

Handling of colloidal silica

Recommendations when handling packaged goods

Supplying the right solutions goes beyond selling products, that's why we also help our partners overcome challenges along the entire life cycle. Product stewardship is important to us and we want to ensure that our products are handled safely and in a proper way.

Safety

Colloidal silica products are aqueous dispersions of amorphous silica. Colloidal silica is not classified as harmful, but as mildly irritating. Because the products can have a drying effect on the skin, protective gloves should always be used. In case of skin contact, wash the area of contact with plenty of water. The use of safety glasses is always recommended. In case of eye contact, rinse with large amounts of water and seek professional medical advice. For further information, please reference the Safety Data Sheets for each product.

Storage recommendations

Shelf life

The maximum shelf life of a colloidal silica product varies between the different products and is referenced in the product data sheets. Storage of the product longer than the shelf life or in unfavorable conditions could affect the performance of the product. Avoid strong UV-light as this might reduce the shelf life due to organic growth. Ensure good hygiene during handling to avoid bacteria contamination.

Temperature

Colloidal silica is a freeze sensitive material. If allowed to freeze, the product will irreversibly agglomerate or gel. If product has been frozen, it will most likely be rendered useless and must be disposed of. If exposed to high storage temperature for extended periods, the shelf life of the product may be shortened. To reduce temperature effects to colloidal silica products and maximize shelf life, they should be stored at a recommended storage temperature of 20°C (68°F). Ambient conditions of +5°C to 35°C (+40°F to 95°F) are generally also acceptable, but please refer to the product data sheets for individual product storage recommendations.

General handling

Opened containers

The shelf life after opening is very much dependent on storage conditions and handling. Keep the lid on packaged goods tightly sealed to avoid contamination and oxygen addition that could lead to organic growth. If using an IBC container as an intermediate storage tank, please refer to the tank cleaning information on next page. We recommend applying a safety filtration before adding the product to your process or application.

Mixing with other chemicals

One of the most useful properties of colloidal silica is its high surface area. When handling colloidal silica it is important to understand that the high surface area also may cause the product to gel or agglomerate if exposed to unfavorable conditions. Levasil® colloidal silica is generally very stable but mixing with even small amounts of e.g. salt, strong acids or alkaline materials could trigger an agglomeration reaction. Also dilution of colloidal silica with hard fresh water or addition of glycol ether to the product can significantly reduce the storage stability and therefore the mixture should be used within a few days.

When intending to mix colloidal silica with other chemicals we recommend to always performing a lab scale evaluation first, ensuring that neither undesired gelling nor organic growth will start, as that will reduce the performance of the product.

Disposal of product

If the product has started to agglomerate, due to contamination, exposure to heat or due to other reasons, we recommend disposing of the residues in the tank. Do not blend with fresh product as the total volume then can be affected.

Dosing equipment

When installing equipment for colloidal silica, it is important to avoid trapping product in low points in pipes or hoses to reduce the risk of organic growth. If allowed to dry, colloidal silica can form silica deposits that are very difficult to remove. Avoid leaving pipes filled with product when not in use as dried silica solids can result in blocked pipes, stiff valves etc. Pipe systems, instruments, pumps and other wetted equipment should be made of stainless or acid resistant stainless steel. Compatible gasket materials are aramid, graphite, PTFE or FPM/FKM. A compatibility list of construction materials is available upon request.

Inspection and cleaning

Inspection

IBC containers used as intermediate storage tanks shall be inspected annually to track build-ups of agglomerated or gelled colloidal silica on the walls and the bottom of the container. Solids and gels can adversely affect flow and are excellent breeding grounds for organic growth. If there is any suspicion of organic growth in the IBC container, this could be indicated by flocculus floating on the surface or a biological odor. Regular sampling and testing for bacteria is recommended. Pipes, pumps, filters and valves that have contained colloidal silica must also be checked on an annual basis.

Cleaning

The simplest method of cleaning pipes, valves and pumps is to rinse them with water directly after use. Pay special attention to dead zones in the piping system. IBC containers that are used as intermediate storage tanks can retain large volumes of fixed deposits and could be cleaned as described below:

IBC container cleaning procedure:

1. Empty the IBC container and flush with water.
2. Drain flush water from the container and then close drain.
3. Inspect the walls and the bottom of the IBC container.
4. Use a water high-pressure spray to remove deposits and other signs of bacteria. Ensure that all solids and deposits are removed.
5. Drain the rinse water from IBC container and then close drain.

If tenacious deposits are present, replace the IBC container.

We are here to help

Product stewardship is important to us and we want to ensure that our products are handled in a safe and proper way. If you need any help or have questions regarding e.g. contamination or cleaning, feel free to contact us either by contacting your local sales representative or by sending an email to: colloidal.silica@nouryon.com

Nouryon

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