



Scientific Documentation

I1015, Iodine, Resublimed (DEA List I
Chemical), Crystal, USP

Not appropriate for regulatory submission.
Please visit www.spectrumchemical.com or
contact Tech Services for the most up-to-date
information contained in this information
package.

Spectrum Chemical Mfg Corp

769 Jersey Avenue
New Brunswick, NJ 08901
Phone 732.214.1300

Ver4.01 20.April.2016



Dear Customer,

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Spectrum has been proudly serving our scientific community for over 45 years. It is our mission to manufacture and distribute fine chemicals and laboratory products with Quality and delivery you can count on every time.

To accomplish our mission, Spectrum utilizes our sourcing leverage and supplier qualification expertise in offering one of the industry's most comprehensive line of fine chemical products under one brand, in packaging configurations designed to meet your research and production requirements. Our product grades include: USP, NF, BP, EP, JP, FCC, ACS, KSA, Reagent grade, as well as DEA controlled substances. We operate facilities in the United States on the East Coast, West Coast, as well as in Shanghai, China in order to provide the best logistical support for our customers.

At Spectrum, Quality is priority number one. Suppliers with the best qualifications are preferred and we employ full-functioning in-house analytical laboratories at each of our facilities. Our facilities and systems are USFDA registered and ISO certified. We frequently host customer audits and cherish opportunities for improvements. Quality is engrained into our culture. Quality is priority number one.

In the following pages, we have designed and prepared documented scientific information to aid you in your initial qualification or your continual use of our products. Please do not hesitate to contact us if further information or the most up-to-date documentation is desired from any of the covered areas.

We appreciate your business and we look forward to hearing from you.

Sincerely,

A handwritten signature in black ink, appearing to read "Alan Wang", with a large, sweeping flourish at the end.

Alan Wang, MSQA, ASQ CQA
Senior Manager, Global Supplier Quality Assurance
qualityassurance@spectrumchemical.com

I1015, Iodine, Resublimed (DEA List I Chemical), Crystal, USP

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spectrum[®]
CHEMICAL MFG CORP



Specification for Iodine, Resublimed (DEA List I Chemical), Crystal, USP (I1015)

Item Number	I1015
Item	Iodine, Resublimed (DEA List I Chemical), Crystal, USP
CAS Number	7553-56-2
Molecular Formula	I ₂
Molecular Weight	253.81
MDL Number	
Synonyms	

Test	Specification	
	Min	Max
ASSAY (I ₂)	99.8 - 100.5 %	
NONVOLATILE RESIDUE		0.05 %
CHLORIDE AND BROMIDE (as Cl)		0.028 %
IDENTIFICATION		TO PASS TEST
EXPIRATION DATE		
RESIDUAL SOLVENTS		TO PASS TEST

Spectrum Chemical Mfg Corp

Corporate Headquarters:
769 Jersey Ave.
New Brunswick, NJ 08901
732.214.1300

West Coast Facility:
14422 S. San Pedro St.
Gardena, CA 90248
310.516.8000

SAFETY DATA SHEET

Preparation Date: 05/06/2015

Revision Date: 05/06/2015

Revision Number: G1

Product identifier

Product code: I1015
Product Name: IODINE, RESUBLIMED, CRYSTAL, USP

Other means of identification

Synonyms: Actomar
Diiodine
Eranol
IODE [French]
Iodio [Italian]
Vistarin

CAS #: 7553-56-2
RTECS # NN1575000
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: Anti-infective agent. Catalyst. Antiseptic. Disinfectant. Bactericide. Fungicide. Chemical intermediate.

Uses advised against No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: <https://www.spectrumchemical.com>

Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Dermal	Category 4
Acute toxicity - Inhalation (Gases)	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 1

Label elements

Danger

Hazard statements

Causes severe skin burns and eye damage
Harmful in contact with skin
Harmful if inhaled
May cause respiratory irritation
Causes damage to organs through prolonged or repeated exposure



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

Not available

Precautionary Statements - Prevention

Wear protective gloves/protective clothing/eye protection/face protection
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product

Precautionary Statements - Response

Specific measures (see .? on this label)
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see .? on this label)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
Call a POISON CENTER or doctor/physician if you feel unwell
Wash contaminated clothing before reuse
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell. Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

Precautionary Statements - Storage

Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %	Trade Secret
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Iodine 7553-56-2	7553-56-2	100	*
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4. FIRST AID MEASURES

First aid measures

General Advice:

Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126).

