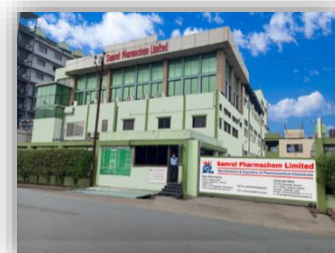




### SAFETY DATA SHEET

#### 1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifiers	
i	Product Name : <b>Iodine</b>
ii	Chemical Formula : I <sub>2</sub>
iii	CAS No. : 7553-56-2
iv	EC No. : 231-442-4
v	HSN Code : 28012000
vi	Hazardous : Yes
vii	Content : Minimum 99.5%
viii	Appearance : Prills with a metallic shine
1.2 Relevant identified uses of the substance	
i	Identified uses : Laboratory chemicals, Food, Drug, Pesticide, Biocidal product use.
1.3 Details of Manufacturer	
i	Company : <b>Samrat Pharmachem Limited</b>
ii	Address : Plot No. A2/3444-3445, GIDC, Phase 4, Ankleshwar – 393002, Gujarat, India.
iii	Phone : +91-7045456789 / 7046456789
iv	Email : <a href="mailto:contact@samratpharmachem.in">contact@samratpharmachem.in</a>
v	Webpage : <a href="http://www.samratpharmachem.com">www.samratpharmachem.com</a>
1.4 Emergency Number	
i	Emergency Phone : +91-7045456789 / 7046456789



#### 2. HAZARD IDENTIFICATION

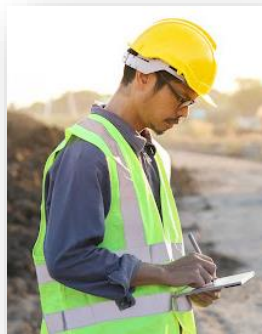
2.1 Classification of substance			
i	H302	Acute Oral Toxicity	: Harmful if swallowed (Category 4)
ii	H311	Acute Dermal Toxicity	: Toxic; contact with skin (Category 4)
iii	H332	Acute Inhalation Toxicity	: Harmful if Inhaled (Category 4)
iv	H315	Skin Corrosion / Irritation	: Causes skin irritation (Category 2)
v	H319	Eye Irritation	: Causes serious eye irritation (Category 2)
vi	H335	Specific Target Organ Toxicity (Respiratory)	: May cause respiratory irritation; Single Exposure (Category 3)




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vii	H372	Specific Target Organ Toxicity (Oral)	: Thyroid; Repeated Exposure (Category 1)
viii	H400	Acute Aquatic Hazard	: Toxic to Aquatic Life (Category 1)



2.2 GHS Label elements, including precautionary statements	
i	Pictogram : 
ii	Signal word : Danger
iii	Hazard Statement(s)
	H302 + H312 + 332 : Harmful if swallowed, in contact with skin or if inhaled
	H315 : Causes skin irritation
	H319 : Causes serious eye irritation
	H335 : May cause respiratory irritation
	H372 : Causes damage to organs (thyroid gland) through prolonged or repeated exposure
	H400 : Very toxic to aquatic life
iv	Precautionary Statement(s)
	P261 : Avoid breathing dust / fumes / gas / mist / vapours / spray
	P264 : Wash exposed skin thoroughly after handling
	P271 : Use outdoors or in a well-ventilated area
	P273 : Avoid release to the environment
	P280 : Wear protective clothing, gloves, eye & face equipment
	P301 + P330 + P331 : IF SWALLOWED: rinse mouth. DO NOT induce vomiting
	P303 + P361 + P353 : IF ON SKIN (or hair): Remove all contaminated clothing. Rise skin with water/shower
	P305 + P351 + P338 : IF IN EYES: Rise cautiously with water for several minutes. Remove contact lenses in present.
	P312 : Immediately call a poison centre or doctor / physician
	P333 + P313 : If skin irritation or rash occurs: Get medical advice / attention
	P391 : Collect spillage
	P405 : Lock up storage
	P501 : Disposal of contents / containers to comply with local, state and federal regulations

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.



