KM616 KM618
Km57 Km619
Km617 Km620

# MATERIAL SAFETY DATA SHEET (MSDS)

FOR

A SINGLE SUBSTANCE

9227 020843

SUBSTANCE Iodine

CAS Registry No. 7553-56-2

Date of Preparation June 20, 1985

Update 1 2 3 4 5 6 7 8 9 10 11 12

NOV 11 1991

EMERGENCY 24-HOUR PHONE NOs.

Medical Information:

Clean-Up Information:

## SUBSTANCE IDENTIFICATION

Columbus Chemical Industries, Inc.

Address: N4335 Temkin Road
Columbus, WI 53925

Tel. No.: (414) 623-2140

Chemical Name: Iodine

Common Names: Iodine

Trade Name: None known

Appearance/Odor: Gray-black crystalline flakes with violet sheen. Sharp, irritating odor familiar to most persons.

## WARNINGS: HEALTH HAZARDS

Can be fatal if small amounts are swallowed.
On the basis of animal studies, can be fatal if large amounts of vapor are inhaled.
Vapor can cause severe breathing difficulties.
Solid material or strong solutions cause burn-like damage to skin and eyes. Eye burns may lead to blindness.
Vapor causes severe irritation of the eyes, nose, mouth, throat and lungs, milder irritation of the skin.
Has very rarely caused severe, even fatal, allergic reactions.
Chronic overexposure can cause skin rashes, irritation of the eyes, nose, mouth and throat, nervousness, sleeplessness, rapid heart beat, and muscle trembling.

## WARNINGS: PHYSICAL HAZARDS

Heating causes rapid production of vapors, which are toxic.
Contact with incompatible substances can cause fire or explosion (see Precautions below).

## PRECAUTIONS: HEALTH HAZARDS

Do not swallow. Do not get on hands or food.
Avoid inhaling. Use in well ventilated area.
Avoid contact with eyes. Do not wear contact lenses.
Avoid contact with skin, especially when irritated or broken.

## PRECAUTIONS: PHYSICAL HAZARDS

Keep away from heat, flames, sunlight.
Use and store in cool, well ventilated area.
Keep away from incompatible substances: gaseous or aqueous ammonia, acetylene, acetaldehyde, alkali metals, metal acetylides (carbides); powdered antimony, aluminum, magnesium or zinc; other active metals and reducing agents.

## FIRST AID/EMERGENCY PROCEDURES

Inhalation: Remove person to fresh air. Support breathing with oxygen if irregular or labored, or person is unconscious. If breathing has stopped, provide artificial respiration. Get medical assistance.

Eye: Immediately irrigate with flowing water for at least 15 minutes without interruption. Turn back lids, wash thoroughly beneath them. Immediately refer eye burns to eye specialist or emergency room.

Skin: Promptly rinse affected area with sodium thiosulfate (5%) or alcohol (if either is available), blot dry, then wash thoroughly with mild soap or detergent and water. If rash or burn appears, refer to a doctor. Remove and wash contaminated clothing.

Ingestion: If person is conscious, immediately give about two glasses of milk (preferably) or water. Do not induce vomiting if solid iodine or a strong solution (above 10%) was swallowed; refer immediately to a doctor/hospital for gastric lavage with soluble starch, sodium thiosulfate (1%), egg white or (continued at bottom)

## WORKPLACE EXPOSURE LIMITS

TLVs

| | | | |
|---|---|---|---|
| Time-Weighted Average: | None | Permissible Exposure Limit: | 0.1 ppm (ceiling) |
| Short-Term Exposure Limit: | None | Immediately Dangerous to Life or Health Level: | 10 ppm |
| Ceiling Limit: | 0.1 ppm | | |

## CLINICAL EFFECTS

Eye: Contact with the solid substance or strong solutions causes corrosion (pain, blurred vision) and possibly burns and opacities leading to blindness. Contact with weaker solutions or vapor can cause severe irritation ("red eye" with tearing, burning sensations). Brown staining of the eye (cornea) can occur.

Skin: Contact with the solid/strong solutions can cause severe irritation (rash, swelling) and, if not quickly removed, burns. Contact with weaker solutions/vapor causes mild irritation. Brown staining can occur. Rarely, skin contact causes an allergic rash. Very rarely, it has caused severe allergic reactions (swelling, low blood pressure, breathing difficulties, confusion, collapse, and even death).

Inhalation: Severe exposure causes a burning sensation in the mouth; irritation of the nose, throat and lungs; slow, labored breathing; headache; and a feeling of tightness in the chest. Aggravates lung disease.

Ingestion: Swallowing causes a burning pain in the mouth and throat; abdominal pain; nausea and vomiting; diarrhea (sometimes bloody); low blood pressure, fast heart beat, bluish skin and other signs of shock (dizziness, confusion, coma); difficulty in breathing; stoppage of breathing and death -- depending on the quantity swallowed

CHRONIC EFFECTS: Via Skin/Inhalation/Ingestion: Chronic overexposure can cause mouth, nose, throat and lung irritation producing large amounts of saliva, a runny nose, sneezing, red eyes, hoarseness and wheezing; swellings along the jaw (salivary glands), skin rashes, diarrhea, weight loss, muscle trembling, fast heart beat, nervousness and sleeplessness. Severe headaches may occur. May aggravate lung and heart diseases.

## CLINICAL CONSIDERATIONS SUGGESTED BY ANIMAL STUDIES

On the basis of animal studies, it is expected that breathing high concentrations of iodine vapor will cause coughing, swelling of the airways and lung, fluid and perhaps blood in the lung, breathing difficulties, and eventually death.

