

Air Particle Report

Sampler ID: 132695

Test Start: 01.01.2023

Report Date: 23.08.2023

Test End: 01.06.2023

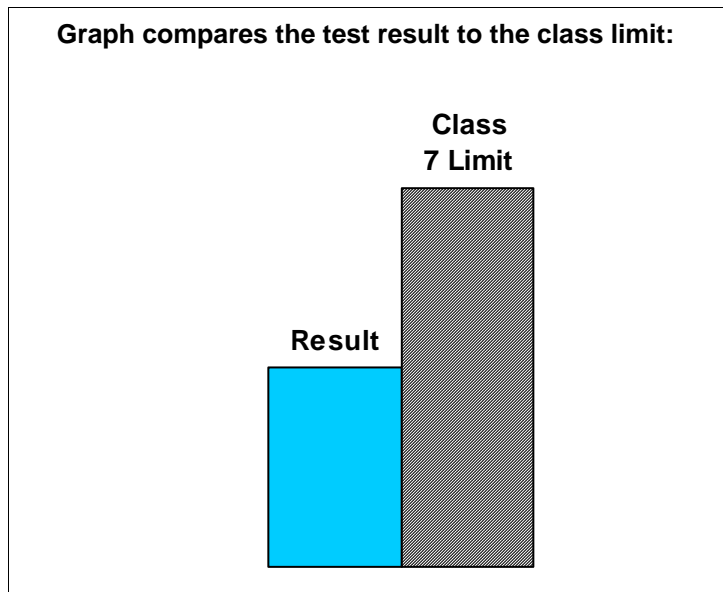
Exposure: 151 Days

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:

52.72% of the ISO 14644-1 Class 7 limit



Recommendations:

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.

Corrosion Report

Sampler ID: 132695

Test Start: 01.01.2023

Report Date: 23.08.2023

Test End: 01.06.2023

Exposure: 151 Days

SCOPE:

This test shows the actual amount of corrosion which occurred on the 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:
359 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 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	NO _x	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.

Use of this service subject to TERMS at www.technologycare.com. Manufactured by: Technology Care LLC, Birmensdorferstrasse 467, 8055 Zurich Switzerland Tel. 044 450 85 60, E-Mail contact@technologycare.com, www.technologycare.com © Technology Care LLC - All rights reserved - Intl. Patents Pending

Chloride Report

Sampler ID: 132695

Test Start: 01.01.2023

Report Date: 23.08.2023

Test End: 01.06.2023

Exposure: 151 Days

SCOPE:

This test shows the cumulative quantity of corrosive chlorides accumulated by the sampler over the sampling duration. It stands as a crucial metric for evaluating overall air pollution levels. This metric also shows the potential of air pollutants to corrode equipment and infrastructure.

TEST RESULTS:

Total Soluble Salts: 0.1401 ug/cm²



The test result is lower than the limit of 5 ug/cm² for electronic devices and installations.

INFORMATION:

Includes a wide range of chemicals containing chlorides, sulphates and nitrates. Sources include industrial processes, construction, metal smelting, coal burning, and cement production, vehicle exhaust, smoke and fertilizers.

The following limits for soluble salts, relevant in terms of corrosion chemistry, have been established by international organizations and insurers:

- 5 µg/cm² for electronic devices and installations.
- 10 µg/cm² for buildings and general installations.

Since salt corrodes metals, it is recommended that electronic equipment be cleaned or replaced if salt levels exceed 5 µg/cm². Possible sources include smoke, chemicals and acids. Elevated levels of salt are very serious for a technical installation since they cause severe corrosion of system components, especially when air humidity is higher than 50 RH. Even small amounts of smoke from burning PVC can cause large amounts of chlorides to contaminate equipment components. Salt may also be contained in concrete dust. This measurement is particularly important in assessing insurance claims resulting from damages caused by smoke or other particle events.