

From: [Marvin Holladay](#)
To: [Shirley Xu](#)
Subject: [External_Sender] RE: MH GLOBAL SOURCING, REQUEST FOR ADDITIONAL INFORMATION
Date: Wednesday, November 30, 2022 11:59:22 AM
Attachments: [IRE Thorium Nitrate \(OS\) MSDS.pdf](#)
[SOP for mantle manufacturing process.pdf](#)
[MSDS for Gas Mantles.pdf](#)

Shirley,

Please find additional information requested regarding the Thorium, SOP for construction of the mantles, MSDS and packaging.

Regarding the Maximum amount of Thorium per mantle. According to the manufacturer they have calculated the amount of Thorium as follows.

Now for thorium in each mantle, there are two ways.

1. We weigh a single ready hose of mantle, then we cut that hose into the required size and then calculate the weight of each mantle and deduct weight of the artificial silk yarn which gives the weight of the thorium. In this method all other chemicals' weight is considered negligible (weight of thorium is 360 milligram per mantle)
2. According to AERB which is a government radiation regulator, they recommend weighing the ash of the mantle after burning and that weight is considered as the weight of thorium.(312 milligram per mantle)

Construction of the mantles is outlined in attachment SOP for mantle manufacturing process.

A Photo of the packaging of 2 pack of mantles attached. Typically, we do not identify the manufacturer on the packaging of products because we would have no way to protect our position and maintain confidential sourcing information. We are a trading company and buy and sell products that meet customer requirements by not exposing our sources we are able to continue to hold our business. If it is required for us to identify the manufacturer, we will comply with any requirement the NRC sets forth.

Safety markings can be added as if required by NRC, is there a specific marking we need to add? If so, is any of the verbiage on the MSDS for Gas Mantle acceptable or can you provide an example?

If any additional information is required, we will be happy to comply.

Thank you,

MH

Marvin Holladay
President

MHlogo_color



M H Manufacturing Solutions LLC
50217 Wanda Ct. Suite B
Macomb, MI 48044
Direct: 586-872-8880
Fax: 586-261-5220
Email: mh@mhmfg-sol.com

From: Shirley Xu <Shirley.Xu@nrc.gov>
Sent: Tuesday, November 29, 2022 2:18 PM
To: Marvin Holladay <mh@mhmfg-sol.com>
Subject: MH GLOBAL SOURCING, REQUEST FOR ADDITIONAL INFORMATION

Marvin,

Please see the attached letter for additional information for a new license application.

Feel free to contact me if you have any questions.

Best,
Shirley



INDIAN RARE EARTHS LTD

MATERIAL SAFETY DATA SHEET

THORIUM NITRATE TETRAHYDRATE

1. PRODUCT AND COMPANY IDENTIFICATION

Product Identification

Product names : Thorium Nitrate Tetrahydrate
Other names : Thorium Nitrate Tetrahydrate

Company Identification

Company : Indian Rare Earths Ltd.
Address : Plot no.1207, V.S.Marg, Prabhadevi, Mumbai-400 028, India.
Telephone Number : +91-22- 24211630, 24211851, 24220230
Fax Number : +91-22-24220236/24385575
E-mail address : cmd@irel.gov.in / dir_mktg@irel.gov.in

2. COMPOSITION /INFORMATION INGREDIENTS

U.N No. - 2976
DOT - 9171
Hazcode/IMO Designation - 7

3. HAZARDS IDENTIFICATION

Eye	Irritating to eyes.
Skin	Irritating to skin.
Inhalation	Harmful to nose & throat
Ingestion	Harmful
Radiation	Carcinogenic in nature, body cell gets irradiated. Depending upon duration of exposure, acute & chronic effects are followed. Dangerous to aquatic life in high concentrations.