Skin Contact:

Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Get medical attention immediately. Call a physician or Poison Control Centre immediately.

Eye Contact:

Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.

Inhalation:

Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. **WARNING!** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled or ingested material is toxic, infectious or corrosive. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention.

Ingestion:

Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms

Severe skin and eye irritation or burns. May affect the liver. It may affect the kidneys. It may affect the thyroid. May cause hyperthyroidism or hypothyroidism. Hypothyroidism may result in goiter. Irritating to respiratory system. Dyspnea (Shortness of breath and difficulty breathing). Coughing. May cause pulmonary edema. Central nervous system effects. May cause digestive (gastrointestinal) tract irritation. May cause abdominal pain, nausea, vomiting, diarrhea. Thirst. Staining of lips, mouth, esophagus. May cause metallic taste. May affect the cardiovascular system.

Indication of any immediate medical attention and special treatment needed

Notes to Physician:

Treat symptomatically

Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media:

The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

Unsuitable Extinguishing Media:

No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products:

If it is involved in a fire, Hydrogen Iodide can be released

Specific hazards:

No information available.

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Avoid breathing dust. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading. Prevent dust cloud.

Methods for cleaning up Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials. Remove all sources of ignition.

Safe Handling Advice:

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Do not breathe vapours/dust. Do not ingest. Keep away from combustible material. When using do not smoke. Use explosion-proof equipment. Use only in well-ventilated areas. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place. Store away from incompatible materials. Do not store near combustible materials. Store in a segregated and approved area.

Incompatible Materials:

Oxidizing agents. Reducing agents. Metals. Incompatible with liquid chlorine, acetylene, hafnium powder, Tetraamine copper (II) sulfate + ethanol, acetaldehyde, ammonia, salt + ethanol, ammonium hydroxide, methyl alcohol, antimony powder, silver azide, lithium, potassium, polyacetylene, sodium, phosphorous, bromine pentafluoride, fluorine, trioxigen difluoride, oxygen difluoride, magnesium, finely divided (powdered) metals, organic solvents, natural rubber goods, neoprene, plastics (ABS, Acetal (Delrin), CPVC, Epoxy, Polypropylene, NORYL, PPS (Ryton)), zinc, aluminum, alkali metals, sulphur, ammonia, ammonia + potassium, ammonium hydroxide, ammonia solutions,

Ammonia + Lithium 1-heptynide, Bromine trifluoride, Bromine pentafluoride, Fluorine, Chlorine trifluoride, reducing agents, iron, ethanol + butadiene + mercuric oxide; ethanol + phosphorous; ethanol + methanol + HgO; foramide + pyridine + sulfur trioxide; formamide; halogens or interhalogens; mercuric oxide; metal carbides; oxygen; pyridine; sodium hydride, metal acetylides (cesium, copper (I), lithium, rubidium), Dipropyl mercury, Titanium (above 113 C.), Cesium Oxide (above 150 C.), various metal acetylides (barium, calcium, strontium, zirconium), various metal carbides.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters**National occupational exposure limits****United States**

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
Iodine - 7553-56-2	0.1 ppm Ceiling 1 mg/m ³ Ceiling	= 0.1 ppm Ceiling = 1 mg/m ³ Ceiling	= 0.1 ppm STEL aerosol and vapor	None

Canada

Components	Alberta	British Columbia	Ontario	Quebec
Iodine - 7553-56-2	= 0.1 ppm Ceiling = 1 mg/m ³ Ceiling	= 0.01 ppm TWA aerosol, inhalable, and vapour	0.01 ppm TWA inhalable fraction and vapor	0.1 ppm Ceiling 1.0 mg/m ³ Ceiling

