

In conformity to Regulation EU 2020/878

### Section 1: Product and Company Identification:

#### 1.1 Product Identifier

|                                  |                                       |
|----------------------------------|---------------------------------------|
| Product Form:                    | Mixture                               |
| Identification of Substance:     | Silicon Dioxide and Water             |
| Product Name:                    | NexSil™ 12HS                          |
| Synonym:                         | Colloidal Silica Sol                  |
| CAS Number:                      | 7631-86-9                             |
| Index Number:                    | Not available                         |
| EINECS Number:                   | 231-545-4                             |
| REACH Registration Number:       | 01-2119379499-16-0220                 |
| Formula:                         | SiO <sub>2</sub>                      |
| Nanoforms:                       | SiO <sub>2</sub> exists as a nanoform |
| Unique formula identifier (UFI): | Not required                          |

#### 1.2 Relevant identified uses of the substance or mixture and uses advised against

|                      |                                                          |
|----------------------|----------------------------------------------------------|
| Recommended Use:     | Papermaking. Ceramics.                                   |
| Restrictions on Use: | For industrial use only, not for food, drug or home use. |

#### 1.3 Details of the supplier of the safety data sheet

|                         |                                                                                                                   |
|-------------------------|-------------------------------------------------------------------------------------------------------------------|
| Company Identification: | Nyacol Nano Technologies, Incorporated<br>Megunko Road, P.O. Box 349, Ashland, MA 01721 U.S.A.<br>+1 508-881-2220 |
| Email Contact:          | <a href="mailto:info@nyacol.com">info@nyacol.com</a>                                                              |
| Internet:               | <a href="http://www.nyacol.com">www.nyacol.com</a>                                                                |

#### 1.4 Emergency telephone number

|                       |                                                                                                                  |
|-----------------------|------------------------------------------------------------------------------------------------------------------|
| In Case of Emergency: | USA/Canada CHEMTREC: +1 (703) 527-3887<br>International CHEMTREC: +1 (703) 741-5970<br>24 Hours/Day: 7 Days/Week |
|-----------------------|------------------------------------------------------------------------------------------------------------------|

### Section 2: Hazard(s) Identification

#### 2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)  
Not classified.

Classification according to Regulation (EC) No. 1272/2008 (CLP)  
Not classified.

#### 2.2 Label Elements

Not labelled.  
Signal Word: Not applicable.  
Hazard Pictogram: Not applicable.  
Hazard Statement(s): Not applicable.  
Precautionary Statement(s): Not applicable.

#### 2.3 Other Hazards

Components do not meet the criteria for a PBT or vPvB substance.

#### 2.4 Unknown acute toxicity (GHS US)

No information available.

### Section 3: Composition / Information on Ingredients

#### 3.1 Chemical characterization: Mixtures

Description: Mixture consisting of the following components.

| Component Name:  | Product Identifier                                          | GHS Classification | Percent By Weight |
|------------------|-------------------------------------------------------------|--------------------|-------------------|
| Silicon Dioxide: | CAS: 7631-86-9<br>EINECS: 231-545-4<br>Index: Not available | Not classified     | 40                |

## NexSil™ 12HS

|        |                                                             |                |    |
|--------|-------------------------------------------------------------|----------------|----|
| Water: | CAS: 7732-18-5<br>EINECS: 231-791-2<br>Index: Not available | Not classified | 60 |
|--------|-------------------------------------------------------------|----------------|----|

Nanoform characteristics:

| Name of nanoform: Synthetic amorphous silicon dioxide |           |        |
|-------------------------------------------------------|-----------|--------|
|                                                       | Value     |        |
| Number based particle size distribution, nm           | d10       | 4-56   |
|                                                       | d50       | 8-75   |
|                                                       | d90       | 12-110 |
| Shape and aspect ratio                                | Spherical |        |
| Crystallinity                                         | Amorphous |        |
| Surface functionalization                             | None      |        |
| Specific surface area, m <sup>2</sup> /g              | 50-600    |        |

Other substances or impurities: Do not affect product classification

Stabilizing Additives: None

The supplier currently has no knowledge on additional ingredients that are classified and that contribute to the classification of this substance.

See Section 16 for a list of hazards if identified above.

## Section 4: First-Aid Measures

### 4.1 Description of first aid measures

**Eye Contact:** Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of the eye and lids with water. Get medical attention.

**Skin Contact:** Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention.

**Ingestion:** If a person is conscious and can swallow, immediately give two glasses of water (16 oz. or 500 ml.) but do not induce vomiting. If vomiting occurs, give fluids again. Do not give anything by mouth to an unconscious or convulsing person. Get medical attention.

**First Aid Facilities:** Eye wash station.

**Advice to Physicians:** No further relevant information available.

### 4.2 Most important symptoms and effects, both acute and delayed

Acute or delayed effects are not anticipated.

### 4.3 Indication of any immediate medical attention and special treatment needed.

No further relevant information available.

