GEMMOLOGICAL INSTRUMENTS Ltd.

SAFETY DATA SHEET

According to Regulation (EC) No. 453/2010
Version 2.1 Revision Date 26.01.2015

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 **Product identifiers**

Product name: **Refractometer Fluid nD 1.78/1.79**
Mixture of Diiodomethane which is over-saturated with Sulphur.

Product Number: RIL 0001
Brand: Gemmological Instruments Ltd.
REACH No. A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No's.: For Diiodmethane (158429) = 75-11-6 and for Sulphur (13803) = 7704-34-9

1.2 **Relevant identified uses of the substance or mixture and uses advised against**

Identified uses: Laboratory chemicals, Manufacture of substances

1.3 **Details of the supplier of the safety data sheet**

Company: Gemmological Instruments Ltd.
21 Ely Place
London EC1N 6TD
England, UK
Telephone: +44 (0)20 7404 3334
E-mail address: information@gem-a.com

1.4 **Emergency telephone number**

Emergency Phone # : UK 999 or 112 Europe: 112 US: 911

Section 2: HAZARDS IDENTIFICATION

2.1 **Classification of the substance or mixture**

Classification according to Regulation (EC) No. 1272/2008

	Diiodomethane (*)	Sulphur in powder/flake form
Acute toxicity, Oral (category 4), H302	**H302**	
Skin irritation (Category 2), H 315	**H315**	**H315**
Serious eye damage (Category 1), H318	**H318**	
Specific target organ toxicity - single exposure (Category 3), Respiratory system H335	**H335**	

(*) For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 **Label elements**

Labelling according Regulation (EC) No. 1272/2008

Pictogram

Signal word **Danger** **Warning**

Hazard statement(s)

H302	Harmful if swallowed	**H302**	
H315	Causes skin irritation.	**H315**	**H315**
H318	Causes serious eye damage.	**H318**	
H335	May cause respiratory irritation.	**H335**	

	Diiodomethane (*)	Sulphur in powder/flake form
Precautionary statement(s)		
P280 Wear eye protection/ face protection.	**P280**	**none**
P301+ P312+ P330 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth	**P301 + P312 + P330**	**none**
P305+ P351+ P338+ P310 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.	**P305 P351 P338 P310**	**none**
Supplemental Hazard Statements:	**none**	**none**
2.3 **Other hazards**	**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.**	
	Possible sensitizer	

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS	Diiodomethane (*)	Sulphur in powder/flake form
3.1 **Substances**		
Synonyms:	**Methylene Iodide**	
Formula:	**CH_2I_2**	**S**
Molecular Weight:	**267.84 g/mol**	**32.07 g/mol**
Hazardous ingredients according to Regulation (EC) No. 1272/2008		
Component: CAS-No.	**75-11-6**	**7704-34-9**
EC-No.	**200-841-5**	**231-722-6**
Index-No.		**016-094-00-1**
Classification:	**Acute Tox. 4; Skin Irrit. 2; Eye Dam. 1; STOT SE 3; H302, H315, H318, H335,**	**none** is not in powderform present as Powder = Skin Irrit.2 H315
Concentration:	**≤ 100 %**	**≤ 100 %**

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

Section 4: FIRST AID MEASURES

4.1 **Description of first aid measures**

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

In swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

4.2 **Most important symptoms and effects, both acute and delayed**
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

4.3 **Indication of any immediate attention and special treatment needed** No data available

Section 5: FIREFIGHTING MEASURES

5.1 **Extinguishing media**

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media
Do **NOT** use water jet.

5.2 **Special hazards arising from the substance or mixture**
Carbon oxides, Sulphur oxides for Sulphur in powder form, Hydrogen iodide

5.3 **Advice for firefighters**
Wear self contained breathing apparatus for firefighting if necessary.

5.4 **Further information**
No data available

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 **Personal precautions, protective equipment and emergency procedures**
Use personal protective equipment. Avoid dust formation (powdered Sulphur). Avoid breathing vapours, mist or gas.
Ensure adequate ventilation. Avoid breathing dust (powdered Sulphur). Evacuate personnel to safe areas.
For personal protection see section 8.

6.2 **Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Discharge into the environment must be avoided.

6.3 **Methods and materials for containment and cleaning up**
Solids: Pick up and arrange disposal without creating dust. Sweep up and shovel.
Fluid: Soak up with inert absorbent material and dispose of as hazardous waste.

Keep in suitable, closed containers for disposal.

6.4 **Reference to other sections**
For disposal see section 13.

