Safety data sheet

according to Regulation (EC) No 1907/2006, Article 31

Printing date 18.02.2025 Version number 3.0 Revision: 12.02.2025

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name: IRF6 UV-LED Ink Black

Article number: I-6102
UFI: 1A00-C0F3-300E-Q9HC

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

Product category PC18 Ink and toners
Application of the substance / the mixture Printing inks

Details of the supplier of the safety data sheet

Direct Color Systems
99 Hammer Mill Rd.
Rocky Hill, CT 06067-USA

Manufacturer/Supplier:

Direct Color Systems
99 Hammer Mill Rd.
Rocky Hill, CT 06067-USA

Emergency telephone number US: 24/7 CHEMTREC 1-800-424-9300
Emergency telephone number International: 24/7 CHEMTREC +1 703-527-3887

* SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Skin Corr. 1C	H314	Causes severe skin burns and eye damage.
Eye Dam. 1	H318	Causes serious eye damage.
Skin Sens. 1	H317	May cause an allergic skin reaction.
Repr. 1B	H360	May damage fertility or the unborn child.
STOT SE 3	H335-H336	May cause respiratory irritation. May cause drowsiness or dizziness.
STOT RE 2	H373	May cause damage to organs through prolonged or repeated exposure.
Aquatic Acute 1	H400	Very toxic to aquatic life.
Aquatic Chronic 2	H411	Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS05 GHS07 GHS08 GHS09

Signal word Danger

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Hazard-determining components of labelling:
Tetrahydrofurfuryl Acrylate
3,3,5-Trimethylcyclohexyl acrylate
2H-Azepin-2-one, 1-ethenylhexahydro-
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Isobournyl Acrylate
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide
2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester
propylidynetrimethanol, ethoxylated, esters with acrylic acid
4,4'-isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid

Hazard statements

H314 Causes severe skin burns and eye damage.
H317 May cause an allergic skin reaction.
H360 May damage fertility or the unborn child.
H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

P101 If medical advice is needed, have product container or label at hand.
P102 Keep out of reach of children.
P103 Read carefully and follow all instructions.
P264 Wash thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310 Immediately call a POISON CENTER/doctor.
P321 Specific treatment (see on this label).
P362+P364 Take off contaminated clothing and wash it before reuse.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards No additional information available.

*
SECTION 3: Composition/information on ingredients

3.2 Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:

CAS: 86178-38-3	3,3,5-Trimethylcyclohexyl acrylate Aquatic Acute 1, H400; Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1B, H317; STOT SE 3, H336	25 - 50%
CAS: 2399-48-6	Tetrahydrofurfuryl Acrylate Repr. 1B, H360; Skin Corr. 1C, H314; Eye Dam. 1, H318; Aquatic Chronic 2, H411; Acute Tox. 4, H302; Skin Sens. 1, H317	≥ 10 - < 25%
CAS: 5888-33-5 EINECS: 227-561-6 Index number: 607-756-00-6	Isobournyl Acrylate Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; STOT SE 3, H335	≥ 10 - < 25%
CAS: 75980-60-8 EINECS: 278-355-8 Index number: 015-203-00-X	diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide Repr. 1B, H360Fd; Skin Sens. 1B, H317	2.5 - 10%

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CAS: 2235-00-9	2H-Azepin-2-one, 1-ethenylhexahydro- STOT RE 1, H372; Acute Tox. 4, H302; Acute Tox. 4, H312; Eye Irrit. 2, H319; Skin Sens. 1, H317	≥ 2.5 - < 10%
CAS: 86273-46-3	2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester Acute Tox. 4, H302; Skin Sens. 1, H317; Aquatic Chronic 3, H412	≥ 1 - < 2.5%
CAS: 28961-43-5	propylidynetrimethanol, ethoxylated, esters with acrylic acid Eye Irrit. 2, H319; Skin Sens. 1, H317	≥ 0.1 - < 1%
CAS: 162881-26-7 ELINCS: 423-340-5 Index number: 015-189-00-5	phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide Skin Sens. 1A, H317; Aquatic Chronic 4, H413	≥ 0.1 - < 1%
CAS: 55818-57-0	4,4'-isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid Skin Sens. 1, H317	≥ 0.1 - < 1%

SVHC

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

Additional information: For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information:

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation:

Supply fresh air and to be sure call for a doctor.

