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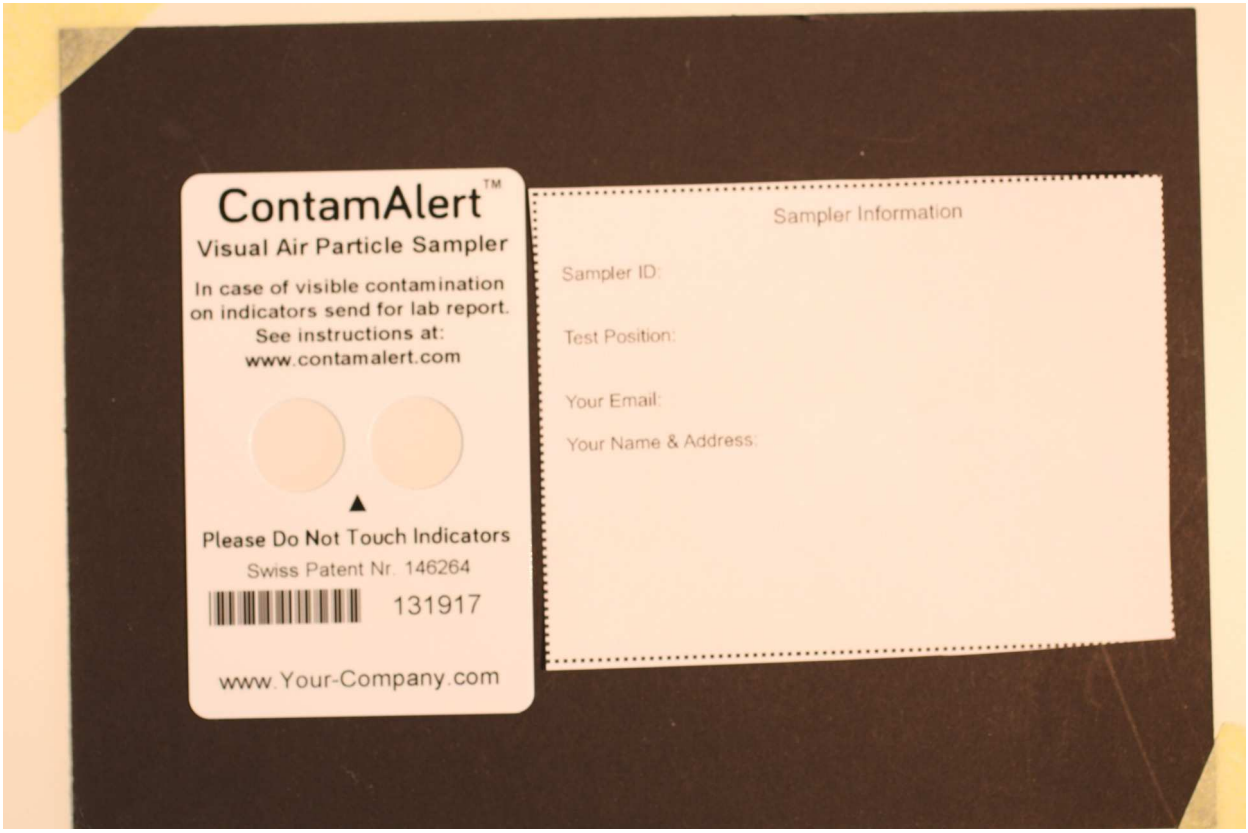
Sampler Scan

Sampler ID: **131401**



Technology Care LLC based in Zurich, Switzerland, is a leading provider of environmental audits and precision cleaning in data centers. For over 25 years, many of the world's largest corporations have relied on our products and services to ensure that their critical environments consistently meet required standards. Our laboratory located in Zurich, Switzerland uses the latest, most innovative technologies to provide analysis of the highest quality. Many of our technologies have been developed in-house and as a result we have been awarded various patents and trademarks. Technology Care LLC is a member of the Swiss Contamination Control Society: SRRT-SwissCCS

Particle Mass

Sampler ID: 131401

Report Date: 13.01.2022

Scope:

This test shows the total mass of particulate contamination collected by the sampler in ug/cm2. Your test result is compared to standard MIL--STD--1246C Class A.

Test Result:

Non-Volatile Residue (NVR): 7.67 ug/cm2

The test result is less than the 10 ug/cm2 limit for standard MIL--STD--1246C Class A. An environment sufficiently well controlled such that contamination is not a factor in determining equipment reliability.

Information:

Non-Volatile Residue (NVR):

In many commercial applications, the precision surface cleanliness level is defined as a contaminant level of less than 10 µg of contaminant per cm2. This corresponds to NVR cleanliness level, MIL--STD--1246C Class A.

Non-volatile residue (NVR) or non-volatile matter is the soluble, suspended, or particulate material remaining following evaporation of the volatile solvent which contains the material. Analysis of nonvolatile content can be used to determine the purity of a solvent as well as to measure the amount of micro-contamination on the surface of an item or component (i.e. its cleanliness).

Chlorides

Sampler ID: 131401

Report Date: 13.01.2022

SCOPE:

The test result shows the total amount of chlorides collected by the sampler in ug/cm2. This test is an important indicator for inorganic contaminants with metal corrosion potential caused by contamination which contains chlorides (salt).

TEST RESULTS:

Total Chloride: 0.3158 ug/cm2

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

INFORMATION:

The following chloride limits, relevant in terms of corrosion chemistry, have been established by international organizations* and insurers:

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

Since chloride (salt) corrodes metals, it is recommended that electronic equipment be cleaned or replaced if chloride levels exceed 5 µg/cm2. Possible sources include smoke, chemicals and acids. Elevated levels of chlorides 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. Chlorides 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.

Because dissolved salts and other inorganic chemicals conduct electrical current, conductivity increases as salinity increases. Organic compounds like oil do not conduct electrical current very well and therefore have a low conductivity when in water.

* Source: “Comparative investigations of corrosive fire gas condensates” EMPA - Swiss Federal Laboratories for Materials Testing and Research.

pH

Sampler ID: 131401

Report Date: 13.01.2022

SCOPE:

This test is an important indicator for metal corrosion potential caused by contamination which is acidic (low pH) or caustic (high pH).The test result shows the pH of the airborne contaminants collected by the sampler during the sampling period.

TEST RESULT:

pH of contamination: 7.128 pH

Good. pH is within the 5 to 8.5 range and has little corrosive impact on most metals.

Information

When contaminants have a pH between 5 and 8.5, the pH has little corrosive impact on most metals. However, the corrosion rate increases rapidly when the pH is outside of that range. pH levels of 5 or below can lead to extreme corrosion rates and premature pitting of metallic objects. Studies* have shown that even small amounts of low pH (acidic) contaminants can corrode metals.

Metals typically develop a passivation layer with moderately alkaline (high pH) exposure, which lowers the corrosion rate as compared to acidic (low pH) exposure. While the passivation layer provides a measure of immunity to further corrosion, corrosion rates can be expected to be comparable in the transpassive region (i.e. highly alkaline versus highly acidic).

Possible sources of corrosive contaminants include smoke, chemicals and acids. This measurement is particularly important in assessing insurance claims resulting from damages caused by smoke or other particle events. In chemistry, pH is a scale used to specify how acidic or basic a water-based solution is. Acidic solutions have a lower pH, while basic solutions have a higher pH.

* Source: “Comparative investigations of corrosive fire gas condensates” EMPA - Swiss Federal Laboratories for Materials Testing and Research.