Australia and Mexico

Components	Australia	Mexico
Iodine 7553-56-2	None	= 0.1 ppm Peak = 1 mg/m ³ Peak

Appropriate engineering controls**Engineering measures to reduce exposure:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment**Personal Protective Equipment**

- Eye protection:** Goggles.
- Skin and body protection:** Long sleeved clothing. Chemical resistant apron. Gloves.
- Respiratory protection:** Respirator with combination filter for vapor/particulate.. Be sure to use an approved/certified respirator or equivalent..
- Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid.	Appearance: Lustrous. Crystals.	Color: Dark purple. Violet. Bluish-black. Grayish-black.
Odor: Sharp. Characteristic.	Taste Sharp. acrid.	Molecular/Formula weight: 253.81 g/mol
Formula: I ₂	Flash point (°C): No data available	Flashpoint (°C/°F): No information available.
Flash Point Tested according to: Not available	Lower Explosion Limit (%): No information available	Upper Explosion Limit (%): No information available
Autoignition Temperature (°C/°F): No information available	pH: 5.4	Melting point/range(°C/°F): 113.7°C/ 236.7°F
Boiling point/range(°C/°F): 184.4°C/ 363.9°F	Decomposition temperature(°C/°F): No information available	Bulk density: No information available
Specific gravity: 4.93	Vapor pressure @ 20°C (kPa): 0.04 @ 25 deg. C.	Density (g/cm³): No information available
Evaporation rate: No information available	Vapor density: 8.8	VOC content (g/L): No information available
Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): 2.49	Viscosity: No information available

9. PHYSICAL AND CHEMICAL PROPERTIES

Miscibility:

No information available

Solubility:

Practically insoluble in water
Soluble in Carbon tetrachloride
Soluble in Carbon Disulfide
Soluble in Chloroform
Soluble in cyclohexane: 2.719 g
Solubility in Carbon disulfide: 197g/kg @ 25°C
Solubility in methanol: 23g/ 100 mL @ 25°C
Solubility in alcohol: 20.5g/ 100 mL @ 15°C
Solubility in ether: 20.6g/ 100 mL @ 17°C
Solubility in Carbon tetrachloride: 19.2 g/kg @ 25°C
Solubility in Benzene: 164.0 g/kg @ 25°C
Solubility in Ethanol: 27.1g/kg @ 25°C
Solubility in n-hexane: 13.2 g/kg @ 25°C
Solubility in butan-2-ol: 97 g/kg @ 25°C
Solubility in ethyl acetate: 157g/kg @ 25°C
Solubility in toluene: 182.5 g/kg @ 25
Solubility in chloroform: 49.7 g/kg @ 25
Solubility in bromoethane: 14.6 g/ 100g @ 25
Solubility in n-heptane: 1.73g / 100g @ 25
Solubility in glycerol: 9.7g / 100g @ 25
Solubility in diethyl ether: 33.7g/ 100g @ 25
Solubility in carbon disulfide: 19.7g/ 100g @ 25

10. STABILITY AND REACTIVITY

Reactivity

Iodine reacts violently with Acetaldehyde, Dipropylmercury, Aluminum + and diethyl ether, Titanium (above 113 C.).

Ignition on contact with bromine, bromine pentafluoride,... chlorine trifluoride, ...metals (powdered) + water, aluminum-titanium alloys + heat, metal acetylides, ... nonmetals, ... sodium phosphinate.

Incandescent reaction with cesium oxide (above 150 deg C), bromine trifluoride, metal acetylides or carbides [e.g. barium acetylide (above 122 deg C), calcium acetylide (above 305 deg C), strontium acetylide (above 182 deg C), zirconium acetylide (above 400 degC)].

Magnesium burns vigorously when heated with iodine vapor.

Iodine unites with fluorine at ordinary temperature with a luminous flame

Chemical stability

Stability:

Stable under recommended storage conditions

Possibility of Hazardous Reactions:

Hazardous polymerization does not occur

Conditions to avoid:

Heat. Ignition sources. Incompatible materials.