In case of unconsciousness place patient stably in side position for transportation.

After skin contact: Immediately wash with water and soap and rinse thoroughly.

After eye contact: Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing:

Call for a doctor immediately.

Drink plenty of water and provide fresh air. Call for a doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents: Use fire extinguishing methods suitable to surrounding conditions.

5.2 Special hazards arising from the substance or mixture No further relevant information available.

5.3 Advice for firefighters

Protective equipment: No special measures required.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

6.2 Environmental precautions:

Do not allow product to reach sewage system or any water course.

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Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralising agent.
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.
Information about fire - and explosion protection: Keep respiratory protective device available.

7.2 Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: Not required.
Further information about storage conditions: Keep container tightly sealed.

7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Ingredients with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls
Appropriate engineering controls No further data; see section 7.
Individual protection measures, such as personal protective equipment
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
Respiratory protection:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
Hand protection

Protective gloves

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The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye/face protection

Tightly sealed goggles

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Physical state	Liquid
Colour:	Black
Odour:	Characteristic
Odour threshold:	Not determined.
Melting point/freezing point:	Undetermined.
Boiling point or initial boiling point and boiling range	Undetermined.
Flammability	Not applicable.
Lower and upper explosion limit	
Lower:	Not determined.
Upper:	Not determined.
Flash point:	Not applicable.
Decomposition temperature:	Not determined.
pH	Not determined.
Viscosity:	
Kinematic viscosity	Not determined.
Dynamic:	Not determined.
Solubility	
water:	Fully miscible.
Partition coefficient n-octanol/water (log value)	Not determined.
Vapour pressure:	Not determined.
Density and/or relative density	
Density:	Not determined.
Relative density	Not determined.
Vapour density	Not determined.

9.2 Other information

Appearance:	
Form:	Liquid
Important information on protection of health and environment, and on safety.	
Ignition temperature:	Product is not selfigniting.
Explosive properties:	Product does not present an explosion hazard.

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Change in condition

Evaporation rate	Not determined.

Information with regard to physical hazard classes

Explosives	Void
Flammable gases	Void
Aerosols	Void
Oxidising gases	Void
Gases under pressure	Void
Flammable liquids	Void
Flammable solids	Void
Self-reactive substances and mixtures	Void
Pyrophoric liquids	Void
Pyrophoric solids	Void
Self-heating substances and mixtures	Void
Substances and mixtures, which emit flammable gases in contact with water	Void
Oxidising liquids	Void
Oxidising solids	Void
Organic peroxides	Void
Corrosive to metals	Void
Desensitised explosives	Void

SECTION 10: Stability and reactivity

10.1 Reactivity No further relevant information available.
10.2 Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
10.3 Possibility of hazardous reactions No dangerous reactions known.
10.4 Conditions to avoid No further relevant information available.
10.5 Incompatible materials: No further relevant information available.
10.6 Hazardous decomposition products: No dangerous decomposition products known.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008
Acute toxicity Based on available data, the classification criteria are not met.
LD/LC50 values relevant for classification:

ATE (Acute Toxicity Estimates)

Oral LD50 > 2,504 - 2,576 mg/kg

Dermal LD50 22,768 mg/kg

2399-48-6 Tetrahydrofurfuryl Acrylate

Oral LD50 928 mg/kg (rat)

2235-00-9 2H-Azepin-2-one, 1-ethenylhexahydro-

Oral LD50 500 mg/kg (ATE)

Dermal LD50 1,100 mg/kg (ATE)

86273-46-3 2-Propenoic acid, 2-[2-(ethenyloxy)ethoxy]ethyl ester

Oral LD50 500 mg/kg (ATE)

Primary irritant effect:
Skin corrosion/irritation Causes severe skin burns and eye damage.

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Serious eye damage/irritation Causes serious eye damage.
Respiratory or skin sensitisation May cause an allergic skin reaction.
Germ cell mutagenicity Based on available data, the classification criteria are not met.
Carcinogenicity Based on available data, the classification criteria are not met.
Reproductive toxicity May damage fertility or the unborn child.
STOT-single exposure May cause respiratory irritation. May cause drowsiness or dizziness.
STOT-repeated exposure May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard Based on available data, the classification criteria are not met.