### 3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances	
i	Molecular Weight : 253.81 g/mol
ii	Constituent Elements : I <sub>2</sub>

### 4. FIRST AID MEASURES

4.1 Symptoms	
i	<b>Most important symptoms and effects, both acute and delayed</b>
	Eye Burn / Irritation, Repeated skin exposure can cause absorption which may lead to health hazards, Gastrointestinal complains & Possible inflammation of respiratory track, risk of lung oedema. Ingestion may cause vomiting & blood pressure drop.
ii	<b>Indication of any immediate medical attention &amp; special treatment needed</b>
	If seeking medical attention, provide SDS document to physician.
4.2 Description of first aid measures	
i	<b>Inhalation</b> : If inhaled, move victim to fresh air. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
ii	<b>Ingestion</b> : Do NOT induce vomiting unless directed to do so by medical personnel. Rinse mouth out with water. If you feel still feel unwell, immediately make victim drink a slurry of activated charcoal in water (two glasses at most). Consult a doctor.
iii	<b>Skin contact</b> : Take off immediately all contaminated clothing. Wash skin with plenty of water. Cover the irritated skin with an emollient. If skin irritation occurs: Get medical advice/attention.
iv	<b>Eye contact</b> : Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with water for several minutes. If eye irritation persists: Get medical advice/attention.



### 5. FIRE FIGHTING MEASURES

5.1 Extinguishing media	
i	<b>Suitable extinguishing agents</b> : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
ii	<b>Special hazards arising from the substance or mixture</b> : Ignition on contact with bromine, chlorine trifluoride, aluminum-titanium alloys + heat, metal acetylides, 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 deg C)]. Magnesium burns vigorously when heated with iodine vapor. Iodine





		unites with fluorine at ordinary temperature with a luminous flame
iii	Special remarks on Explosion Hazard	: Explosive reactions with iodine and: hafnium powder + heat; tetraamine copper (II) sulfate + ethanol; trioxygen difluoride; polyacetylene (at 113 deg. C); potassium; sodium; butadiene + ethanol +mercuric oxide
iv	Advice for firefighters	: Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
v	Additional information	: Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

### 6. ACCIDENTAL RELEASE MEASURES

<b>6.1</b>	<b>Personal precautions, protective equipment &amp; emergency procedures</b>
	Wear protective equipment. Use respiratory protective device against the effects of fumes/dust/aerosol. Keep unprotected persons away. Ensure adequate ventilation. Do not touch or walk on spilled product.
<b>6.2</b>	<b>Environmental precautions</b>
	Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dyke if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the SDS and with local authorities.
<b>6.3</b>	<b>Methods and material for containment and cleaning up</b>
	Cover drains. Cover spill with non-combustible material e.g. sand, mud & vermiculite. Observe possible material restrictions (see sections 7 and 10). Use gloves to take up dry. Dispose-off properly. Clean up affected area carefully.
<b>6.4</b>	<b>Reference to other sections</b>
	For disposal see section 13



### 7. HANDLING AND STORAGE

<b>7.1</b>	<b>Precautions for safe handling</b>
	Avoid contact with skin and eyes do not inhale substance mixture. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from incompatibles such as oxidizing agents, reducing agents, metals and metallic powders. Keep away from flames / extreme heat. For precautions see section 2.2.
<b>7.2</b>	<b>Conditions for safe storage, including any incompatibilities</b>
	Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons. Recommended storage temperature see the product label. Storage class (TRGS 510): 6.1D: Non-





	combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects. Do not pack material in metals, steel, iron or zinc.
<b>7.3</b>	<b>Specific end use(s)</b>
	Apart from the uses mentioned in section 1.2 the product has applications in the following industries X-ray contrast agents, Antimicrobial agents, LCD Polarizer, Industrial catalysts, Animal feed, Edible Salt & as a Stabiliser in tyres & airbags.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>8.1 Control Parameters</b>			
i	Ingredients with workplace control parameters		
	<i>Predicted no effect concentration (PNEC)</i>		
	<b>Particulars</b>	<b>Value</b>	<b>Exposure Time</b>
(a)	Fresh Water	0.01813 mg / l	short-term (single instance)
(b)	Sea Water	0.06001 mg / l	short-term (single instance)
(c)	Sewage treatment plant	11 mg / l	short-term (single instance)
(d)	Fresh water sediment	3.99 mg / kg	short-term (single instance)
(e)	Sea sediment	20.22 mg / kg	short-term (single instance)
(f)	Soil	5.95 mg / kg	short-term (single instance)
ii	<i>Derived no effect level (DNEL's)</i>		
(a)	Worker (Industry)	0.07 mg/m <sup>3</sup>	chronic - systemic effects
(b)	Worker (Industry)	0.01 mg/kg bw/day	chronic - systemic effects
<b>8.2 Exposure Controls</b>			
i	Appropriate engineering controls		
	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.		
ii	Personal protective equipment		
(a)	Eye / face protection		
	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses		
(b)	Skin Protection		
	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.		
(c)	Body Protection		
	Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.		
(d)	Respiratory protection		
	For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).		
(e)	Control of environmental exposure		
	Do not let product enter drains.		





### 9. PHYSICAL & CHEMICAL PROPERTIES

<b>Appearance</b>	Form: Solid Colour: Violet with metallic shine (Dark)	<b>Flammability</b>	Product is not flammable
<b>Odour</b>	Pungent	<b>Vapour pressure</b>	0.233 mm Hg @ 25° C (77° F)
<b>Odour threshold</b>	0.85 ppm / 9 mg/m <sup>3</sup>	<b>Relative vapour density at 20°C</b>	8.8
<b>pH-value</b>	Not Applicable	<b>Relative density</b>	Not determined
<b>Melting/Freezing point</b>	113.5° C (236.3° F)	<b>Solubilities</b>	0.3 g/l @ 25° C (77° F)
<b>Boiling point</b>	184.4° C (363.92° F)	<b>Partition coefficient (n-octanol/water)</b>	2.49 (Log Kow)
<b>Flash Point</b>	Not determined	<b>Auto/Self-ignition temperature</b>	Not determined
<b>Evaporation rate</b>	Not determined	<b>Decomposition temperature</b>	Not determined
<b>Flammability</b>	Not determined	<b>Viscosity</b>	Not determined
<b>Density</b>	4930 kg/m <sup>3</sup> ) at 20° C (77° F)	<b>Poison Class</b>	Not determined



### 10. STABILITY & REACTIVITY

i	Reactivity	: Non-reactive under normal conditions. Reacts (slowly) with some metals
ii	Chemical stability	: If kept under long exposure to air the material shall evaporate releasing violet fumes. No decomposition if used and stored according to specifications.
iii	Possible hazardous reactions	: None under normal processing. Can react violently on contact with incompatibles
iv	Conditions to avoid	: Avoid high temperatures exposure to direct sunlight, & avoid contact with incompatible materials
v	Incompatible material	: Strong reducing agents, metals, metallic powder & strong oxidisers
vi	Hazardous decomposition products	: Risk of explosion with: Reducing agents, alkali metals, acetylene, ammonia, potassium, copper compounds, sodium, oxyhalogenic compounds, boron, halogen oxides, iodides & azides.  Risk of ignition or formation of inflammable gases with: Powdered metals, zinc, semimetals, halogen compounds, non-metallic oxides, formaldehyde, hydrides, sodium phosphite, phosphorus, sulfur, titanium, powdered magnesium, petrol & butadiene.  Exothermic reaction with:





Carbides, turpentine oils, alkaline oxides, nitrides, acetaldehyde, lithium, fluorides, oxides of phosphorus, chlorine & iron in powder form.