Incompatible Materials:

Oxidizing agents. Reducing agents. Metals. Incompatible with liquid chlorine, acetylene, hafnium powder, Tetraamine copper (II) sulfate + ethanol, acetaldehyde, ammonia, salt + ethanol, ammonium hydroxide, methyl alcohol, antimony powder, silver azide, lithium, potassium, polyacetylene, sodium, phosphorous, bromine pentafluoride, fluorine, trioxygen difluoride, oxygen difluoride, magnesium, finely divided (powdered) metals, organic solvents, natural rubber goods, neoprene, plastics (ABS, Acetal (Delrin), CPVC, Epoxy, Polypropylene, NORYL, PPS (Ryton)), zinc, aluminum, alkali metals, sulphur, ammonia, ammonia + potassium, ammonium hydroxide, ammonia solutions, Ammonia + Lithium 1-heptynide, Bromine trifluoride, Bromine pentafluoride, Fluorine, Chlorine trifluoride, reducing agents, iron, ethanol + butadiene + mercuric oxide; ethanol + phosphorous; ethanol + methanol + HgO; formamide + pyridine + sulfur trioxide; formamide; halogens or interhalogens; mercuric oxide; metal carbides; oxygen; pyridine; sodium hydride, metal acetylides (cesium, copper (I), lithium, rubidium), Dipropyl mercury, Titanium (above 113 C.), Cesium Oxide (above 150 C.), various metal acetylides (barium, calcium, strontium, zirconium), various metal carbides.

Hazardous decomposition products: Hydrogen iodide. Iodine vapour.

Other Information

Corrosivity: Extremely corrosive in the presence of stainless steel (316)
Extremely corrosive in the presence of stainless steel (304)
Extremely corrosive in presence of copper
No corrosive effect on Aluminum
No corrosive effect on Bronze

Special Remarks on Corrosivity: No corrosion data on brass

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Ingestion. Inhalation. Skin.

Acute Toxicity

Component Information

Iodine - 7553-56-2

LD50/oral/rat = 14 g/kg Oral LD50 Rat
LD50/oral/mouse = 1000 mg/kg (RTECS)
22000 mg/kg (Hazardous Substance Data Bank)
LD50/dermal/rat = No information available
LD50/dermal/rabbit = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = 10000 mg/kg LD50 Oral Rabbit
137 ppm 1h LCL inhalation Rat

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 14000mg/kg

Product code: I1015

Product name: IODINE, RESUBLIMED,
CRYSTAL, USP

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LD50/oral/mouse =
Value - Acute Tox Oral = 1000mg/kg

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat
VALUE -Acute Tox Dermal = 14000mg/kg

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact:	Corrosive. Causes skin irritation. Causes skin burns. It can cause brown stains on the skin. It is corrosive and cause penetrating lesions.
Eye Contact:	Causes severe eye irritation and possible burns. May cause conjunctivitis. Exposure to vapor can cause burning sensation in the eyes, tearing, inflammation of the eye lids. Exposure to high concentrations of vapor may cause corneal damage (Dendritic Keratitis in which the corneal epithelium is sloughed off).
Inhalation	Low hazard during normal industrial handling. Excessive inhalation of iodine vapors may cause respiratory tract, nasal, and mucous membrane irritation. Symptoms may include coughing, tightness in the chest, rhinitis, dyspnea/respiratory distress, coughing, sneezing, pulmonary edema, chemical pneumonitis, edema of the larynx and bronchi, pharyngitis, swelling of the parotid gland, and cachexia. High exposure may lead to lung disease and may also affect behavior/central nervous system (delirium, hallucination, depression, seizure, dizziness, headache, stupor, somnolence).
Ingestion	Ingestion of large doses may cause irritation of mouth of the digestive tract with thirst, nausea, vomiting, abdominal pain, hypermotility, and diarrhea, staining of mouth, esophagus, lips, mucous membranes, metallic taste, abdominal pain, fever. It may also affect the cardiovascular system (tachycardia, hypotension, cardiovascular collapse), behavior/central nervous system (delirium, dizziness, headache, hallucinations, seizures, depression, stupor, somnolence, muscle weakness). Death is rare following acute iodine ingestion. It is estimated that the mean lethal dose in an adult lies between 2 to 4 grams of free iodine. However, death from acute iodine poisoning may occur due to circulatory collapse, asphyxiation from glottic edema, pulmonary edema, aspiration pneumonia, and cyanosis.
Aspiration hazard	No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity

