

LTS (CHEMICAL) INC.  
GALLIUM HYDROXIDE  
MATERIAL SAFETY DATA SHEET

GENERAL

MANUFACTURER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.

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COMPANY'S CITY: ORANGEBURG  
COMPANY'S STATE: NEW YORK  
COMPANY'S ZIP CODE: 10962  
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COMPANY'S TEL #: 845-494-2940  
DATE MSDS PREPARED: 02/03/05  
DATE MSDS REVISED: 3/4/2007

1. IDENTIFICATION

COMMON CHEMICAL NAME: GALLIUM HYDROXIDE  
CHEMICAL FORMULA:  $\text{Ga}(\text{OH})_3$   
CAS NUMBER: 12024-21-4  
EINECS NO: 234-691-7

2. HEALTH HAZARD INFORMATION

HUMAN HEALTH EFFECTS: NO SPECIFIC RISK WHEN HANDLED IN ACCORDANCE WITH GOOD OCCUPATIONAL HYGIENE AND SAFETY PRACTICE.

PHYSICAL & CHEMICAL HAZARDS:  
FIRE OR EXPLOSION: DOES NOT PRESENT ANY PARTICULAR FIRE HAZARD  
CLASS/SPECIFIC HAZARDS: THIS PRODUCT IS NOT CLASSIFIED AS A HAZARDOUS SUBSTANCE.

3. FIRST AID MEASURES

INHALATION: MOVE THE AFFECTED PERSON AWAY FROM THE CONTAMINATED AREA. SUPPLY FRESH AIR. PROVIDE ARTIFICIAL RESPIRATION. KEEP PERSON WARM

SKIN CONTACT: WASH WITH PLENTY OF WATER AND SOAP

EYE CONTACT: RINSE WITH PLENTY OF WATER IMMEDIATELY FOR SEVERAL MINUTES. CONSULT A DOCTOR

INGESTION: RINSE MOUTH OUT WITH WATER AND CONSULT A DOCTOR IMMEDIATELY

4. FIRE - FIGHTING MEASURES

EXTINGUISHING AGENTS: THIS PRODUCT IS NOT FLAMMABLE. USE FIREFIGHTING MEASURES THAT SUIT THE SURROUNDING FIRE

PROTECTIVE EQUIPMENT: WEAR SELF-CONTAINED RESPIRATORS AND FULLY PROTECTIVE IMPERVIOUS SUIT

SPECIFIC HAZARDS: NOT COMBUSTIBLE. DOES NOT PRESENT ANY PARTICULAR RISK IN THE EVENT OF A FIRE

5. ACCIDENTAL RELEASE MEASURES

PERSONAL PROTECTIVE EQUIPMENT: RESPIRATORY PROTECTION DEVICE WITH A PARTICLE FILTER.  
ENVIRONMENTAL PRECAUTIONS: THIS PRODUCT DOES NOT PRESENT ANY PARTICULAR RISK FOR THE ENVIRONMENT

METHODS FOR CLEANING UP:  
RECOVERY: SWEEP UP OR VACUUM UP THE PRODUCT. COLLECT UP THE PRODUCT AND PLACE IT IN A SPARE CONTAINER WITH PROPER LABEL

CLEANING/DECONTAMINATION:  
DISPOSAL: WASH CONTAMINATED AREA WITH LARGE AMOUNTS OF WATER  
DISPOSE OF MATERIALS OR SOLID RESIDUES AT AN AUTHORIZED SITE

## 6. HANDLING AND STORAGE

### HANDLING

TECHNICAL MEASURES:  
MEASURES: DOES NOT REQUIRE ANY SPECIFIC OR PARTICULAR MEASURES  
SAFE HANDLING ADVICE: AVOID THE FORMATION OR SPREAD OF DUST IN THE ATMOSPHERE  
STORAGE: ONLY USE IN WELL-VENTILATED AREAS

TECHNICAL MEASURES:  
TECHNICAL MEASURES: DOES NOT REQUIRE ANY SPECIFIC OR PARTICULAR TECHNICAL MEASURES

STORAGE CONDITIONS: STABLE UNDER NORMAL STORAGE CONDITIONS

INCOMPATIBLE PRODUCTS: ACIDS

PACKAGING: PRODUCT MUST ONLY BE KEPT IN THE SUPPLIER'S PACKAGING

PACKAGING MATERIALS: PLASTIC MATERIALS (POLYETHYLENE)

