

MATERIAL SAFETY DATA SHEET

IDENTIFICATION

NAME

LUDOX* Colloidal Silica

GRADEHS-40, HS-30, TM, SM, ASM, AM,
FM, FMA, AS, LS, CL-X**CHEMICAL FAMILY**

Silicate

SYNONYMS

Silicon Dioxide; Amorphous Silica

CAS REGISTRY NO.

7631-86-9

CAS NAME

Silica

TSCA INVENTORY STATUS

Reported/Included

I.D. NOS./CODES

NIOSH Registry No.: VV7322000

SARA/TITLE III STATUS

See ADDITIONAL INFORMATION Section.

MANUFACTURER/DISTRIBUTOR

E. I. du Pont de Nemours & Co. (Inc.)

PRODUCT INFORMATION PHONE

(800) 441-9442

ADDRESS

Wilmington, DE 19898

MEDICAL EMERGENCY PHONE

(800) 441-3637

TRANSPORTATION EMERGENCY PHONE

CHEMTREC (800) 424-9300

*Reg. U.S. Pat. & Tm. Off., Du Pont Company. LUDOX^(R) Colloidal Silica is made only by Du Pont.

PHYSICAL DATA

BOILING POINT, 760 mmHg
100°C (212°F) Liquid component is water.

MELTING POINT
0°C (32°F)

SPECIFIC GRAVITY
1.10-1.40

VAPOR PRESSURE
24 mmHg at 25°C (77°F)
48 mmHg at 38°C (100°F)

VAPOR DENSITY
Vapor is water

SOLUBILITY IN WATER
100%

pH INFORMATION
8.4-10.4 (see below for specific grades)

EVAPORATION RATE (Butyl Acetate = 1)
<1

FORM
Liquid

APPEARANCE
Clear to opalescent

COLOR
Colorless

ODOR
Odorless

<u>LUDOX^(R)</u> <u>Grade</u>	<u>pH</u>	<u>Titrateable Alkali</u> <u>(as Na₂O) Wt.%</u>	<u>Wt.% Silica</u> <u>(as SiO₂)</u>
HS-40	9.7	0.41	40
HS-30	9.8	0.32	30
TM	9.1	0.21	50
SM	10.0	0.56	30
ASM	10.0	0.56	30
AM	8.8	0.24	30
FM	10.1	0.40	15
FMA	10.1	0.40	15
AS	9.1	*	40
LS	8.1	0.10	30
CL-X	9.2	0.19	46

*Sol. contains 0.16% NH₃ and 0.08% Na₂O (occluded inside the particles).

HAZARDOUS COMPONENTS

<u>MATERIAL(S)</u>	<u>CAS No.</u>	<u>APPROXIMATE %</u>
Amorphous Silica	7631-86-9	15 to 50
Formaldehyde*	50-00-0	0.02
Titrateable Alkali (as Na ₂ O)	-----	0.10 to 0.58

*LUDOX^R SM, AM, and AS grades do not contain formaldehyde.

NONHAZARDOUS COMPONENTS

Water	7732-18-5	50-85
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HAZARDOUS REACTIVITY

INSTABILITY

No known hazardous instability.

INCOMPATIBILITY

No known hazardous incompatibility.

DECOMPOSITION

No known hazardous decomposition.

POLYMERIZATION

Will not occur.

FIRE AND EXPLOSION DATA

FLASH POINT

Will not burn

AUTOIGNITION TEMPERATURE

Not applicable

AUTODECOMPOSITION TEMPERATURE

Not applicable

FIRE AND EXPLOSION HAZARDS

None

EXTINGUISHING MEDIA

As appropriate for combustibles in area.

SPECIAL FIREFIGHTING INSTRUCTIONS

None

FLAMMABLE LIMITS IN AIR, % BY VOL.

LOWER Not applicable

UPPER Not applicable

ADDITIONAL INFORMATION AND REFERENCES

STORAGE CONDITIONS

Keep containers tightly closed. Store at temperatures above 2°C (35°F) to avoid Irreversible precipitation of silica.

NPCA - HMIS RATINGS

Health (Acute)	1
Flammability	0
Reactivity	0
Personal Protection	-

Personal Protection rating to be supplied by user depending on use conditions.