(continued from above) milk. For weaker solutions, induce vomiting (person's finger to back of his throat, or give syrup of ipecac). If health professional is present, follow with activated charcoal, then a cathartic. Support breathing with oxygen if it becomes shallow, irregular or labored, or person is unconscious. If breathing stops, provide mouth-to-mouth respiration. Get medical assistance whenever iodine is swallowed.

The product is evaluated below for its physical hazards. Reactive products can cause hazardous physical effects directly, or indirectly through the release of new hazardous products, which may also pose health hazards.

PHYSICAL HAZARD EVALUATION

| FIRE POTENTIAL | | | | EXPLOSION POTENTIAL | | REACTIVITY POTENTIAL | |
|---|---|---|---|---|---|---|---|
| Flammable | /_/ | Pyrophoric | /_/ | Compressed Gas | /_/ | Water-Reactive | /_/ |
| Combustible Liquid | /_/ | Organic Peroxide | /_/ | Explosive | /_/ | Unstable (reactive) | /_/ |
| Oxidizer | /X/ | | | | | CORROSIVE | /_/ |

REACTIVITY HAZARDS

| HAZARDS | Fire /X/ | High Heat /X/ | Explosion /X/ | Container Rupture /_/ | Hazardous Reaction Product /X/ |
|---|---|---|---|---|---|
| HAZARDOUS PRODUCTS | NOTE: OSHA defines "reactivity" as water-reactivity and instability. Hazards/Hazardous Products cited here are not due to these factors; they may result from contact with incompatible substances (see Incompatible Substances, page 4, and Explanation below). | | | | |
| EXPLANATION | Fire may result from contact with powdered metals, alkali metals, organic reducing agents, metal acetylides; water will ignite the powdered aluminum, magnesium or zinc mixtures. Explosion may result from contact with acetylene or concentrated ammonia; the ammonia reaction product is explosive when dry or nearly dry. | | | | |

SPILLS, LEAKS AND OTHER UNPLANNED RELEASES (clean-up and disposal)

Initial Health/Safety Protective Measures: Evacuate area; notify safety personnel. Remove any incompatible substances present. Assure maximum ventilation; put on NIOSH or MSHA-approved SCBA or equivalent operated in a positive pressure mode. Provide first aid, if needed (see First Aid).

Clean-Up Procedures: Prevent spread of solid-material spills (berm area with sand, soil, etc.), collect material in most convenient and safe manner, deposit in sealed containers. Treat wet spills or solutions with sodium sulfite, bisulfite or thiosulfite, then collect in sand, soil, vermiculite, etc. After depositing in sealed containers, treat spill area with one of the sulfites mentioned, then flush area thoroughly with water. Do not remove protective equipment/clothing until vapors have cleared.

Disposal Methods:

Dispose of sealed containers in a secured sanitary landfill approved by local authorities.

PROTECTIVE MEASURES (worker protection)

Ventilation:

Ventilation must be sufficient to meet permissible exposure limits, which include a Ceiling Limit (see Workplace Exposure Limits). Under exceptional circumstances (ventilation failure, spills), MSHA or NIOSH-approved respirators may be used.

Personal Respiratory Protection:

(See Spills, Leaks above.)

Eye Protection:

Dust and splash-proof safety goggles whenever the solid material, or liquids more than 7% iodine by weight, may come into contact with the eyes.

Protective Clothing:

Impervious clothing, gloves, and minimum 8-inch face shield designed to prevent any skin contact.

Other Protective Equipment and Facilities:

Eyewash station (or hose suitable for use in eye irrigation) and chemical safety (quick-drench) showers should be available in the immediate work area.

Product Iodine

FIRE AND EXPLOSION DATA

| Flash Point (and method used) | Autoignition Temperature | Flammability Limits In Air (by volume) |
|---|---|---|
| NONE | NONE | Lower: % Upper: % NONE |

Unusual Fire and Explosion Hazards:

When heated produces toxic iodine fumes, reacts vigorously with strong organic reducing agents (see Incompatible Substances below and Reactivity Hazards on next page).

Fire Extinguishing Media:

NOT APPLICABLE (iodine not flammable)

Special Firefighting Procedures:

Use water for cooling containers to prevent release of toxic (highly irritating) and highly reactive iodine fumes.

Special Firefighting Protective Equipment/Clothing

NIOSH or MSHA-approved self-contained breathing apparatus (SCBA) with full facepiece operated in pressure-demand or other positive pressure mode.

| NFPA HAZARD IDENTIFICATION (Grading) SYSTEM | NOT RATED Flammability ☐ Reactivity (Stability) ☐ Reactivity grades 2-4 indicate explosion potential. |
|---|---|

REACTIVITY DATA

| | | | | |
|---|---|---|---|---|
| STABLE /X/ | UNSTABLE /_/ under-- | Normal Conditions | | Conditions Causing Instability: |
| | | Other Conditions | | |

| | | | |
|---|---|---|---|
| HAZARDOUS INSTABILITY | None | X | Types: Polymerization /_/ Decomposition /_/ Condensation /_/ Self-Reaction /_/ |
| | Occurs | | |

| | | |
|---|---|---|
| INCOMPATIBLE SUBSTANCES | Water /_/ | Caseous or aqueous ammonia, acetylene, acetaldehyde, alkali metals, metal acetylides (carbides); powdered antimony, aluminum, magnesium or zinc; other active metals and reducing agents. |