## Section 5: Fire-Fighting Measures

### 5.1 Extinguishing Media

**Suitable Extinguishing Media:** All are suitable. Use water spray, dry chemical, foam or carbon dioxide to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

**Unsuitable extinguishing media:** None known.

### 5.2 Special hazards arising from the substance or mixture

**Flammability of the product:** Material will not burn in a fire. Containers can build pressure if exposed to heat or fire.

Special Hazard Arising from the Chemical:

None known.

Fire Hazard:

None known.

Explosion Hazard

None known.

Reactivity:

None known.

**5.3 Advice for firefighters**

Special Protective Equipment for Fire-fighters:

Wear standard full firefighter turn-out gear (full bunker gear) and respiratory protection (SCBA).

**Section 6: Accidental Release Measures****6.1 Personal precautions, protective equipment and emergency procedures**

Eye protection and impervious gloves. An approved air-purifying respirator should be worn if dust or mist is present.

**6.1.1 For non-emergency personnel**

Wear protective equipment. Keep unprotected persons away.

**6.2 Environmental precautions**

Prevent entry into sewers and waterways.

**6.3 Methods and material for containment and cleaning up**

Ventilate area. Avoid breathing vapor or mist. Wear appropriate personal protective equipment, including appropriate respiratory protection. Contain spill if possible. Wipe up or absorb on suitable material and shovel up. Prevent entry into sewers and waterways. Avoid contact with skin, eyes or clothing.

**6.4 Reference to other sections**

For more information on exposure controls and personal protection or disposal considerations, check section 8 and 13 of this SDS.

**Section 7: Handling and Storage****7.1 Precautions for safe handling**

Minimum feasible handling, and temperatures should be maintained. Avoid generating mist during use. Use only in well ventilated area.

**7.1.1 Protective measures**

Use only in well ventilated areas. As a precautionary measure, the wearing of standard work gear is suggested.

**7.1.2 Advice on general occupational hygiene**

Avoid inhalation, ingestion and contact with eyes or skin. General occupational hygiene measures are required to ensure a safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no eating, drinking and smoking at the workplace and wearing standard working clothes and shoes unless otherwise stated. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home.

**7.2 Conditions for safe storage, including any incompatibilities**

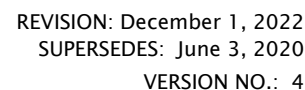
Keep from freezing. Periods of exposure to high temperatures should be minimized. Provide sufficient ventilation in storage and workrooms. Store in a cool dry area.

**7.3 Specific end use(s)**

No additional information available. Refer to Section 1.2 of this SDS.

**Section 8: Exposure Controls / Personal Protection****8.1 Control Parameters****8.1.1 National Limit Values**

Silicon Dioxide, CAS 7631-86-9



|                                                    |                                                                |
|----------------------------------------------------|----------------------------------------------------------------|
| Color:                                             | Translucent white                                              |
| Odor:                                              | Odorless                                                       |
| Melting point/freezing point:                      | Not determined                                                 |
| Boiling point:                                     | 100 °C (212 °F)                                                |
| Flammability:                                      | Not flammable                                                  |
| Lower and upper explosion limit:                   | Not applicable                                                 |
| Flash point:                                       | Not applicable                                                 |
| Auto-ignition temperature:                         | Not applicable                                                 |
| Decomposition temperature:                         | Not applicable                                                 |
| pH:                                                | 10                                                             |
| Kinematic viscosity, mm <sup>2</sup> /s            | <25                                                            |
| Solubility:                                        | Fully miscible with water. Nanoform solubility 0.01% in water. |
| Partition coefficient, n-octanol/water (log value) | Not determined                                                 |
| Vapor pressure                                     | Not determined                                                 |
| Relative density (specific gravity)                | 1.3                                                            |
| Relative vapor density                             | Not determined                                                 |
| Particle characteristics                           | See Section 3 for nanoform characteristics                     |

### Section 10: Stability and Reactivity

#### 10.1 Reactivity

Not determined.

#### 10.2 Chemical Stability

Stable.

#### 10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

#### 10.4 Conditions to avoid

No recommendation.

#### 10.5 Incompatible materials

Water reactive materials such as alkali metals.

#### 10.6 Hazardous decomposition products

Not determined.

### Section 11: Toxicological Information

#### 11.1 Information on toxicological effects

Acute toxicity:

LD50, Rat, Oral Values for classification:

Silicon Dioxide, 7631-86-9

>5000 mg/kg

Skin corrosion/irritation:

Avoid contact with skin, may cause skin irritation or dryness.

Eye damage / eye irritation

Avoid contact with eyes, may cause irritation.

Inhalation:

Use breathing protection when aerosol or mist is formed. Breathing dried dust or spray mist causes irritation. OSHA exposure limit: Amorphous Silica = 20 mppcf (5 mg/M<sup>3</sup>) SiO<sub>2</sub> respirable dust or mist. 8-hour time weighted average. Exposure analysis method: NIOSH Manual of Analytical Methods, 3rd edition, Method 7501.

Sensitization:

No sensitizing effect known.