SARA/TITLE III HAZARD CATEGORIES AND LISTS

Product Hazard Categories:

Chronic Health	- Yes
Acute Health	- Yes
Fire Hazard	- No
Pressure Hazard	- No
Reactivity	- No

Lists

Extremely Hazardous Substance	- No
CERCLA Hazardous Substance	- No
Toxic Chemicals	- No

CANADIAN WHMIS CLASSIFICATION

LUDOX[®] GRADE

RATING

FM	Not regulated
FMA	Not regulated
HS-40	D-2B
HS-30	D-2B
SM	D-2B
ASM	D-2B
AM	D-2B
TM	D-2B
AS	D-2B
LS	D-2B
CL-X	D-2B

For further information, see Du Pont "LUDOX^(R) Colloidal Silica" and "LUDOX CL-X Colloidal Silica" Data Sheets; "LUDOX^(R) Properties, Uses, Storage, and Handling" Bulletin.

DATE OF LATEST REVISION/REVIEW:
PERSON RESPONSIBLE FOR MSDS:

11/88
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Chestnut Run Plaza
P.O. Box 80709
Wilmington, DE 19880-0709
(302) 999-4946

H-12258

Date: 11/88

HEALTH HAZARD INFORMATION

PRINCIPAL HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Overexposure, and Medical Conditions Aggravated by Exposure)

May irritate skin and eyes. Overexposure to aerosols, mists, or dusts may cause a tissue response in the lungs.

Oral LD₅₀: > 10,000 mg/kg in rats

The compound is a slight skin irritant and a mild eye irritant in animals. Toxic effects observed in animals exposed by inhalation include upper respiratory irritation and emphysema. Toxic effects described in animals exposed by ingestion include nonspecific effects such as weight loss and diarrhea. Toxic effects described in animals exposed by insufflation (intratracheal instillation) for one to two years include collagenized fibrosis of the lungs.

Human health effects of overexposure by eye contact may include eye irritation with discomfort, tearing, or blurring of vision. Human health effects of overexposure by skin contact may include skin irritation with discomfort or rash. Human health effects of overexposure by inhalation may include temporary lung irritation with cough, discomfort, difficulty breathing, or shortness of breath. Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARCINOGENICITY

Colloidal silica is not listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

With the exception of the SM, AM, and AS grades, LUDOX^R contains low levels of formaldehyde. Warning: Formaldehyde (gas) has been listed by the State of California as a substance known to cause cancer.

EXPOSURE LIMITS [PEL (OSHA), TLV (ACGIH), AEL (DU PONT), ETC.]

Dust resulting from dried LUDOX^(R) spills or deposits may be considered to be amorphous silica. The exposure limits for amorphous silica are:

OSHA 8-hour Time Weighted Average (TWA) = 20 million particles per cubic foot of air (mppcf); ACGIH TLV^(R) - TWA = 10 mg/m³ (total dust); Du Pont AEL = 3 mg/m³ (respirable dust), 6 mg/m³ (total dust).

When aerosols are intentionally produced such as in spray applications, respirable LUDOX particles may be produced. Animal studies are underway at Du Pont to facilitate establishment of an Acceptable Exposure Limit (AEL) for LUDOX Aerosols. Meantime, where there is inhalation exposure potential for LUDOX aerosols, Du Pont advises that precautions be taken similar to those used for crystalline (quartz) silica. Accordingly, exposure to LUDOX colloidal silica aerosols should be limited to 0.1 mg/m³ respirable SiO₂.

SAFETY PRECAUTIONS

Avoid contact with eyes, skin, and clothing.

Avoid breathing aerosols and mists (also dust from dried-down product).

Wash thoroughly after handling.

Wash contaminated clothing before reuse and before LUDOX^(R) dries.

HEALTH HAZARD INFORMATION (cont.)

FIRST AID

In case of contact: Immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water.

If inhaled: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

If swallowed: No specific intervention is indicated as the compound is not likely to be hazardous by ingestion. However, consult a physician if necessary.

PROTECTION INFORMATION

GENERALLY APPLICABLE CONTROL MEASURES

Good general ventilation should be provided to keep aerosol, mist and dust concentrations below the exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Chemical splash goggles and rubber gloves. Where there is potential for inhalation exposure to product dust, mist, or aerosols in excess of applicable exposure limits, use respirators approved by NIOSH for protection against dusts and mists.

DISPOSAL INFORMATION

SPILL, LEAK OR RELEASE

Flush with water to chemical sewer.

WASTE DISPOSAL

Comply with Federal, State and local regulations.

SHIPPING INFORMATION

Not regulated as a hazardous material by DOT or IMO.

SHIPPING CONTAINERS

Tank cars, tank trucks, 55-gallon PE lined steel drums.