### 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects			
i	Oral	LD50 Rat	315 mg/kg
ii	Dermal	LD50 Rabbit	1425 mg/kg
iii	Inhalation	LC50 Rat (Dust / Mist)	4.558 mg/l/4h
iv	Additional Information	Harmful if swallowed. Harmful in contact with skin. Harmful if inhaled. (OECD 403 method)	
11.2 Corrosion Irritation			
i	Serious eye damage / irritation		Causes serious eye irritation pH: Not applicable
ii	Respiratory or skin irritation		Did not cause sensation. Mouse (OECD 429 test method)
iii	Germ cell mutagenicity		Mutagenicity tests are negative (OECD 476 test method)
iv	Carcinogenicity		Did not show carcinogenic effects in experiments
v	Reproductive Toxicity		Not classified (OECD 422 test method)
11.3 Additional information			
i	No observed adverse effect level (NOAEL)		
	Particulars	Value	
	Animal / male, F0/P) Single exposure	10 mg/kg	
	Animal / female, F0/P) Single exposure	10 mg/kg	
	Specific target organ toxicity (STOT) Single exposure	Category 3: Inhalation of vapours may cause respiratory irritation	
	Rat: Oral ~ 90 days	0.375 mg/kg bodyweight / day Thyroid affection	
	Thyroid Gland, Chronic, Oral, Human: Systematic	= 0.01 mg/kg bodyweight / day	
	Specific target organ toxicity (STOT) Repeated exposure	Category 1: Thyroid affection	
ii	Aspiration Hazard		Not classified
iii	Viscosity, Kinematic		Not applicable
iv	Potential adverse human health effects and symptoms include irritation to eyes, skin & respiratory track, Risk of lung oedema, may cause gastrointestinal irritation, nausea, vomiting and diarrhea, Thyroid enlargement / affection		





### 12. ECOLOGICAL INFORMATION

<b>12.1 Toxicity</b>			
i	Particulars	Type	Value
	Fish LC50	Oncorhynchus mykiss (rainbow trout)	1.67 mg/l
	Crustacea LC 50	Daphnia magna (planktonic crustacean)	0.55 mg/l, 48 hours
	Other aquatic invertebrates ErC 50	Algae	0.13 mg/l
ii	Ecology – general	Very toxic to aquatic life. Before neutralisation, the product may represent a danger to aquatic organisms	
iii	Ecology – air	Not dangerous for the ozone layer	
iv	Hazardous to aquatic environment – short term (acute)	Very toxic to aquatic life	
v	Hazardous to aquatic environment – long term (chronic)	Not classified	
<b>12.2 Persistence and degradability</b>			
i	Persistence and degradability	Biodegradability	
ii	Biodegradation	Not applicable	
<b>12.3 Bio accumulative potential</b>			
i	BCF – Other aquatic organisms	0.027 BCF	
ii	Partition coefficient n-octanol/water (Log Kow)	2.49	
iii	Bioaccumulative potential	Low bioaccumulation potential	
<b>12.4 Mobility in Soil</b>			
i	Partition coefficient n-octanol/water (Log Koc)	0.47 – 1.64	
<b>12.5 Results of PBT and vPvB assessment</b>			
	No data available		
<b>12.6 Other adverse effects</b>			
	Not known		



### 13. DISPOSAL CONSIDERATIONS

<b>13.1 Waste disposal recommendation's</b>	
i	General instructions
	This material, containers & non-recyclable solutions should be offered to a licensed disposal company. Dispose of contents/container in accordance with licensed collectors sorting instructions. Dispose in a safe manner in accordance with local/national regulations. Do not discharge into drains.







ii	Product / Packaging disposal recommendations	
	Avoid release to the environment	
iii	European list of waste (LoW) code	
	<b>Code</b>	<b>Content</b>
	18 01 06*	Chemicals consisting of or containing dangerous substances
	15 01 10*	Packaging containing residues of or contaminated by dangerous substances