4. FIRST AID MEASURES

Eye	Move victim to fresh air, hold eye lid open and flush with plenty of water.
Inhalation	Move victim to fresh air.
Ingestion	If swallowed and victim is conscious give victim to drink water or milk. Get medical attention immediately.
Skin	Wash thoroughly with soap & plenty of water.

5. FIRE FIGHTING MEASURES

Flash point	Not flammable but may cause fire on contact with ordinary combustibles
Flammable limits in air	Not flammable
Fire extinguishing agent	Water
Special hazard	Yield toxic gases, oxides of nitrogen when involved in fire
Behaviour in fire	When large quantities are involved in fire, nitrate may fuse or melt in which condition application of water may result in extensive scattering of molten material will increase the intensity of a fire.

6. ACCIDENTAL RELEASE MEASURES:

Isolate the area and remove, collect the discharged material in PVC / M.S. container & seal it, notify local health and pollution control agencies, wildlife Officials. In case of fire wear applicable PPE's like goggles, coverall and Self Contained Breathing Apparatus (SCBA) and fight fire. During fire, poisonous gases are produced strictly use SCBA & PPE's. Flood /discharge area with water & may be dangerous if water enters water intakes & public domain, hence contain, collect the contaminated material involved in fire & residue including water & seal it in closed container. Decontaminate the area, material involved after fire fighting is completed.

Decontaminate the entire area, men material etc. Monitor the entire area, fire fighting equipment & fire crews after decontamination for residual contamination if any.

7. HANDLING AND STORAGE

Handling: Wear Personnel Protective Equipment (PPE) & use TLD badges during handling. Observe dose limit, distance and time duration for the handling work. Keep the container well closed to prevent exposure of the material to moisture.

Storage:

1. Material filled in the good quality polythene bags & sealed properly and packed in the PVC / MS container (50Kg) Or polythene lined steel drums with lid.
 2. Storage should be isolated, well ventilated, floor surface should be smooth enough to ease for decontamination and as per prescribed limits set by the regulatory body.
-

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personnel Protective equipment	Dust respirators, gloves, coverall, rubber shoes or boots
Surveillance	Wear/use TLD badges during handling & while working in the plant area.

9. PHYSICAL AND CHEMICAL PROPERTIES:

Physical state at 15 ⁰ C and 1 atm	Solid
Molecular weight	555.2
Specific gravity	(est) > 1 at 20 ⁰ C (solid)

10. STABILITY AND REACTIVITY

Stability during transport	Stable
Reactivity with water	Forms a weak solution of Nitric Acid, the reaction is not hazardous
Reactivity with common material	In contact with easily oxidisable substances may react enough to cause ignition, violent combustion or explosion, Solution in water are acidic and can corrode metals

11. TOXICOLOGICAL INFORMATION

Compound has low chemical toxicity but alpha emission is expected to constitute a hazard if a fairly large amount is inhaled or ingested. Dust may irritate eyes and cause diffuse dermatitis. Beta and Gamma emission is small.

Genetic effect of long exposure to low level radiation are suspected to be harmful

12. ECOLOGICAL INFORMATION

Dangerous to aquatic life in high concentrations may be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

13. DISPOSAL CONSIDERATIONS

Radioactive material. Disposal of waste should be in a well defined manner as prescribed by Atomic Energy Regulatory Board (AERB) & regulatory body of the respective country.

14. TRANSPORT INFORMATION

This is a radioactive material. Transport is regulated. The detailed procedure for forwarding, transport, handling and storage of radioactive consignment refer to AERB code SC/TR-1 entitled code for "Safety in transport of Radioactive materials and IAEA safety series no.6 (1985)".

15. REGULATORY INFORMATION

Issue warning – Radioactive, Oxidizing material, Water contaminant
Label

Category – Radioactive, Oxidizer

Class - 7

Prior approval obtain from competent authority (AERB) for shipping/transport of radioactive products. Refer following documents:

1. AERB code no. SC/TR-1 – "Code for safety in transport of radioactive materials".
2. Radiation Protection Rule 1971 (Gazette of India Part II section 3, sub section (i), 1987
3. IAEA safety series no.6 (1985)

16. OTHER INFORMATION

For further information on product, please contact Marketing Department, IREL.