May cause reddening of the skin, itching, acne-like eruption of the skin/skin rash, and skin allergies.
 Prolonged or repeated exposure may cause eye irritation and conjunctivitis.
 Prolonged or repeated ingestion may cause a reversible reduction in thyroid function (hypothyroidism), nodular goiter, hyperthyroidism, thyrotoxicosis, metabolic disturbances, and may affect the blood (anemia), liver, urinary system/kidneys (kidney damage, hematuria, albuminuria, anuria). Other symptoms of chronic iodine poisoning (Iodism) may include fever, rapid heartbeat, tremor, headache, delirium, stupor, insomnia, salivation, weight loss/loss of appetite, salivation, stomatitis, parotitis, diarrhea, gastric irritation, joint pain and swelling.
 Prolonged or repeated inhalation may cause disrupted thyroid activity (see ingestion), and chronic irritation of the throat, sneezing, nasal discharge, bronchitis, laryngitis, asthma. It may also affect behavior (see ingestion).
 Iodine concentrates in the Thyroid during chronic exposure..

Sensitization: No information available

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic

Components	ACGIH - Carcinogens	IARC	NTP	OSHA HCS - Carcinogens	Australia - Prohibited Carcinogenic Substances	Australia - Notifiable Carcinogenic Substances
Iodine	A4 Not Classifiable as a Human Carcinogen	Not listed	Not listed	Not listed	Not listed	Not listed

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: May cause adverse developmental effects
 Exposure to excessive amounts of iodine during pregnancy is capable of producing fetal hypothyroidism, severe goiter or cretinism in the offspring

Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure Respiratory Tract.
STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure if swallowed.
 Thyroid.

Target Organs: Thyroid. Respiratory system. Skin. Eyes. Central nervous system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: No information available

Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Iodine	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN3495
Proper Shipping Name: Iodine
Hazard Class: 8
Subsidiary Risk: 6.1
Packing Group: III
ERG No: 154
Marine Pollutant: No data available
DOT RQ (lbs): No information available

Symbol(s):

+

TDG (Canada)

UN-No: UN3495
Proper Shipping Name: Iodine
Hazard Class: 8
Subsidiary Risk: (6.1)
Packing Group: III
Description: No information available

ADR

UN-No: UN3495
Proper Shipping Name: Iodine
Hazard Class: 8
Packing Group: III
Subsidiary Risk: 6.1
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

UN-No: UN3495
Proper Shipping Name: Iodine
Hazard Class: 8
Subsidiary Risk: 6.1
Packing Group: III
Description: No information available
IMDG Page: No information available

14. TRANSPORT INFORMATION

Marine Pollutant No information available
EMS: F-A
MFAG: No information available
Maximum Quantity: No information available

RID

UN-No: UN3495
Proper Shipping Name: Iodine
Hazard Class: 8
Subsidiary Risk: 6.1
Packing Group: III
Classification Code: No information available
Description: No information available

ICAO

UN-No: UN3495
Proper Shipping Name: Iodine
Hazard Class: 8
Subsidiary Risk: 6.1
Packing Group: III
Description: No information available

IATA

UN-No: UN3495
Proper Shipping Name: Iodine
Hazard Class: 8
Subsidiary Risk: 6.1
Packing Group: III
ERG Code: 8P
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Components	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Iodine	Present	Present KE-21023	Present	Not present	Present	Present	Present 231-442-4

U.S. Regulations

Iodine

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 1026
Pennsylvania RTK: Present
Minnesota - Hazardous Substance List: Present
California Directors List of Hazardous Substances: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Iodine	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting <i>de minimis</i>
Iodine	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Iodine	Not Applicable	Not Applicable

Canada**WHMIS hazard class:**

D2A Very toxic materials
E Corrosive material

Iodine

D2A E

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	WHMIS Ingredient Disclosure List -
Iodine	1 %

Inventory

Components	Canada (DSL)	Canada (NDSL)
Iodine	Present	Not Listed

Components	CEPA Schedule I - Toxic Substances	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Iodine	Not listed	Not listed

EU Classification**R-phrase(s)**

R50 - Very toxic to aquatic organisms.
R20/21 - Harmful by inhalation and in contact with skin.

