

**Material name: IORA Model Clear**

In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

**SECTION 1: Identification of the substances/mixture and of the company/undertaking****1.1 Product identifiers**

Product name: IORA Model Clear

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

Identified uses: Printing inks

Uses advised against: This product is a cartridge containing ink. Under normal conditions of use, the substance is released from a cartridge only inside an appropriate printing system, and therefore, exposure is limited.

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

Company: iSQUARED AG  
Kreuzlingerstrasse 5  
CH-8547 Lengwil, Switzerland

Telephone: DE: +49 89 215 57 998  
CH: +41 71 577 10 49

E-mail address: info@isquared.eu.com

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture**

Classification according to Regulation (EG) Nr. 1272/ 2008 (CLP)

Acute toxicity - oral	Category 4	H302
Skin irritation	Category 2	H315
Serious eye damage	Category 1	H318
Skin sensitisation	Category 1	H317
Eye irritation	Category 2	H319
Specific target organ toxicity - single exposure	Category 3	H335
Reproductive toxicity	Category 2	H361
Specific target organ toxicity - repeated exposure	Category 2	H373
Chronic aquatic toxicity	Category 2	H411

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

**2.2 Label Elements:****Labeling according to Regulation (EC) 1272/2008 [CLP]:**

Pictogram



Signal Word:

Danger

Hazard Statement(s)

H302	Harmful if swallowed
H315	Causes skin irritation
H318	Causes serious eye damage
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure

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H411	Toxic to aquatic life with long lasting effects
Precaution Statement(s) P280	Wear protective gloves/ protective clothing/ eye protection/ face protection
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray
P305 + P351 + P338	If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P302 + P352 If on Skin:	Wash with plenty of soap and water
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention
P363	Wash contaminated clothing before reuse
P337 + P313	If eye irritation persists: Get medical advice/ attention
Storage:	None needed according to classification criteria
Disposal:	P501 Dispose of contents/ container in accordance with local/ regional/ national regulations

**2.3 Other Hazards:**

None known

**SECTION 3: Composition/information on ingredients****3.1 Substances**

CAS EC No. Registration No.	Component Synonyms	Regulation (EC) 1272/2008	Wt. %
5888-33-5 227-561-6 01-2119957862-25-0001	Isobornyl acrylate	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335) Aquatic Chronic 2 (H411)	≤30
5117-12-4 418-140-1 01-2120102080-83-0000	4-(1-Oxo-2-propenyl)-morpholine	Acute Tox. 4 (H302) Eye Dam. 1 (H318) Skin Sens. 1 (H317) STOT RE 2 (H373)	≤30
---	Proprietary	Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335)	≤30
---	Proprietary	Classified as not hazardous	≤30
---	Proprietary	Classified as not hazardous	≤30
75980-60-8 278-355-8 01-2119972295-29-0000	Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	Skin Sens. 1 (H317) Repr. 2 (H361) Aquatic Chronic 2 (H411)	≤5
---	Proprietary	Classified as not hazardous	≤5

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Additional Information: Under normal conditions of use, the substance is released from a cartridge only inside an appropriate system, and therefore exposure is limited. The liquid within the cartridges is considered hazardous, and the MSDS has been prepared in case of exposure to the liquid.

**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. Remove contaminated clothing and shoes. Consult a physician.

**In case of eye contact**

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

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**Self-protection of the first aider**

Put on appropriate protective equipment (see section 8). Move exposed person to fresh air. Remove contaminated clothing and shoes.

**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 medical 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.

**5.2 Special hazards arising from the substance or mixture**Carbon oxides, nitrogen oxides (NO<sub>x</sub>), Oxides of phosphorus**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**

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Personal precautions: Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection see section 8. Consult expert immediately.

Occupational Spill/ Release: Intact cartridges do not pose a leak or spill hazard. Damaged cartridges may leak uncured ink. Stop leak if possible without personal risk. Reduce vapors with water spray. Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers.

## 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

Wear appropriate protective equipment and clothing.

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 inhalation of vapour or mist. Keep away from sources of ignition - No smoking. For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage  
Store sealed in the original container at room temperature.

Light sensitive

Storage temperature between 15 °C and 25 °C.

Shipment temperatures (up to 5 weeks) is -20°C to 50°C.

