# Corrosion - Standard ANSI/ISA-71.04

**Sampler ID:** 132695

**Report Date:** 07.11.2026

**Test Start:** 01.01.2023

**Test End:** 01.06.2023

**Exposure:** 151 Days

## SCOPE:

This test shows the actual amount of corrosion which occurred on the copper metal coupon. Test results correspond to ANSI/ISA-71.04 which is an internationally accepted standard that categorizes copper corrosion in relation to the deployment and reliability of electronic equipment.

## TEST RESULTS:

Equipment Reliability Correlation based on ANSI/ISA-71.04 Standard for copper reactivity.

| | |
|---|---|
| Copper:<br>371 Angstroms/30 Days | Test result corresponds to severity level G2 - Moderate (European standard EN 60721-3-3 Level 3C2). An environment in which the effects of corrosion are measurable and may be a factor in determining equipment reliability. |

## Expected Corrosive Gas Concentrations:

| | |
|---|---|
| H2S | 3 - 10 ppb |
| SO2,SO3 | 10 - 100 ppb |
| Cl2 | 1 - 2 ppb |
| NOx | 50 - 125 ppb |

| Name | Symbol | Information |
|---|---|---|
| Hydrogen Sulfide | H2S | Hydrogen sulfide ($H_2S$) 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 | SO2, SO3 | 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 | Cl2, ClO2 | 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 | Description |
|---|---|---|
| G1 - Mild | <300 Angstroms / 30 days | Sufficiently well controlled, corrosion is not a factor. |
| G2 - Moderate | <1000 Angstroms / 30 days | Effects of corrosion are measurable and may be a factor. |
| G3 - Harsh | <2000 Angstroms / 30 days | High probability that corrosive attack will occur. |
| GX - Severe | >2000 Angstroms / 30 days | Only specially designed and packaged equipment would be expected to survive. |

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# Airborne Particles - Standard ISO 14644-1

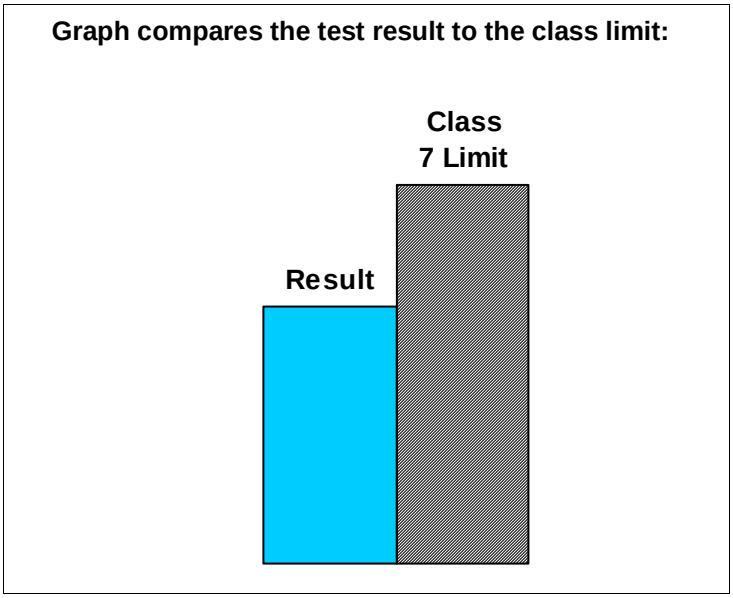
**Sampler ID:** 132695
**Report Date:** 07.11.2026
**Test Start:** 01.01.2023
**Test End:** 01.06.2023
**Exposure:** 151 Days

## SCOPE:

This report corresponds to ISO 14644-1 which is a widely accepted standard for qualifying indoor air cleanliness in terms of the concentration of airborne particles per cubic meter.

## TEST RESULT:

67.97% of the ISO 14644-1 Class 7 limit




## Statistical Evaluation and Comparison with ISO 14644-1 Limits

| Particle Size | Concentration (m3): | CLASS 7 LIMIT | CLASS 8 LIMIT | CLASS 9 LIMIT |
|---|---|---|---|---|
| 0.5 µm | 239'247 | 352,000 | 3,520,000 | 35,200,000 |
| 1 µm | 56'549 | 83,200 | 832,000 | 8,320,000 |
| 5 µm | 1'991 | 2,930 | 29,300 | 293,000 |

ISO 14644-1 Class 9: General indoor rooms.

ISO 14644-1 Class 8: Data centers, mission critical facilities, technology spaces and electronic equipment.

ISO 14644-1 Class 7: Biopharma products, sterile pharmaceuticals, electronics components, medical devices and implants; and the maintenance of sensitive aviation and avionics systems.

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