NOT SUITABLE: NONE

## 7. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING MEASURES: ENSURE GOOD VENTILATION OF THE WORK STATION.

OCCUPATIONAL EXPOSURE LIMITS:  
-LIMITS (U.S.A./A.C.G.I.H.): TLV(TWA): 10MG/M3

PERSONAL PROTECTIVE EQUIPMENT:  
- RESPIRATORY PROTECTION: RESPIRATORY PROTECTIVE DEVICE WITH A PARTICLE FILTER

- EYE PROTECTION: SAFETY GLASSES

HYGIENE MEASURES: WASH WITH SOAP AS OFTEN AS NECESSARY

## 8. PHYSICAL AND CHEMICAL PROPERTIES

CHEMICAL FORMULA:  $\text{Ga}_2\text{O}_3$   
MOLECULAR MASS: 187.44 G

APPEARANCE:  
- FORM: SOLID  
- AVERAGE PARTICLE SIZE: 5 - 30  $\mu\text{m}$

- COLOR: WHITE  
- ODOR: ODORLESS

- PH: NOT APPLICABLE  
- MELTING POINT: 1900  $^{\circ}\text{C}$

- FLASH POINT: NOT APPLICABLE  
OXIDIZING PROPERTIES: NON OXIDIZING MATERIAL

SOLUBILITY:  
- IN WATER: INSOLUBLE  
- IN ORGANIC SOLVENTS: INSOLUBLE

## 9. STABILITY AND REACTIVITY

STABILITY: STABLE UNDER NORMAL CONDITION OF USE  
HAZARDOUS REACTIONS: NO DANGEROUS REACTION KNOWN UNDER NORMAL CONDITIONS  
OF USE  
FURTHER INFORMATION: CARRY OUT WITH CAUTION WHEN DISSOLVING IN ACID

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#### 10. TOXICOLOGICAL INFORMATION

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ACUTE TOXICITY: LD 50 ORAL (RAT): 10000 MG/KG (PUBLISH DATA)  
LOCAL EFFECTS: SLIGHTLY IRRITATING TO THE EYES

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#### 11. ECOLOGICAL INFORMATION

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BEHAVIOR IN THE ENVIRONMENT:  
MOBILITY: PRACTICALLY INSOLUBLE PRODUCT, READILY FORMS DEPOSITS  
PERSISTENCE/DEGRADABILITY: INERT MINERAL PRODUCT. NOT DEGRADABLE.  
DESTINATION OF THE PRODUCT: ULTIMATE DESTINATION OF THE PRODUCT: SOIL AND SEDIMENT  
EFFECTS ON THE AQUATIC ENVIRONMENT: NO INFORMATION AVAILABLE

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#### 12. DISPOSAL CONSIDERATIONS

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WASTE FROM RESIDUES:  
DESTRUCTION/DISPOSAL: DISPOSE OF MATERIALS OR SOLID RESIDUES AT A LICENSED SITE  
CONTAMINATED PACKAGING: CLEAN WITH WATER  
DESTRUCTION/DISPOSAL: ENTRUST THE THOROUGHLY DECONTAMINATED PACKAGING TO A  
LICENSED WASTE-CONTRACTOR  
RECOMMENDATION: CONSULT STATE, LOCAL OR NATIONAL REGULATIONS FOR  
DISPOSAL

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#### 13. TRANSPORT INFORMATION

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NOT A HAZARDOUS MATERIAL FOR TRANSPORTATION  
INTERNATIONAL REGULATIONS:  
RAIL/ROAD (RID/ADR): NOT RESTRICTED  
MARITIME TRANSPORT (IMO/MDG): NOT RESTRICTED  
AIR TRANSPORT (ICAO-IATA): NOT RESTRICTED

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#### 14. REGULATORY INFORMATION

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MANDATORY LABELING: NOT APPLICABLE  
NOTE: THE REGULATORY INFORMATION GIVEN ABOVE ONLY INDICATES  
THE PRINCIPAL REGULATIONS SPECIFICALLY APPLICABLE TO THE  
PRODUCT DESCRIBED IN THE SAFETY DATA SHEET. THE USER'S  
ATTENTION IS DRAWN TO THE POSSIBLE EXISTENCE OF  
ADDITIONAL PROVISIONS WHICH COMPLETE THESE REGULATIONS

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#### 15. 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.