### 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 Exposure limit values

General product information: No occupational exposure limits (PEL/TWA) have been established for this product.

Component Analysis:

Component	Component Manufacturer IEL (Internal Exposure Limit)
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	3.5 mg/m <sup>3</sup>

Derived No Effect Level (DNEL)

No information available

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**Predicted No Effect Concentration**

No information available

**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

**Personal protective equipment****Eye/face protection**

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 satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

**Body Protection**

Impervious clothing, 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**

a) Appearance	liquid (Ink cartridge) Colour: clear/blue
b) Odour	No data available Characteristic
c) Odour Threshold	No data available
d) pH	No data available
e) Melting point/freezing point	No data available
f) Initial boiling point and boiling range	No data available
g) Flash point	No data available
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapour pressure	No data available

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l) Vapour density	No data available
m) Relative density	No data available
n) Water solubility	No data available
o) Partition coefficient: n-octanol/water	No data available
p) Auto-ignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidizing properties	No data available

**9.2 Other safety information**

No data available

**SECTION 10: Stability and reactivity****10.1 Reactivity**

Heating may cause a fire.

**10.2 Chemical stability**

Unstable on exposure to light. Unstable on exposure to heat.

**10.3 Possibility of hazardous reactions**

Uncured ink will polymerize on exposure to light.

**10.4 Conditions to avoid**

Avoid exposure to heat and light.

**10.5 Incompatible materials**

Not applicable under normal conditions of use and storage.

**10.6 Hazardous decomposition products**

Thermal decomposition products. Combustion: oxides of carbon.

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

Isobornyl acrylate

LD50 Oral - Rat - 4.890 mg/kg

Remarks: Behavioral:Tremor. Lungs, Thorax, or  
Respiration:Dyspnea. Skin and Appendages:  
Other: Hair.

LD50 Dermal - Rabbit - &gt; 5.000 mg/kg

4-(1-Oxo-2-propenyl)-morpholine

LD50 Oral - rat - 588 mg/kg (OECD Test  
Guideline 401)

LD50 Dermal - rat - &gt; 2.000 mg/kg

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

LD50 Oral - Rat - male and female –  
> 5.000 mg/kg (OECD Test Guideline 401)

LD50 Dermal - Rat - male and female –

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&gt; 2.000 mg/kg (OECD Test Guideline 402)

**Skin corrosion/irritation**

Isobornyl acrylate

Moderate skin irritation

4-(1-Oxo-2-propenyl)-morpholine

Skin – rabbit

Result: No skin irritation - 24 h

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Skin – Rabbit

Result: No skin irritation

**Serious eye damage/eye irritation**

Isobornyl acrylate

Moderate eye irritation

4-(1-Oxo-2-propenyl)-morpholine

Eyes – rabbit

Result: Risk of serious damage to eyes. (OECD Test Guideline 405)

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Eyes – Rabbit

Result: No eye irritation

**Respiratory or skin sensitisation**

Isobornyl acrylate

No data available

4-(1-Oxo-2-propenyl)-morpholine

in vivo assay - guinea pig

May cause sensitisation by skin contact.  
(Directive 67/548/EEC, Annex V, B.6.)

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Mouse

Result: May cause sensitisation by skin contact.  
(OECD Test Guideline 429)**Germ cell mutagenicity**

Isobornyl acrylate

No data available

4-(1-Oxo-2-propenyl)-morpholine

no data available

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

In vitro mammalian cell gene mutation test

Chinese hamster lung cells

Result: negative

**Carcinogenicity**

Isobornyl acrylate

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

4-(1-Oxo-2-propenyl)-morpholine

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**Reproductive toxicity**

Isobornyl acrylate

No data available

4-(1-Oxo-2-propenyl)-morpholine

No data available

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

No data available

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**Specific target organ toxicity - single exposure**

Isobornyl acrylate	Inhalation - May cause respiratory irritation.
4-(1-Oxo-2-propenyl)-morpholine	No data available
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	No data available

**Specific target organ toxicity - repeated exposure**

Isobornyl acrylate	No data available
4-(1-Oxo-2-propenyl)-morpholine	No data available
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	No data available

**Aspiration hazard**

Isobornyl acrylate	No data available
4-(1-Oxo-2-propenyl)-morpholine	No data available
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	No data available

