

Material name: IORA Model grey
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 grey

1.2 Recommended uses of the mixture and restricted uses

Identified uses: Printing inks

Uses advised against: None known

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: CH: +41 (0) 71 532 99 - 00

E-mail: 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 Statements

H302 Harmful if swallowed
H315 Causes skin irritation

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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

Precaution Statements

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:	Store in a well ventilated area. Keep container tightly closed when not in use. Store away from heat and light.

Disposal:

P501	Dispose of contents/ container in accordance with local/ regional/ national regulations
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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

Material name: **IORA Model grey**
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

---	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	Not classified	≤5
---	Titanium Dioxide	Classified as not hazardous	≤5
---	Proprietary	Aquatic Chronic 2 (H411)	≤5

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

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. Immediate medical attention is recommend.

If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. If symptoms occure, seek medical attention immediately

In case of skin contact

Wash off with soap and plenty of water. Remove contaminated clothing and shoes. In case of allergic reaction seek medical attention.

In case of eye contact

Keep eye wide open and rinse thoroughly with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do. Seek medical attention.

If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Seek medical attention.

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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

4.4 Most important symptoms and effect, acute and delayed

Symptoms: Burning sensation, itching, rashes, hives.

Note to physicians: May cause sensitization in susceptible persons, which can be treated symptomatically.

SECTION 5: Firefighting measures**5.1 Extinguishing media:****Suitable extinguishing media**

Use extinguishing agent suitable for surrounding fire. Class B fires: use alcohol-resistant foam, dry chemical like sodium bicarbonate or carbon dioxide.

Unsuitable extinguishing media

Caution: Water spray may be inefficient.

5.2 Special hazards arising from the substance or mixture

Carbon oxides, nitrogen oxides (NO_x), phosphorus oxides

5.3 Advice for firefighters

Wear self-contained breathing apparatus for firefighting and full firefighting turnout gear. Cool containers with plenty of water until after the fire is out. Remove containers from area of fire if it can be done without risk. Keep out of drains, sewers, ditches and waterways. Inhalation of fumes and aerosols is a health risk.

5.4 Further information

The substance is not sensitive to mechanical impact or static discharge.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

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. Stay away from leaked material.

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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. Absorb with chemical absorber for oils or other noncombustible material. Collect spilled material in appropriate container for disposal. Keep out of water supplies, sewers etc. Clean contaminated areas thoroughly according to local regulations.

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. 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. Handle in accordance with good industrial hygiene and safety practice. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Store in cool, dry place away from light and heat. Keep container tightly closed in a 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.

Storage temperature between 15 °C and 25 °C.
Shipment temperatures (up to 5 weeks) is -20°C to 50°C.

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 Manufacturer IEL (Internal Exposure Limit)
Diphenyl(2,4,6-trimethylbenzoyl)phosphine 3.5 mg/m³ oxide

Derived No Effect Level (DNEL)	No information available
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 immediately after using this product, before breaks and at the end of workday. Do not eat, drink, smoke or apply makeup while using this product.

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation of the respiratory system is observed, ventilation and evacuation may be required.

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

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

s) Explosive properties No data available
t) Oxidizing properties 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 under development of heat.

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: carbon oxides, nitrous oxides, phosphorous oxides.

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 - > 5.000 mg/kg
4-(1-Oxo-2-propenyl)-morpholine	LD50 Oral - rat - 588 mg/kg (OECD Test Guideline 401) LD50 Dermal - rat - > 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 – > 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

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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

Specific target organ toxicity - single exposure

Isobornyl acrylate

Inhalation - May cause respiratory irritation.

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

No data available

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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

Material name: IORA Model grey

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

Toxicity to algae: Growth inhibition EC50 -
Pseudokirchneriella subcapitata (green algae) -
> 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

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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.

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

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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 Assessment

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, 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.

Material name: IORA Model grey
In Compliance with Regulation (EG) 1907/2006 (REACH) as Amended

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.