11.2 Information on other hazards

Endocrine disrupting properties

541-02-6 Decamethylcyclopentasiloxane: List II

26523-78-4 tris(nonylphenyl) phosphite: List I

556-67-2 octamethylcyclotetrasiloxane: List II; III

540-97-6 dodecamethylcyclohexasiloxane: List II

SECTION 12: Ecological information

12.1 Toxicity
Aquatic toxicity: No further relevant information available.
12.2 Persistence and degradability No further relevant information available.
12.3 Bioaccumulative potential No further relevant information available.
12.4 Mobility in soil No further relevant information available.
12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.
12.6 Endocrine disrupting properties For information on endocrine disrupting properties see section 11.
12.7 Other adverse effects
Remark: Very toxic for fish
Additional ecological information:
General notes:
Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Very toxic for aquatic organisms

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Recommendation
Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Uncleaned packaging:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agents: Water, if necessary together with cleansing agents.

SECTION 14: Transport information

14.1 UN number or ID number
ADR, IMDG, IATA UN3082

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14.2 UN proper shipping name

ADR 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3,3,5-Trimethylcyclohexyl acrylate, Tetrahydrofurfuryl Acrylate)

IMDG ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3,3,5-Trimethylcyclohexyl acrylate, Tetrahydrofurfuryl Acrylate), MARINE POLLUTANT

IATA ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3,3,5-Trimethylcyclohexyl acrylate, Tetrahydrofurfuryl Acrylate)

14.3 Transport hazard class(es)

ADR, IMDG, IATA

Class 9 Miscellaneous dangerous substances and articles.

Label 9

14.4 Packing group

ADR, IMDG, IATA III

14.5 Environmental hazards:

Marine pollutant: Symbol (fish and tree)

Special marking (ADR): Symbol (fish and tree)

Special marking (IATA): Symbol (fish and tree)

14.6 Special precautions for user Warning: Miscellaneous dangerous substances and articles.

Hazard identification number (Kemler code): 90

EMS Number: F-A,S-F

Stowage Category A

14.7 Maritime transport in bulk according to IMO instruments Not applicable.

Transport/Additional information:

ADR

Limited quantities (LQ) 5L

Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

Transport category 3

Tunnel restriction code (-)

IMDG

Limited quantities (LQ) 5L

Excepted quantities (EQ) Code: E1
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 1000 ml

UN "Model Regulation": UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (3,3,5-TRIMETHYLCYCLOHEXYL ACRYLATE, TETRAHYDROFURFURYL ACRYLATE), 9, III

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SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Directive 2012/18/EU

Named dangerous substances - ANNEX I None of the ingredients is listed.

Seveso category E1 Hazardous to the Aquatic Environment

Qualifying quantity (tonnes) for the application of lower-tier requirements 100 t

Qualifying quantity (tonnes) for the application of upper-tier requirements 200 t

REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3

DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II

None of the ingredients is listed.

REGULATION (EU) 2019/1148

Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))

None of the ingredients is listed.

Annex II - REPORTABLE EXPLOSIVES PRECURSORS

None of the ingredients is listed.

Regulation (EC) No 273/2004 on drug precursors

108-88-3 Toluene: 3

Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors

108-88-3 Toluene: 3

National regulations:

Other regulations, limitations and prohibitive regulations

Substances of very high concern (SVHC) according to REACH, Article 57

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

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

*

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

This Safety Data Sheet is in compliance with Regulation (EC) No 1907/2006, Article 31 as amended by Regulation (EU) 2020/878.

Relevant phrases

H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
H360 May damage fertility or the unborn child.
H360Fd May damage fertility. Suspected of damaging the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

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H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.
H413 May cause long lasting harmful effects to aquatic life.

Date of previous version: 04.10.2023
Version number of previous version: 1.0

Abbreviations and acronyms:

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
SVHC: Substances of Very High Concern
vPvB: very Persistent and very Bioaccumulative
ATE: Acute toxicity estimate values
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1C: Skin corrosion/irritation – Category 1C
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Skin Sens. 1: Skin sensitisation – Category 1
Skin Sens. 1A: Skin sensitisation – Category 1A
Skin Sens. 1B: Skin sensitisation – Category 1B
Repr. 1B: Reproductive toxicity – Category 1B
Repr. 1B: Reproductive toxicity – Category 1B
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3
Aquatic Chronic 4: Hazardous to the aquatic environment - long-term aquatic hazard – Category 4

*** Data compared to the previous version altered.**