Contact Person : Director (Marketing)
Contact No : +91-22-24301755/24220843
Fax No. : +91-22-24385575
E-Mail : dir_mktg@irel.gov.in

Preparation Information:

This MSDS has been prepared by IREL, Corporate Safety Department in consultation with Production Units located in India.

Revision Number : 2
Date Of issue : October 2010
Replaces : E-mail id, Fax no



FANCY INDIA CORP.
MANUFACTURER & EXPORTERS

EG – Material Safety data sheet as per EG - Regulation 2001/58/EG
issued on October 25, 2018

1. Name of Product, Model Number, Manufacturer and Product application.

1.1 Product name: Incandescent Gas Mantle

1.2 Manufacturer information:

1.2.1 Manufacturer/Supplier: Fancy India Corp.
405, Veena Chambers, Clive Road,
Dana Bunder, Mumbai – 400009.
Cell #: +919821094401.

1.3 Application: Mantles used in lamps operating on LPG and CNG as illuminant, for commercial use (Increase of light output of a burning gas flame of a street light.)

2. Composition & Information on Components

2.1 Gas mantle containing Thorium Nitrate.

No. Chemical name weight %

1 Thorium oxide 50-60

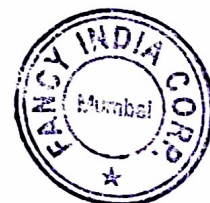
2 Cerium oxide 5-10

3 Magnesium oxide 1-5

3. Possible Hazards

3.1 Classification: The product is not a hazardous material as per EG-Preparation Regulation 1999/45/EG

3.2 Additional hazard indication: The product is slightly radioactive.



4. First aid measures

4.1 General indication

4.1.1 After skin contact: Wash the area with plenty of water.

4.1.2 After swallowing: Do not initiate vomiting, seek medical assistance.

4.1.3 After contact with eyes: Rinse eyes with plenty of water, and seek medical assistance.

5. Firefighting measures

5.1 Suitable fire extinguishing media: all general fire extinguishing media are suitable.

5.2 For safety reasons unsuitable fire extinguishing media: not known

5.3 Special hazards of the product itself: not known

5.4 Special safety equipment for firefighting: Breathing mask which is not dependent on the surrounding air.

6. Measures in case of accidental release

6.1 Personal precaution: Non-hazardous to handle.

6.2 Environmental protection: Non-hazardous to the environment. Adopt proper disposal procedures.

6.3 Cleaning procedure: Pick up mechanically.

7. Handling and storage

7.1 Handling

7.1.1 Guideline for safe handling: Mantles can be handled by hands. Wash hands with soap after application.

7.1.2 Guideline for Fire: No special measures necessary, see point 5.

7.2 Storage

7.2.1 Guideline for storage: Dry storage, store in closed original packing.

7.2.2 Storage class: LGK 7



8. Exposure control and personal protective equipment

8.1 Components with limiting values to be monitored at the workplace.

No. Chemical Name Maximal workplace concentration

- 1 Thorium oxide Follow radiation protection ordinance
- 2 Magnesium oxide 6 mg/m³

8.2 Respiratory protection: P3-Filter (Particle filter) if necessary.

8.3 Hand protection: Rubber protective gloves (not fabric gloves)

8.4 Eye protection: Safety glasses with frame and side protection.

9. Physical and chemical property

9.1 Form: solid

9.2 Colour: white

9.3 Odour: odourless

9.4 Melting point: no data available

9.5 Flashpoint: no data available

9.6 Density: no data available

9.7 Solubility: not soluble in water

10. Stability and reactivity

10.1 Conditions to be avoided: not known for the intended use.

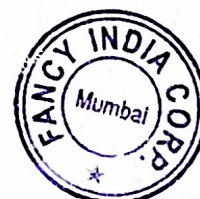
10.2 Materials to be avoided: not known for the intended use.