**Additional Information**

Isobornyl acrylate	RTECS: UD3940000 To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
4-(1-Oxo-2-propenyl)-morpholine	RTECS: Not available Headache, Nausea. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	Repeated dose toxicity: Rat - male and female - Oral - NOAEL : 100 mg/kg - LOAEL : 300 mg/kg (OECD Test Guideline 408) RTECS: Not available To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**SECTION 12: Ecological information****12.1 Toxicity**

The aquatic toxicity of the product is unknown; however based on components, it is predicted that this material may be toxic to aquatic organisms or cause long-term adverse effects in the aquatic environment. Prevent contamination of soil, drains and surface waters.

**Component Analysis:**

Isobornyl acrylate	Toxicity to daphnia and other aquatic invertebrates
4-(1-Oxo-2-propenyl)-morpholine	Toxicity to algae: Growth inhibition EC50 - Pseudokirchneriella subcapitata - > 120 mg/l - 72h (OECD Test Guideline 201)
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	Toxicity to fish: static test LC50 - Danio rerio (zebra fish) - 1 - 10 mg/l - 96 h Toxicity to daphnia and other aquatic invertebrates: Immobilization EC50 - Daphnia



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magna (Water flea) - 3,53 mg/l - 48 h (OECD Test Guideline 202)

Toxicity to algae: Growth inhibition EC50 - Pseudokirchneriella subcapitata (green algae) - &gt; 2,01 mg/l - 72 h (OECD Test Guideline 201)

**12.2 Persistence and degradability**

No information available for product

**12.3 Bioaccumulative potential**

No information available for product

**12.4 Mobility in soil**

No information available for product

**12.5 Results of PBT and vPvB assessment**

No information available for product

**12.6 Other adverse effects**

No information available for product

**SECTION 13: Disposal considerations****13.1 Waste treatment methods****Product**

Offer surplus and non-recyclable solutions to a licensed disposal company.

**Contaminated packaging**

Dispose of as unused product. Do not reuse or refill empty containers.

**13.2 Additional information**

Prior to disposal iSQUARED recommends consulting an approved waste disposal firm to ensure regulatory compliance.

**SECTION 14: Transport information****DOT (US)**

Non-hazardous for transportation.

**IATA**

Non-hazardous for transportation.

**IMDG**

Non-hazardous for transportation.

**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****EU – REACH (1907/2006) – Annex XIV List of Substances Subjected to Authorisation**

No components of this materials are listed.

**EU – REACH (1907/2006) – Article 59(1) Candidate List of Substances for Eventual Inclusion in Annex XIV**

No components of this materials are listed.

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**EU – REACH (1907/2006) – Annex XVII Restrictions of Certain Dangerous Substances, Mixtures and Articles**

No components of this materials are listed.

**Germany Regulations****Germany Water Classification**

Isobornyl acrylate (5888-33-5)

ID Number 2247, hazard class 2 - hazard to waters

4-(1-Oxo-2-propenyl)-morpholine (5117-12-4)

ID Number 6697, hazard class 2 - hazard to waters

Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide (75980-60-8)

ID Number 6366, hazard class 2 - hazard to waters

**Denmark Regulations****Environmental Protection Agency List of Undesirable Substances**

No components of this materials are listed.

**EU-Inventory****Substances Analysis - Inventory**

CAS	Component	Substance Listed
5888-33-5	Isobornyl acrylate	EINECS
5177-12-4	4-(1-Oxo-2-propenyl)-morpholine	ELINCS
-	Proprietary	EINECS
75980-60-8	Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	EINECS
-	Proprietary	EINECS

**15.2 Chemical Safety Assesment**

No chemical safety assessment has been carried out for the substance.

**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
H317	May cause an allergic skin reaction
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H411	Toxic to aquatic life with long lasting effects

**Key/Legend**

DOT (US) – US Department of Transportation; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; ELINCS - European List of Notified Chemical Substances; EN – European Standard; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IMDG - International Maritime Dangerous Goods; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); NIOSH - National Institute for Occupational Safety and Health; REACH - Registration,

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Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006; STOT – Specific Target Organ Toxicity; TWA - Time Weighted Average

Read the MSDS before handling the product.

**DISCLAIMER OF LIABILITY:** 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. iSQUARED Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.