S -phrase(s)

S 2 - Keep out of the reach of children.
S23 - Do not breathe gas/fumes/vapor/spray.
S25 - Avoid contact with eyes.
S61 - Avoid release to the environment. Refer to special instructions/safety data sheets.

Components	Classification	Concentration Limits:	Safety Phrases
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Iodine	Xn; R20/21 N; R50	No information	S2 S23 S25 S61
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The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

Xn - Harmful.

N - Dangerous for the environment.



16. OTHER INFORMATION

Preparation Date: 05/06/2015
Revision Date: 05/06/2015
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet

Certificate of Registration

Intertek

This is to certify that the quality management system of

Spectrum China Ltd.

Building A20, No. 3802, Shengang Road, Songjiang District, Shanghai, China

has been assessed and registered by Intertek as conforming to the requirements of

ISO 9001: 2008

The quality management system is applicable to:

Provision of service of purchase, testing and sales for chemical products, repacking of non-hazardous chemical products.

Organization Code: 77762704-8
Certificate Number: 111310001-01
Certificate Issue Date: 17 November 2015
Certificate Expiry Date: 14 September 2018



014

A handwritten signature in black ink, appearing to read 'Calin Moldovean'.

Authorised Signature: Calin Moldovean – President, Business Assurance
Intertek Certification Limited, 10A Victory Park, Victory Road, Derby DE24 8ZF, United Kingdom
Intertek Certification Limited is a UKAS accredited body under schedule of accreditation no. 014.

In the issuance of this certificate, Intertek assumes no liability to any party other than to the client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with Intertek's requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone.
The annual validity of the certificate can also be checked through the website <http://www.cnca.gov.cn> of CNCA in China.



The certificate remains the property of Intertek, to whom it must be returned upon request.



March 28, 2016

Certificate of cGMP

Dear Valued Customer:

Spectrum Chemicals and Laboratory Products certify that our USP, NF, FCC, EP, BP, JP, and food grade products are produced, processed, packaged and held in compliance with current Good Manufacturing Practices (cGMP) in accordance with the applicable parts of 21 CFR, parts 210 and 211 of the Code of Federal Regulations.

Spectrum is an FDA registered and inspected drug establishment. Our United States Food and Drug Administration (USFDA) Registration numbers are as follows:

Spectrum-Gardena, CA:	<u>2020632</u>
Spectrum-New Brunswick, NJ:	<u>2246824</u>
Spectrum -Shanghai, China:	<u>3006174778</u>

Thank you for your interest with Spectrum products. Please feel free to contact the Quality Assurance department at 310-516-8000 or via email at qualityassurance@spectrumchemical.com if we may be of further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Michelle Weston".

Michelle Weston
Quality Assurance Specialist



April 18, 2016

Certificate of cGMP

Dear Valued Customer:

Spectrum Chemicals and Laboratory Products certify that the following product(s) is produced, processed, packaged and held in compliance with current Good Manufacturing Practices (cGMP) in accordance with the applicable parts of 21 CFR, parts 210 and 211 of the Code of Federal Regulations.

Catalog Number	Product Name
I1015	Iodine, Resublimed (DEA List I Chemical), Crystal, USP

Spectrum is an FDA registered and inspected drug establishment. Our United States Food and Drug Administration (USFDA) Registration numbers are as follows:

Spectrum-Gardena, CA: 2020632
Spectrum-New Brunswick, NJ: 2246824
Spectrum-Shanghai, China: 3006174778

Thank you for your interest with Spectrum products. Please feel free to contact the Quality Assurance department at 310-516-8000 or via email at qualityassurance@spectrumchemical.com if we may be of further assistance.

