

Standard ANSI/ISA-71.04

Sampler ID: 132198

Test Start: 01.03.2022

Report Date: 10.01.2023

Test End: 30.03.2022

Exposure: 29 Days

SCOPE:

Test results correspond to ANSI/ISA-71.04 which is an internationally accepted standard that categorises copper and silver corrosion in relation to the deployment and reliability of electronic equipment.

TEST RESULTS:

Equipment Reliability Correlation based on ANSI/ISA-71.04-2013 Standard for copper and silver.

Copper:
0 Angstroms/30 Days

Test result corresponds to severity level G1 - Mild (European standard EN 60721-3-3 Level 3C1). An environment sufficiently well controlled such that corrosion is not a factor in determining equipment reliability.

Silver:
7 Angstroms/30 Days

Test result corresponds to severity G1 - Mild (European standard EN 60721-3-3 Level 3C1). An environment sufficiently well controlled such that corrosion is not a factor in determining equipment reliability.

Expected Corrosive Gas Concentrations:

H2S <3 ppb
SO2,SO3 < 10 ppb
Cl2 < 1 ppb
NOx < 50 ppb

Name	Symbol	Information
Hydrogen Sulfide	H2S	Hydrogen sulfide (H ₂ S) is a colourless gas with a characteristic odour of rotten eggs which being denser than air may pool in low areas in still conditions. Sources: Hydrogen sulfide occurs naturally in some environments such as sulfur springs, swamps and salt marshes, and is often associated with the decomposition of organic material. Human activities and industries that may produce hydrogen sulfide include: sewage treatment plants and farming operations.
Sulfur Dioxide	SO ₂ , SO ₃	Sulfur dioxide has a pungent, irritating odour, familiar as the smell of a just-struck match. Sources: The largest source of SO ₂ in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities. Smaller sources of SO ₂ emissions include: industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and other vehicles and heavy equipment that burn fuel with a high sulfur content.
Chlorine, Chlorine Dioxide	Cl ₂ , ClO ₂	Chlorine gas can be recognized by its pungent, irritating odor, which is like the odor of bleach. Sources: Aluminum manufacture, paper mills, refuse decomposition, cleaning products.
Oxides of Nitrogen	NOx	Pungent odour. Sources: Automobile emissions, fossil fuel combustion, microbes, chemical industry.

ANSI/ISA -71.04 Corrosion Severity Levels:

Severity Level	Copper Corrosion	Silver Corrosion	Description
G1 - Mild	<300 Angstroms / 30 days	<200 Angstroms / 30 days	Sufficiently well controlled, corrosion is not a factor.
G2 - Moderate	<1000 Angstroms / 30 days	<1000 Angstroms / 30 days	Effects of corrosion are measurable and may be a factor.
G3 - Harsh	<2000 Angstroms / 30 days	<2000 Angstroms / 30 days	High probability that corrosive attack will occur.
GX - Severe	>2000 Angstroms / 30 days	>2000 Angstroms / 30 days	Only specially designed and packaged equipment would be expected to survive.