In conformity to Regulation EU 2020/878

Section 1: Product and Company Identification:

1.1 Product Identifier

Product Form:	Mixture
Identification of Substance:	Colloidal silica in water
Product Name:	NexSil™ 20NH4
Synonym:	Colloidal silicon dioxide
CAS Number:	7631-86-9
Index Number:	Not available.
EINECS Number:	231-545-4
REACH Registration Number:	01-2119379499-16-0220
Formula:	SiO_2
Nanoforms:	SiO2 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 Megunko Road, P.O. Box 349, Ashland, MA 01721 U.S.A. 508-881-2220
Email Contact:	info@nyacol.com
Internet:	www.nyacol.com

1.4 Emergency telephone number

In Case of Emergency:	USA/Canada CHEMTREC: +1 (703) 527-3887 International CHEMTREC: +1 (703) 741-5970 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 further relevant information available.

Section 3: Composition / Information on Ingredients

Description: Mixture consisting of the following components.

Component Name:	Product Identifier	GHS Classification	Percent By Weight

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Silicon Dioxide:	CAS: 7631-86-9 EINECS: 231-545-4 Index: Not available	Not classified	40
Water:	CAS: 7732-18-5 EINECS: 231-791-2 Index: Not available	Not classified	60
Ammonium Hydroxide: REACH: Not registered by NNT	CAS: 1336-21-6 EINECS: 215-647-6 Index: 007-001-01-2	Skin corr. 1B - H314	<0.30

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, m2/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: In case of contact, immediately flush skin with plenty of water for several minutes. Remove contaminated clothing. Get medical attention if skin irritation develops or persists.

Inhalation: If inhaled, remove to fresh air; remove person from exposure source. Get medical attention immediately.

Ingestion: Consult medical professional. Do not induce vomiting unless directed by medical professional. Never give anything by mouth to an unconscious person.

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

In conformity to Regulation EU 2020/878

Suitable Extinguishing Media:	All are acceptable. Use fire fighting measures that suit the environment.
Unsuitable extinguishing media:	None known.

5.2 Special hazards arising from the substance or mixture

Flammability of the product:	Product is not flammable. Containers can build pressure if exposed to heat or fire.
Special Hazard Arising from the Chemical:	No further relevant information available.
Fire Hazard:	No further relevant information available.
Explosion Hazard	No further relevant information available.
Reactivity:	No further relevant information available.

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. 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. An approved air-purifying respirator should be worn if vapor or mist is present. Do not breath vapor or mist. Do not freeze.

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. 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.

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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

Country	Occupational exposure limit	Reference period	Reference
USA	80 mg/m^3/%SiO2	8 hours	OSHA PEL - http://www.cdc.gov/niosh/idlh/7631869.html
UK	6 mg/m^3 (inhalable)	8 hours	Health and Safety Executive- http://www.hse.gov.uk/pubns/priced/eh40.pdf
Germany	4 mg/m^3 (inhalable)	8 hours	Senate Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (MAK Commission): http://www.dfg.de/en/dfg_profile/statutory_bodies/senate/health_hazards/index.html
Belgium	10 mg/m^3	8 hours	Service public fédéral Emploi, Travail et Concentration sociale: http://www.emploi.belgique.be/WorkArea/showcontent.aspx?id=23914
Austria	2 mg/m^3 (inhalable)	8 hours	http://www.arbeitsinspektion.gv.at/NR/rdonlyres/F173280B-D4FB-44D2-8269-8DB2CB1D2078/0/GKV2011.pdf

Ammonium Hydroxide, CAS 1336-21-6		
USA OSHA	OSHA PEL Ceiling (mg/M$^{3)}$	17 mg/M^3 TWA

8.1.2 DNELs and PNECs

Silicon Dioxide, CAS 7631-86-9

DNEL (Derived No Effect Level)

Route of Exposure/Environmental protection target	DNEL
Inhalation - Long term/systemic effects	4 mg/m^3

PNEC (Predicted No Effect Concentration)

No information available.

8.2 Exposure Controls

Engineering Controls: Ventilation adequate to meet occupational exposure limits.

Hygiene Measures: Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be changed and laundered or dry-cleaned.

Respiratory: Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air-supplied respirators should always be worn when airborne concentrations of the contaminant or oxygen content is unknown.

Hands: Wear impervious gloves such as neoprene.

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Eyes:	Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.
Skin:	Wear clean body-covering clothing; impervious gloves such as neoprene. Workers should wash exposed skin several times daily with soap and water. Soiled work clothing should be laundered or dry-cleaned.
Environmental Exposure Controls:	Adverse effects of this material on the environment have not been evaluated. Proper disposal techniques to isolate and recover material should be implemented.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Physical State	Liquid
Color:	Translucent white
Odor:	Odorless
Metling 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:	9.3
Kinematic viscosity, mm^2/s	<25
Solubility:	Fully miscible with water. Nanoform solubility 0.01% in water.
Partition coefficient, n-octanol/water (log value)	Not determined
Vapor pressure	2260 kPs (17 mm Hg) at 20°C
Relative density (specific gravity)	1.3
Relative vapor density	Not determined
Particle characteristics	See Section 3 for nanoform characteristics

9.2 Other information

Not applicable.

Section 10: Stability and Reactivity

10.1 Reactivity

Not determined.

10.2 Chemical Stability

Stable under normal ambient and anticipated storage and handling conditions.

10.3 Possibility of hazardous reactions

Hazardous polymerization will not occur.

10.4 Conditions to avoid

No recommendation.

10.5 Incompatible materials

Not determined.

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

In conformity to Regulation EU 2020/878

Ammonium Hydroxide, 1336-21-6	>90 mL/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^3) SiO_2 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.

Section 12: Ecological Information

12.1 Aquatic Toxicity

Silicon Dioxide CAS 7631-86-9
Not harmful to aquatic organisms.

Ammonium Hydroxide CAS 1336-21-6
EC50/48 hrs., 89 mg/l (Daphnia Magna (Water flea))
LC50/96 hrs., <1 mg/l (fish)

12.2 Persistence and degradability

There is no data on the degradability of this product.

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 solidified for disposal in a chemical waste approved landfill.
United States:	Not a RCRA hazardous waste.

Section 14: Transport Information

In conformity to Regulation EU 2020/878
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):	Ammonium Hydroxide, CAS 1336-21-6 is listed in SARA 313.
FDA:	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. 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. 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.
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

In conformity to Regulation EU 2020/878
A chemical safety assessment has not been carried out for silicon dioxide.

Section 16: Other Information

List of relevant phrases from section 2 and 3:
H314 Causes severe skin burns and eye damage.
R34 Causes burns.

National Fire Protection Association (U.S.A.) 704	Health-1, Flammability-0, Reactivity-0, Special-None
HMIS® Hazard Rating:	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 Nyacol Nano Technologies, Incorporated Telephone: 508-881-2220 U.S.A.
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