Sincerely,

Michelle Weston
Quality Assurance Specialist



April 19, 2016

Re: Iodine, Resublimed (DEA List I Chemical), Crystal, USP- I1015

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfr. Corp. understand the concern regarding Bovine Spongiform Encephalopathy (BSE). Please be assured that the chemical

Iodine, Resublimed (DEA List I Chemical), Crystal, USP- I1015

is BSE/TSE free.

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag-Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature



April 18, 2016

Re: Iodine, Resublimed (DEA List I Chemical), Crystal, USP-I1015

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfr. Corp. understand the concern regarding the presence of allergens in raw materials. Please be assured that the following chemical does not contain (Milk; Egg; Fish; Shellfish; Sulfur dioxide and sulfites at concentrations of more than 10 mg/kg or 10 mg/liter expressed as SO₂; Lupin; Tree nuts; Mollusks; Wheat; Peanuts; Soy; Cereals containing Gluten; Celery; Mustard; Sesame Seed).

Iodine, Resublimed (DEA List I Chemical), Crystal, USP-I1015

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag-Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature



April 19, 2016

Re: Iodine, Resublimed (DEA List I Chemical), Crystal, USP- I1015

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfg. Corp. understand the concern regarding Aflatoxins in raw materials. To the best of our knowledge, the product listed below is not contaminated with Aflatoxins. Aflatoxins are not used in production. The following product does not come in contact with Aflatoxins at any stage of production.

Iodine, Resublimed (DEA List I Chemical), Crystal, USP- I1015

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag-Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature

Label Information

The Spectrum label presents technical and safety information in an easily understood format. Our technical specialists stay abreast of the latest requirements of the Globally Harmonized System for Classification and Labelling of Chemicals (GHS), as well as the Occupational Safety and Health Administration (OSHA), the Food and Drug Administration (FDA) and other government regulatory agencies in order to ensure compliance, accuracy and concise hazard communication.

A **DANGER**

• Causes severe skin burns and eye damage • Harmful in contact with skin or if inhaled • May cause respiratory irritation • Causes damage to organs (thyroid) through prolonged or repeated exposure if swallowed.

• Do not eat, drink or smoke when using this product • Wear protective gloves, protective clothing, eye protection, face protection • Do not breathe dust • Use only outdoors or in a well-ventilated area • Wash face, hands and any exposed skin thoroughly after handling.

FIRST AID: Immediately call a POISON CENTER or physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Wash contaminated clothing before reuse. IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF SWALLOWED: Rinse mouth. DO NOT induce vomiting.

KEEP FROM CHILDREN

SPECTRUM[®]

I1015 **12 KG**

Iodine Resublimed Crystal, U.S.P.

CAS 7553-56-2

CAUTION: For manufacturing, processing or repacking. **Read and understand the label and Safety Data Sheet (SDS) prior to use.**

DOT: UN3495, Iodine, 8 (6.1), PG III

Chemical Emergency: (800)424-9300

www.SpectrumChemical.com

K F.W. 253.81

Assay (I) 99.8-100.5%
MAXIMUM LIMITS
Nonvolatile Residue0.05%
Chloride or Bromide (as Cl)0.028%
Residual Solvents To pass test

Exp. Date: 03-31-2025

L **O** Lot No. 062233

W 9/E1GHS A

SPECTRUM CHEMICAL MFG. CORP. **Gardena, CA 90248 • New Brunswick, NJ 08901**

- | | | |
|---|--|---|
| A Bar Code | F Size/Quantity | K Empirical Formula, Formula Weight and Technical Specifications Panel |
| B GHS Hazard Pictograms | G Chemical Abstracts Service (CAS) Registry Number | L Expiration Information |
| C Warning, Safety Data and Precautionary Information | H Caution Information | M Lot Number |
| D Product Catalog Number | I DOT Shipping Information | N Kosher Certified by Kosher Supervision of America (KSA). |
| E Item Name, Form, Grade | J Toll-Free 24-Hour Chemical Emergency Telephone Number | |
| O Storage Color Band | | |

This color-coded band indicates the hazard most likely to be posed by that material under storage conditions. The criteria used to assign band colors have been established by the Storage Code working group of the Society for Chemical Hazard Communication (SCHC). It is recommended that like colors be stored together, unless otherwise stated, based on the color codes indicated to the right. However, it is the responsibility of the customer to check with their local fire department for possible conflicts with our recommendations when storing hazardous chemicals.