Section 7: HANDLING AND STORAGE

7.1 **Precautions for safe handling**
Avoid contact with skin and eyes. Avoid formation of dust and aerosols (powdered Sulphur).
Avoid inhalation of vapour or mist. Provide appropriate exhaust ventilation at places (where dust is formed).
For precautions see section 2.2.

7.2 **Conditions for safe storage, including any incompatibilities**
Store in a cool place. Small Phials containing 5 or 10 mls fluid can be stored at +15 ^{o}C to +25 ^{o}C.
Keep container tightly closed in a dry and well ventilated place.
Containers and or phials which are opened must be carefully resealed and kept upright to prevent leakage.
Storage class (TRGS 510): Combustible liquids

7.3 **Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 **Control parameters**

Components with workplace control parameters

8.2 **Exposure controls**

Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice.
Wash hands before breaks and at the end of workday.

8.2 continued **Personal protective equipment**

Eye/face protection
Tightly fitting safety goggles. Faceshield (8-inch minimum).
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

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.

The selected protective gloves have to statisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact & Splash contact:	**Diiodomethane**	**Sulphur in powder/flake form**
Material:	butyl-rubber	Nitrile rubber.
Minimum layer thickness:	0.3 mm	0.11 mm
Break through time:	480 min	480 min
Material tested:	Butoject® (KCL 897/Aldrich Z677647, Size M)	Dermatril® (KCL 740/Aldrich Z677272, Size M)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de
Test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Impervious clothing and or a 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.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Discharge into the environment must be avoided.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 **Information on basic physical and chemical properties**

			Diiodomethane	**Sulphur in powder/flake form**
a)	Appearance	Form:	liquid	flakes
		Colour:	slightly light brown	light yellow
b)	Odour		No data available	slight
c)	Odour Threshold		No data available	No data available
d)	pH		No data available	No data available
e)	Melting point/freezing point range:		5 - 8 °C - lit.	117 - 120 °C - lit.
f)	Initial boiling point and boiling range		67 - 69 °C at 15 hPa - lit.	444.7 °C - lit.
g)	Flash point		110 °C - closed cup	207 °C - closed cup
h)	Evaporation rate		No data available	No data available
i)	Flammability (solid, gas)		No data available	May form combustible dust concentrations in air
j)	Upper/lower flammability or explosive limits		No data available	Upper explosion limit: 6.83 % (V) Lower explosion limit: 0.17 % (V)
k)	Vapour pressure		No data available	10 hPa at 246 °C 1 hPa at 183,8 °C

	l)	Vapour density	9.25 - (Air = 1.0)	No data available
	m)	Relative density	3.325 g/mL at 25 °C.	2.07 g/cm^3 at 25 °C.

9.1 continued **Information on basic physical and chemical properties**

			Diiodomethane	Sulphur in powder/flake form
	n)	Water solubility	No data available	insoluble
	o)	Partition coefficient: n-octanol/water	log Pow: 3,176	No data available
	p)	Auto-ignition temperature	No data available	240 °C.
	q)	Decomposition temperature	No data available	No data available
	r)	Viscosity	No data available	8 mm^2/s at 140 °C.
	s)	Explosive properties	No data available	No data available
	t)	Oxidizing properties	No data available	No data available
9.2	**Other safety information**	Relative vapour density	9.25 - (Air = 1.0)	No data available

Section 10: STABILITY AND REACTIVITY

		Diiodomethane	Sulphur in powder/flake form
10.1	**Reactivity**	No data available	No data available
10.2	**Chemical stability**	Stable under recommended storage conditions	Stable under recommended storage conditions
10.3	**Possibility of hazardous reactions**	No data available	No data available
10.4	**Conditions to avoid**	No data available	Avoid moisture. Heat, flames and sparks.
10.5	**Incompatible materials**	Alkali metal salts, Strong oxidising agents, Strong bases, Metals Forms shock-sensitive mixtures with certain other materials., Lithium, Potassium, Sodium/sodium oxides, and its alloys	& Amines, Bases
10.6	**Hazardous decomposition products**	No data available	No data available
	Other decomposition products	No data available	No data available
		In the event of fire: see section 5	