### 14. TRANSPORT INFORMATION

<b>14.1</b>	<b>In accordance with ADR / IMDG / IATA / ADN / RID</b>				
	<b>ADR</b>	<b>IMDG</b>	<b>IATA</b>	<b>ADN</b>	<b>RID</b>
i	UN Number				
	UN 3495	UN 3495	UN 3495	UN 3495	UN 3495
ii	UN proper shipping name				
	IODINE	IODINE	IODINE	IODINE	IODINE
iii	Transport hazard class				
	8 (6.1)	8 (6.1)	8 (6.1)	8 (6.1)	8 (6.1)
iv	Hazardous class symbols				
v	Packing group				
	III	III	III	III	III
vi	Environment hazards: Dangerous for the environment				
	Yes	Yes	Yes	Yes	Yes
vii	Marine Pollutant				
	Not applicable	Yes	Not applicable	Not applicable	Not applicable
<b>14.2</b>	<b>Transport in bulk according to annexure II of Marpol and the IBC Code</b>				
i	IBC Code		Not applicable		



### 15. REGULATORY INFORMATION

<b>15.1</b>	<b>EU - Regulations</b>
i	No REACH Annexure XVII restrictions
ii	Iodine is not the REACH Candidate List
iii	Iodine is not on the REACH Annexure XIV List
iv	Iodine is not subject to Regulations (EU) No. 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals
v	Iodine is not subject to Regulation (EU) No. 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants



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15.2 National Regulations (Listed on)		
i	<b>AICS</b>	Australian Inventory of Chemical Substances
ii	<b>Canadian DSL</b>	Canadian Domestic Substances List
iii	<b>Canadian IDL</b>	Ingredient Disclosure List
iv	<b>IECSC</b>	Inventory of Existing Chemical Substances Produced or Imported in China
v	<b>EINECS</b>	European Inventory of Existing Commercial Chemical Substances
vi	<b>KECL/KECI</b>	Korean Existing Chemicals Inventory
vii	<b>NZIoC</b>	New Zealand Inventory of Chemicals
viii	<b>PICCS</b>	Philippines Inventory of Chemicals & Chemical Substances
ix	<b>US TSCA</b>	United States Toxic Substances Control Act
x	<b>JPDSC</b>	Japanese Poisonous and Deleterious Substances Control Law
xi	<b>INSQ</b>	Mexican National Inventory of Chemical Substances
xii	<b>TIC</b>	Turkish Inventory of Chemicals

## 16. OTHER INFORMATION

16.1 NFPA Rating										
i	Health hazard	: 3 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.								
ii	Fire hazard	: 0 - Materials that will not burn under typical dire conditions, including intrinsically non-combustible materials such as concrete, stone, and sand.								
iii	Reactivity	: 0 - Material that in themselves are normally stable, even under fire conditions.								
16.2 HMIS Rating		<table border="1" style="width: 100%;"> <tr> <td style="background-color: #0000FF; color: white;"><b>Health</b></td> <td style="text-align: center;"><b>3</b></td> </tr> <tr> <td style="background-color: #FF0000; color: white;"><b>Fire</b></td> <td style="text-align: center;"><b>0</b></td> </tr> <tr> <td style="background-color: #FFFF00; color: black;"><b>Reactivity</b></td> <td style="text-align: center;"><b>0</b></td> </tr> <tr> <td style="background-color: #000000; color: white;"><b>Personal Protection</b></td> <td style="text-align: center;"><b>J</b></td> </tr> </table>	<b>Health</b>	<b>3</b>	<b>Fire</b>	<b>0</b>	<b>Reactivity</b>	<b>0</b>	<b>Personal Protection</b>	<b>J</b>
<b>Health</b>	<b>3</b>									
<b>Fire</b>	<b>0</b>									
<b>Reactivity</b>	<b>0</b>									
<b>Personal Protection</b>	<b>J</b>									
i	Health	: 3 - Moderate Hazard - Temporary or minor injury may occur								
ii	Flammability	: 0 - Minimal Hazard - Materials that will not burn								
iii	Physical	: 0 - Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.								
iv	Personal Protection	: J - Gloves. Synthetic apron. Vapour and dust respirator. Be sure to use an approved/certified respirator or								



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	equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.
<b>16.3</b>	<b>Further Information</b>
	The above information is derived from the available literature & believed to be correct but may not be complete & conclusive. The company shall not be responsible for any damage resulting from handling or usage of the product. The information shall be used only as a guide.

**DISCLAIMER OF LIABILITY** The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.