- YELLOW:** Oxidizer
- RED:** Flammable
- GREEN:** General Storage
- BLUE:** Health Hazard
- WHITE:** Corrosive

Spectrum Chemical Mfg Corp

Corporate Headquarters:

769 Jersey Ave.
New Brunswick, NJ 08901

732.214.1300

West Coast Facility:

14422 S. San Pedro St.
Gardena, CA 90248

310.516.8000

Item Number	I1015	Lot Number	2FA0260
Item	Iodine, Resublimed (DEA List I Chemical), Crystal, USP		
CAS Number	7553-56-2		
Molecular Formula	I ₂	Molecular Weight	253.81

Test	Specification		Result
	min	max	
ASSAY (I ₂)	99.8 - 100.5 %		99.9 %
NONVOLATILE RESIDUE		0.05 %	0.01 %
CHLORIDE AND BROMIDE (as Cl)		0.028 %	<0.028 %
IDENTIFICATION		TO PASS TEST	PASSES TEST
EXPIRATION DATE			31-OCT-2018
RESIDUAL SOLVENTS		TO PASS TEST	NO RESIDUAL SOLVENTS USED
APPEARANCE			GRAY METALLIC LUSTER
DATE OF MANUFACTURE			23-NOV-2015

Spectrum Chemical Mfg Corp
755 Jersey Avenue
New Brunswick 08901 NJ

Certificate of Analysis Results Certified By:




Mulbah F. Dwanah
Laboratory Supervisor
Spectrum Chemicals & Laboratory Products

All pharmaceutical ingredients are tested using current edition of applicable pharmacopeia.

January 26, 2016

RE: Lot Numbering System

Dear Valued Customer:

This letter is to inform you of Spectrum Chemicals and Laboratory Products' Lot Numbering System. The system is based on an alpha-numerical sequence which provides the month, year and location of production.

The lot numbering system utilized until 2010 is a sequence of **six characters**, two letters followed by four numbers. The first letter represents the year, for example, Y denotes 2009 and Z denotes 2010. The second letter represents the month and site, for example, A-L denotes January through December at Spectrum's Gardena, CA facility, while M-X denotes January through December at the New Brunswick, NJ facility. The following four numbers are sequentially assigned.

Example: ZI0928 = The 928th material produced in California in September 2010

The lot numbering system utilized for 2011 and forward, is a sequence of **seven characters**. The first character, a number, represents the production facility:

- 1 = Gardena, CA Facility
- 2 = New Brunswick, NJ Facility
- 3 = China Facility

The second character, a letter, represents the year. For example, A denotes 2011 and B denotes 2012. The third character, a letter, represents the month, with A denoting January and L denoting December. The following four numbers are sequentially assigned.

Example: 2AA0706 = The 706th material produced in New Jersey in January 2011

Thank you for your interest with Spectrum products. Please feel free to contact us at 310-516-8000 or via email at qualityassurance@spectrumchemical.com if we may be of further assistance.

Sincerely,



Michael Dang
Manager, GMP Compliance



Stability – Shelf Life Guidance

Product Covered: I1015, Iodine, Resublimed (DEA List I Chemical), Crystal, USP

Spectrum Chemical's manufacturing partner has assigned the following shelf life guidance for the product listed above.

The product, I1015, Iodine, Resublimed (DEA List I Chemical), Crystal, USP, is assigned a 36 months shelf life from date of manufacturing. The quality and integrity of the chemical depends on the handling and storage conditions. Please refer to the Safety Data Sheet for proper storage and handling procedures.

Adan R. Hernandez
Quality Control Manager

A handwritten signature in blue ink that reads "Adan R. Hernandez".

Corporate Headquarters
769 Jersey Avenue
New Brunswick, NJ 08901-3605