Chronic Effects:

No further relevant information available.

Carcinogenicity

No data indicating any concern for carcinogenicity.

#### 11.2 Information on other hazards

No further relevant information available.

### Section 12: Ecological Information

#### 12.1 Aquatic Toxicity

Not harmful to aquatic organisms.

#### 12.2 Persistence and degradability

No further relevant information available.

#### 12.3 Bioaccumulative potential

No further relevant information available.

#### 12.4 Mobility in soil

No further relevant information available.

#### 12.5 Results of PBT and vPvB Assessment

The PBT and vPvB criteria of Annex XIII to the Regulation do not apply to this product.

#### 12.6 Endocrine disrupting properties

No further relevant information available.

#### 12.7 Other adverse effects

No further relevant information available.

### Section 13: Disposal Considerations

This information presented only applies to the materials as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

Disposal Considerations:

The product should be recycled or burned in an incinerator or scrubber approved for chemical waste.

United States:

The product is not a RCRA hazardous waste.

### Section 14: Transport Information

The product is not restricted for transportation.

#### Sections 14.1 – 14.4

##### Regulations

U.S. D.O.T.: Not regulated.

ICAO/IATA: Not regulated.

IMO/IMDG: Not regulated.

ADR: Not regulated.

#### 14.5 Environmental Hazards

Not an environmental hazard for transport.

#### 14.6 Special precautions for user

None.

#### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable.

### Section 15: Regulatory Information

#### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

##### Worldwide Chemical Inventories

EINECS (EU): All ingredients listed

TSCA (USA): All ingredients listed – active

DSL (Canada): All ingredients listed

|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AICS (Australia):                                | All ingredients listed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ENCS (Japan):                                    | All ingredients listed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| ECL (Korea):                                     | All ingredients listed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| PICCS (Philippines):                             | All ingredients listed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| IECSC (China):                                   | All ingredients listed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Technical Instructions (air):                    | Not determined.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Water hazard class:                              | Based on available data, Silicon Dioxide is not classified as dangerous for the environment according regulation (EC) 1272/2008.                                                                                                                                                                                                                                                                                                                                                                                              |
| State Right-to-Know Laws:                        | Section 3 of this SDS lists all components of the product.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| California Proposition 65:                       | No ingredients listed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| SARA Section 311/312 (29 CFR 1910.1200) Hazards: | Not classified according to GHS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| SARA 313, 304 and CERCLA 102 (A):                | No ingredients listed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| FDA:                                             | <p>21 CFR 175.105 – Silicon Dioxide may be used as a component of adhesives used to prepare articles intended for the use in packaging, transporting or holding food.</p> <p>21 CFR 177.1200 – Silicon Dioxide may be used as a component of a polymer used as a base sheet or as a coating applied to a base sheet for use in food packaging.</p> <p>21 CFR 182.90 – Silicon Dioxide is generally recognized as safe (GRAS) as a substance migrating to food from paper and paper board products used in food packaging.</p> |
| WHMIS:                                           | Not controlled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Controlled Products Regulations:                 | This SDS contains all the information items specified in Schedule 1, Column 3 of the Controlled Products Regulations in a 16-heading format.                                                                                                                                                                                                                                                                                                                                                                                  |

### 15. 2 Chemical safety assessment

A chemical safety assessment has not been carried out for silicon dioxide.

## Section 16: Other Information

List of hazard phrases: None, as silicon dioxide is not classified according to regulation (EC) 1272/2008 (CLP).

|                                                                        |                                                                                                                                                                                            |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| National Fire Protection Association (U.S.A.) 704 HMIS® Hazard Rating: | Health-1, Flammability-0, Reactivity-0, Special-None<br>Health-1, Flammability-0, Reactivity-0, Protective Equipment – B; safety glasses, gloves.                                          |
| Recommended Use:                                                       | The product is recommended for use in papermaking and ceramics. Other uses have not been investigated and may have other hazards. For industrial use only, not for food, drug or home use. |
| Work Alert:                                                            | Workers using the product should read and understand this SDS and be trained in the proper use of this material.                                                                           |
| Other Special Considerations:                                          | None known.                                                                                                                                                                                |
| SDS Prepared By:                                                       | Andrew A. Guzelian<br>Nyacol Nano Technologies, Incorporated<br>Telephone: 508-881-2220 U.S.A.                                                                                             |
| Revision Date:                                                         | December 1, 2022                                                                                                                                                                           |
| Supersedes:                                                            | June 3, 2020                                                                                                                                                                               |

**NexSil™ 12HS**

This SDS has been prepared with data from Nyacol Nano Technologies, Inc.'s laboratories, raw material suppliers, and government publications. Information herein is accurate to the best of our knowledge. Suggestions are made without warranty or guarantee of results. Before using, the user should determine the suitability of the products for the intended use, and the user assumes the risk and liability in connection therewith. We do not suggest violation of any existing patents or give permission to practice any patented invention without license.

NYACOL® is a registered trademark of Nyacol Nano Technologies, Inc.