

LTS RESEARCH LABORATORIES, INC.  
MATERIAL SAFETY DATA SHEET  
SILICON OXIDE

GENERAL INFORMATION

MANUFACTURER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.  
COMPANY'S STREET: 37 RAMLAND ROAD  
COMPANY'S CITY: ORANGEBURG  
COMPANY'S STATE: NEW YORK  
COMPANY'S ZIP CODE: 10962  
EMERGENCY CHEMTREC #: 800-262-8200  
COMPANY'S EMERGENCY TEL. #: 800-424-9300 (LOCAL)  
703-527-3887 (INTERNATIONAL)  
COMPANY'S TEL #: 845-494-2940  
DATE MSDS PREPARED: 11/22/05  
DATE MSDS REVISED: 06/14/11

1. IDENTIFICATION

CHEMICAL NAME: SILICON DIOXIDE  
CHEMICAL FAMILY: METAL OXIDE  
CHEMICAL FORMULA: SiO, SiO<sub>2</sub>, SiO<sub>x</sub>  
CAS NO: 10097-28-6/7631-86-9  
USAGE: MATERIAL FOR OPTICAL COATING  
APPEARANCE: TRANSLUCENT, WHITE TO OFF-WHITE

2. HAZARDS INFORMATION

HAZARD DESCRIPTION: Xn HARMFUL  
T TOXIC  
Xi IRRITANT  
RISK PHRASES: R 49 MAY CAUSE CANCER BY INHALATION  
R 48/20 ALSO HARMFUL; DANGER OF SERIOUS DAMAGE BY PROLONGED EXPOSURE THROUGH INHALATION  
R 20 HARMFUL BY INHALATION  
R 36/ 37/38 IRRITATING TO EYES, RESPIRATORY SYSTEM, AND SKIN  
R 22 HARMFUL IF SWALLOWED  
HMIS RATINGS:  
HEALTH: 1  
FLAMMABILITY: 0  
REACTIVITY: 0

EMERGENCY OVERVIEW REMOVE VICTIM TO FRESH AIR, KEEP WARM AND QUIET, GIVE OXYGEN IF BREATHING IS DIFFICULT AND SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

3. HEALTH HAZARD INFORMATION

POTENTIAL HEALTH EFFECTS SILICA IS THE CHIEF CAUSE OF PULMONARY DUST DISEASE. THE PROLONGED INHALATION OF DUSTS CONTAINING FREE SILICA MAY RESULT IN THE DEVELOPMENT OF DISABLING, PULMONARY FIBROSIS KNOWN AS SILICOSIS. THE ACTION OF CRYSTALLINE SILICA ON THE LUNGS RESULTS IN THE PRODUCTION OF A DIFFUSE, NODULAR FIBROSIS IN WHICH THE PARENCHYMA AND THE LYMPHATIC SYSTEMS ARE INVOLVED. THIS FIBROSIS IS, TO A CERTAIN EXTENT, PROGRESSIVE, AND

MAY CONTINUE TO INCREASE FOR SEVERAL YEARS AFTER EXPOSURE IS TERMINATED. THE FIRST AND MOST COMMON SYMPTOM IS SHORTNESS OF BREATH. FURTHER PROGRESS OF THE DISEASE RESULTS IN MARKED FATIGUE, EXTREME DYSPNEA AND CYANOSIS, LOSS OF APPETITE, PLEURITIC PAIN AND TOTAL INCAPACITY TO WORK. IF TUBERCULOSIS DOES NOT SUPERVENE, THE CONDITION MAY EVENTUALLY CAUSE DEATH EITHER FROM CARDIAC FAILURE OR FROM DESTRUCTION OF LUNG TISSUE, WITH RESULTANT ANOXEMIA.

EYE: MAY CAUSE EYE IRRITATION.  
SKIN: MAY CAUSE SKIN IRRITATION.  
INGESTION: MAY CAUSE IRRITATION OF THE DIGESTIVE TRACT. THE TOXICOLOGICAL PROPERTIES OF THIS SUBSTANCE HAVE NOT BEEN FULLY INVESTIGATED.  
INHALATION: SILICON DIOXIDE 0-100 10 MG/M<sup>3</sup> /% RESPIRABLE SIO 2+2 .1 MG/M<sup>3</sup> RES  
CHRONIC: NOT AVAILABLE.

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#### 4. FIRST AID

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EYES: FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING THE UPPER AND LOWER LIDS. GET MEDICAL AID.  
SKIN: GET MEDICAL AID IF IRRITATION DEVELOPS OR PERSISTS. RINSE AREA WITH LARGE AMOUNTS OF WATER FOR AT EAST 15 MINUTES.  
INHALATION: REMOVE FROM EXPOSURE TO FRESH AIR IMMEDIATELY. GET MEDICAL AID IF COUGH OR OTHER SYMPTOMS APPEAR.  
INGESTION: GIVE 1-2 GLASSES OF MILK OR WATER AND INDUCE VOMITING, SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST. NEVER INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. NOTES TO PHYSICIAN: TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

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#### 5. FIRE FIGHTING MEASURES

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GENERAL INFORMATION: WEAR A SELF-CONTAINED BREATHING APPARATUS IN PRESSURE-DEMAND, MSHA/NIOSH (APPROVED OR EQUIVALENT), AND FULL PROTECTIVE GEAR.  
EXTINGUISHING MEDIA: NON-FLAMMABLE  
AUTO IGNITION TEMPERATURE: NOT AVAILABLE.  
FLASH POINT: NOT AVAILABLE.  
NFPA RATING: NOT PUBLISHED.  
EXPLOSION LIMITS:  
LOWER: NOT AVAILABLE.  
UPPER: NOT AVAILABLE.