10.3 Hazardous decomposition products: not known for the intended use. Combustion gases may contain ThO₂ dust.

11. Toxicological Information

11.1 Classification relevant LD/LC₅₀ values: no data available.

11.2 Primary irritation effect: no data available.



12. Ecological information

12.1 Incandescent gas mantles are not hazardous to the environment.

13. Guideline on disposal

13.1 Follow the radiation protection ordinance.

14. Data for transport

14.1 UN No.: 2912

14.2 PSN: **RADIOACTIVE MATERIAL – LOW SPECIFIC ACTIVITY (LSA-1)**

14.3 **INDUSTRIAL PACKAGE TYPE: IP-1**

15. Specifications

15.1 Labelling according to EG-Guideline: UN2912.

15.2 Other specifications: Follow the radiation protection ordinance.
Radioactive Class 7 sticker with appropriate Transport Index
on the outer package surface.

16. Other information: The information supplied is based on our current knowledge, yet represents no assurances of product features and justifies no contractual legal relationship.

FOR FANCY INDIA CORP.


Divyesh Shah (Proprietor)



FANCY INDIA CORP.
MANUFACTURER & EXPORTERS

Standard Operating Procedure (SOP) for Mantle Manufacturing Process:

1. Tubular knitted artificial silk yarn hoses are soaked in a solution containing Natural Thorium Nitrate, Natural Cerium Nitrate, Magnesium Nitrate etc.
2. These pieces are thoroughly dried in the processing area.
3. The dried pieces are treated with liquid ammonia.
4. The pieces are then washed and dried.
5. These dried pieces are ready to cut in required sizes, ironed and tied at both ends, they are called as Mantles.
6. These mantles are then packed as per customer requirement.

For **FANCY INDIA CORP.**


Authorised Signatory

Not packaged in individual units

DIRECTIONS

1. To use, simply pour the contents into a clean container.
2. Use with a spray nozzle.
3. Apply liberally to the surface to be cleaned. Allow to dry for 10-15 minutes. Wipe off with a clean cloth.

Made in the USA

Midstate

200-14

DIRECTIONS

To use, simply pour the contents into a clean container. Use with a spray nozzle. Apply liberally to the surface to be cleaned. Allow to dry for 10-15 minutes. Wipe off with a clean cloth.

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MIDSTATE
Clean Co.
200-14, 200-15, 200-16, 200-17
(207) 540-3000

Midstate

200-14



525
MANTLES-120 PC.

Midstate Lamp LLC
169 E.CR 200 N. Arthur, IL 61911 - Phone: 217.543.3095
Mantles contain Thorium Intrate Imported by MH Global Sourcing, LLC

MANTLES

No. 525

2 Mantles

Not packaged for individual sale.

DIRECTIONS

A. Tie the mantle onto the burner cap, evenly distribute the material.

B. Cut off extra string.

C. Apply flame to the mantle, but do not turn on valve until mantle has burned white.

Mantles contain Thorium Intrate Imported by MH Global Sourcing, LLC

2LM525

WARNING!

These mantles are safe when used as intended. As a precaution, do not inhale mantle smoke or vapors. Do not handle mantle for any length of time whether in a package or not. Wash hands after handling. Harmful if swallowed, keep out of the reach of children. Using a lamp with a hole in the mantle may cause overheating and possible carbon-monoxide gases.

DIRECTIONS

A. Tie the mantle onto the burner cap, evenly distribute the material.

B. Cut off extra string.

C. Hold match to apply flame, but do not turn on valve until mantle has burned white.

Made in India exclusively for:

MIDSTATE
LAMP LLC

169 E. CR 200 N. Arthur, IL61911
(217) 543-3095

Mantles contain Thorium Intrate Imported by MH Global Sourcing, LLC

12LM525