum length of hose to make bend}$$

r = given bend radius of the hose

Example: to make a 90° bend with a hose with a 2" I.D.

$$\frac{90^\circ}{360^\circ} (2 \times 3.14 \times 4.5)$$

$$.25 \times 2 \times 3.14 \times 4.5 = 7 \text{ inches}$$

7 inches is the minimum length the hose can be bent without damaging it. Remember that the bend should take place over the entire minimum length and not a portion of it. In addition, the formula does not mean that 7 inches will be long enough to meet application needs. It only means that if the 90° bend takes place in less than 7 inches, the hose could be damaged.

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COMMONLY USED RUBBER COMPOUNDS

ASTM Designation	Common Name	Composition	ASTM Designation	Common Name	Composition
D1418			D1418		
CM	CPE	Chlorinated Polyethylene	IIR	Butyl	Isobutylene-isoprene
CR	Neoprene*	Chloroprene	IR	Polyisoprene	Isoprene, synthetic
CSM	Hypalon	Chloro-sulfonyl-polyethylene	NBR	Buna N, Nitrile	Nitrile-butadiene
ECO	Hydrin	Ethylene oxide and Chloromethyl oxirane	NR	Natural	Isoprene - natural
EPDM	Ethylene Propylene Rubber	Ethylene Propylene Diene terpolymer	SBR	SBR	Styrene-butadiene
FKM	Fluoroelastomer Viton	Hexafluoropropylene vinylidene fluoride	UHMWPE	Ultra-High Molecular Weight Polyethylene	Polyethylene
			XLPE	Cross-linked Polyethylene	Polyethylene and cross-linking agent

* DuPont registered trademark

GENERAL INFORMATION

I. Hose Selection

It is important to have all the required information to select the proper hose for any hose application. The acronym "STAMPED" can be used to remember the required information as follows:

Size - Inside diameter (I.D.) and length. In some cases, the outside diameter (O.D.), also.

Temperature - Internal, external, minimum and maximum.

Application - What is the hose supposed to do?

Material - What type of product will be conveyed?

Pressure - What are the normal working and burst pressures?

Ends - Are couplings needed? What type, size and thread?

Delivery - When and where will it be needed? Special packaging required?



II. Common Terms

Term	Definition	Term	Definition
I.D.	Inside diameter of hose opening	Weight/ft.	Weight per foot of hose
O.D.	Outside diameter of hose	Bend Radius	The minimum radius to which the hose will bend before it is damaged
Max W.P.	Maximum recommended working	Standard Lengths	The bulk length that the hose is stocked for distributors
PSI	Pressure in pounds per square inch		

III. Thread Chart

Abbreviation	Seal	System Name	Compatible Thread
GHT	Washer	Garden Hose Thread	GHT to GHT only
NST	Washer	National Standard Thread (Fire)	NST to NST only
NPSH	Washer	National Pipe Straight Hose	Male NPSH to Female NPSH Female NPSH to Male NPSH or Male NPT
NPT	Thread to Thread	National Pipe Tapered	Male NPT to Female NPT or Female NPSH
IPT		Iron Pipe Thread (generic)	Need more information

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