Section 11: TOXICOLOGICAL INFORMATION

11.1 **Information on toxicological effects**

Acute toxicity	Diiodomethane	Sulphur in powder/flake form
LDLO Oral - rabbit - 175 mg/kg	No data available	x
LD50 Oral - rat - 500,01 mg/kg	x	No data available
LD50 Oral - rat - > 2000 mg/kg	No data available	x
LC50 Inhalation - rat - 4 h - > 9.23 mg/l	No data available	x
LD50 Dermal - rabbit - > 2000 mg/kg	No data available	x
LDLO Intravenous - rat - 8 mg/kg	No data available	x
LDLO Intravenous - rabbit - 5 mg/kg	No data available	x
LDLO Intraperitoneal - guinea pig - 55 mg/kg	No data available	x
LDLO Intravenous - dog - 10 mg/kg	No data available	x
LD50 Intraperitoneal - rat - 403 mg/kg	x	No data available
LD50 Subcutaneous - mouse - 830 mg/kg	x	No data available
Skin corrosion/irritation	Irritating to skin	
Skin - rabbit	No data available	No skin irritation
Serious eye damage/eye irritation	Risk of serious damage to eyes	
Eyes - rabbit	No data available	No eye irritation
Respiratory or skin sensitization	No data available	No data available
Germ cell mutagenicity	No data available	No data available
Carcinogenicity IARC:	No component of this product present at levels greater than or equal to 0,1% is identified a probable, possible or confirmed human carcinogen by IARC	
Reproductive toxicity	No data available	No data available
Specific target organ toxicity - single exposure Inhalation - May cause respiratory irritation	x	No data available
Specific target organ toxicity - repeated exposure	No data available	No data available
Aspiration hazard	No data available	No data available
Additional Information:	RTECS: PA8575000	RTECS: WS4250000
Signs and Symptoms of Exposure		Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting., Dermatitis.
Note:	To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.	

Section 12: ECOLOGICAL INFORMATION

		Diiodomethane	Sulphur in powder/flake form
12.1	**Toxicity**		
	Toxicity to fish	No data available	
	LC50 - Oncorhynchus mykiss (rainbow trout)	No data available	> 180 mg/l - 96 h
	LC50 - other fish	No data available	866 mg/l - 96 h
	Toxicity to daphnia and other	No data available	x
	aquatic invertebrates	No data available	x
	EC50 - Daphnia magna (Water flea)	No data available	> 5000 mg/l - 48 h
12.2	Persistence and degradability	No data available	No data available
12.3	Bioaccumulative potential	No data available	No data available
12.4	Mobility in soil	No data available	No data available
12.5	Results of PBT and vPvB assessment	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	
12.6	Other adverse effects		
	Harmful to aquatic life	No data available	No data available

Section 13: DISPOSAL CONSIDERATIONS

	Diiodomethane	Sulphur in powder/flake form
13.1 **Waste treatment methods**		
Product:		
* Offer surplus and non-recyclable solutions to a licensed disposal company.	x	x
* Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.		x
Contaminated packaging:		
Dispose of as unused product.	x	x

Section 14: TRANSPORT INFORMATION

		Diiodomethane	Sulphur in powder/flake form
14.1	**UN number:**		
	* ADR/RID:	-	1350
	* IMDG:	-	1350
	* IATA:	-	1350
14.2	**UN proper shipping name:**		
	* ADR/RID:	Not dangerous goods	SULPHUR
	* IMDG:	Not dangerous goods	SULPHUR
	* IATA:	Not dangerous goods	Sulphur
14.3	**Transport hazard class(es):**		
	* ADR/RID:	-	4.1
	* IMDG:	-	4.1
	* IATA:	-	4.1
14.4	**Packaging group:**		
	* ADR/RID:	-	III
	* IMDG:	-	III
	* IATA:	-	III
14.5	**Environmental hazards:**		
	* ADR/RID:	no	no
	* IMDG:	Marine pollutant: no	Marine pollutant: no
	* IATA:	no	no
14.6	**Special precautions for user:**	No data available	No data available

Section 15: REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulations (EC) No. 453/2010

	Diiodomethane	Sulphur in powder/flake form
15.1 **Safety, health and environmental regulations/legislation specific for the substance or mixture**	no data available	no data available

15.2	**Chemical Safety Assessment**	For this product a chemical safety assessment was not carried out	For this product a chemical safety assessment was not carried out

Section 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Gemmological Instruments Ltd. and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product(s).

Data sheets of suppliers and information from chemical handbooks relating to the subject are used for compiling this data sheet.

e.g.	Safety Data Sheets from Sigma Aldrich	www.sigma-aldrich.com
	Safety Data Sheets from Merck chemicals	www.merck-chemicals.com
	CRC Handbook of Chemistry and Physics	