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#### 6. HANDLING AND STORAGE

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HANDLING: USE WITH ADEQUATE VENTILATION. MINIMIZE DUST GENERATION AND ACCUMULATION.  
AVOID BREATHING DUST, VAPOR, MIST, OR GAS. AVOID CONTACT WITH EYES, SKIN, AND CLOTHING.  
AVOID INGESTION AND INHALATION.  
STORAGE: STORE IN A TIGHTLY CLOSED CONTAINER. STORE IN A COOL, DRY, WELL-VENTILATED AREA AWAY FROM INCOMPATIBLE SUBSTANCES.

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#### 7. EXPOSURE CONTROL AND PERSONAL PROTECTION

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ENGINEERING CONTROLS: USE ADEQUATE VENTILATION TO KEEP AIRBORNE CONCENTRATIONS LOW.  
EXPOSURE LIMITS:  
EYES: FLUSH EYES WITH LUKEWARM WATER, LIFTING UPPER AND LOWER EYELIDS, FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

SKIN: REMOVE CONTAMINATED CLOTHING, BRUSH MATERIAL OFF SKIN, WASH AFFECTED AREA WITH MILD SOAP AND WATER, AND SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST. CLOTHING WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT SKIN EXPOSURE. RESPIRATORS: FOLLOW THE OSHA RESPIRATOR REGULATIONS FOUND IN 29CFR 1910.13 FOR EUROPEAN STANDARD EN 149. ALWAYS USE A NIOSH OR EUROPEAN STANDARD EN 149 APPROVED RESPIRATOR WHEN NECESSARY.

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#### 8. PHYSICAL AND CHEMICAL PROPERTIES

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PHYSICAL STATE:	SOLID
APPEARANCE:	TRANSLUCENT OR WHITE TO OFF-WHITE
ODOR:	NONE
PH:	NOT AVAILABLE.
VAPOR PRESSURE:	NOT AVAILABLE.
VAPOR DENSITY:	NOT AVAILABLE.
EVAPORATION RATE:	NOT AVAILABLE.
VISCOSITY:	NOT AVAILABLE.
BOILING POINT:	2230 °C
FREEZING/MELTING POINT:	1710 °C
DECOMPOSITION TEMPERATURE:	NOT AVAILABLE.
SOLUBILITY:	INSOLUBLE
SPECIFIC GRAVITY/DENSITY:	2.2-2.6 G/CM <sup>3</sup>

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#### 9. STABILITY AND REACTIVITY

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CHEMICAL STABILITY:	STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.
CONDITIONS TO AVOID:	EXPOSURE TO MOIST AIR OR WATER.INCOMPATIBILITIES
MATERIAL TO AVOID:	HYDROGEN FLUORIDE, INTERHALOGENS, HALOGENS, OXIDIZING AGENTS
DANGEROUS REACTIONS:	REACTS VIOLENTLY WITH INTERHALOGENS
HAZARDOUS	
DECOMPOSITION PRODUCTS:	NONE KNOWN

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#### 10. TOXICOLOGICAL INFORMATION

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CARCINOGENICITY:	NO CLASSIFICATION DATA ON CARCINOGENIC PROPERTIES OF THIS MATERIAL IS AVAILABLE FROM THE EPA, IARC, NTP, OSHA, OR ACGIH.
ADDITIONAL INFORMATION:	TO THE BEST OF OUR KNOWLEDGE THE ACUTE AND CHRONIC TOXICITY OF THIS SUBSTANCE IS NOT FULLY KNOWN.

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#### 11. TRANSPORT INFORMATION

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US DOT:	NONE
IMO:	NONE
IATA:	NONE
RID/ADR:	NONE

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#### 12. OTHER INFORMATION

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THIS SAFETY DATA SHEET SHOULD BE USED IN CONJUNCTION WITH TECHNICAL SHEETS. IT DOES NOT REPLACE THEM. THE INFORMATION GIVEN IS BASED ON OUR KNOWLEDGE OF THIS PRODUCT, AT THE TIME OF PUBLICATION. IT IS GIVEN IN GOOD FAITH. THE ATTENTION OF THE USER IS DRAWN TO THE POSSIBLE RISKS INCURRED BY USING THE PRODUCT FOR ANY OTHER PURPOSE OTHER THAN THAT FOR WHICH IT WAS INTENDED. THIS DOES NOT IN ANY WAY EXCUSE THE USER FROM KNOWING AND APPLYING ALL THE REGULATIONS GOVERNING HIS ACTIVITY. IT IS THE SOLE RESPONSIBILITY OF THE USER TO TAKE ALL

PRECAUTIONS REQUIRED IN HANDLING THE PRODUCT. THE AIM OF THE MANDATORY REGULATIONS MENTIONED IS TO HELP THE USER TO FULFILL HIS OBLIGATIONS REGARDING THE USE OF HAZARDOUS PRODUCTS.