

POSITION STATEMENT

USE OF COPPER IN ACETYLENE SERVICE

Background

Fresh surfaces (devoid of oxide) of pure copper in contact with moist acetylene under pressure are susceptible to the formation of explosive copper acetylides.

Incident reports from the early 1900's, when acetylene was being used for street lighting and other general applications, suggest that the use of copper piping and fittings to convey acetylene was a contributing factor in the incidents.

Question

Can components manufactured from copper or copper bearing alloys be used in acetylene service?

Answer

The Compressed Gas Association (CGA) recommends that if materials constructed of copper or copper bearing alloys come in contact with acetylene or methylacetylene-propadiene stabilized (MPS) gas, the percentage of copper shall not exceed 65% mass, unless higher content alloys are found to be compatible in the specific application by experience or by test.

Bourdon tubes of pressure gauges and metallic inlet filters may exceed this requirement if higher content alloys have been found to be suitable in the specific application by experience or by test. The use of high copper content material in the manufacture of welding and cutting tips is acceptable since these items are not exposed to acetylene under closed, static conditions. They are open to the atmosphere, and no acetylene remains in them once the torch valves are closed.

Silver/copper solders or brazing alloys used in the construction of equipment for such gases shall have a maximum silver content of 46% and a maximum copper content of 37%.

For more information, see CGA E-11, *Standard for Stationary Compressed Gas Cylinder Discharging Manifolds with Working Pressures up to 3000 psi*, section 4.2.1 [1].

References

Unless otherwise specified, the latest edition shall apply.

[1] CGA E-11—2021, *Standard for Stationary Compressed Gas Cylinder Discharging Manifolds with Working Pressures up to 3000 psi*, Compressed Gas Association, www.cganet.com.

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Work Item 23-032
Industrial Gases Apparatus Committee

NOTE—No technical information has been changed from the 2018 edition. This reaffirmed edition may include minor editorial changes.

REAFFIRMED: 2024
SECOND EDITION: 2018
REAFFIRMED: 2012
FIRST EDITION: 2000

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