

Tech Update

Welding Hose: What hose do I need?

What is the RMA/CGA IP-7 Standard?

The Industrial Gas Apparatus Committee of the Compressed Gas Association (CGA) and the Hose Technical Committee of the Rubber Manufacturers Association (RMA) jointly prepared the RMA/CGA IP-7 standard. This standard was written to cover light duty, standard duty and heavy-duty hose to be used with oxy-fuel gas equipment for welding, cutting or other allied processes, such as brazing, metallizing, heating and scarfing downstream of a pressure control device (such as a regulator).

What do the Grades and Types mean?

Grade R - for acetylene only. Tube and cover are not flame or oil resistant.

Grade RM – for acetylene only. Tube is not oil or flame resistant, flame and oil resistant cover.

Grade T – for all fuel gases. Flame and oil resistant tube and cover.

Type L – light duty service, single line

Type S – standard duty service, single line

Type H – heavy-duty service, single line

Type VD – vulcanized double line (twin weld hose)

Why are Grades R and RM for acetylene only?

For many years the prevalent fuel gas in the industry was acetylene. Acetylene has little or no adverse effects on rubber. Therefore, no requirements for fuel gas compatibility were initially specified in the RMA/CGA IP-7 standard. Due to enhanced performance or reduced cost, different types of fuel gases (propane, natural gas, MAPP, propylene, hydrogen, etc.) became popular. Many of these fuel gases are detrimental to certain types of rubber. With the use of these fuel gases, combining the wrong hose and fuel could lead to premature hose failure, property damage and personal injury.

Due to safety concerns, the RMA/CGA organizations changed the standard to include the use of these gases. Additional requirements for hose compatibility were added to the standard in 1990 and the IP-7 standard was changed, adding a new Grade T classification for all fuel gases. The Grade R and RM classifications were also changed to reflect their use for acetylene only.

What hose do I need when the gas is acetylene?

It is acceptable to use Grade R, RM and T with acetylene. However the application should be evaluated before the selection of a particular Grade of hose (See “When should I use Grade T hose?”)

When should I use Grade T hose?

If you are using a fuel gas other than acetylene, you must use Grade T hose. Grade T hose ensures compatibility with the gas being conveyed and user safety. If using acetylene, Grade T hose may provide additional features over the Grade R and RM that make it beneficial for the applications. Some of these are:

- *Oil resistance:* When exposed to an oil environment, the Grade R hose may become soft and tacky. This can lead to cover separation from the reinforcement or excessive wear of the cover. Both of these conditions can lead to premature hose failure and decreased service life. The Grade T hose provides protection from oil, both internally and externally, while only the cover of the Grade RM provides this protection.

- *Flame Resistance:* The Grade T hose provides added protection, both externally and internally, when exposed to a flame or hot materials. The tube and cover of the Grade T hose are self-extinguishing and provide maximum safety when exposed to adverse conditions such as hot slag, flash backs or inadvertent flame exposure. The cover of the Grade RM hose also provides this protection. Grade R has no flame resistance requirements.

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