Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

*

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

· **1.1 Product identifier**

· **Trade name: GIRARDELLI X-3D Developer**

· **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further identified uses other than those listed below are currently known.

· **Application of the substance / the mixture**
Photochemicals
Developer for X-ray films
Reserved for industrial and professional use.

· **1.3 Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Ritter Concept GmbH
Freiburger Str. 45
88400 Biberach
Tel. (07351) 52 925-10
Fax (07351) 52 925-11
e-mail: info@ritterconcept.com

· **Informing department:**
Tel. (07351) 52 925-10
e-mail: info@ritterconcept.com
· **1.4 Emergency telephone number:**
During office hours:
Tel. (07351) 52 925-10

*

SECTION 2: Hazards identification

· **2.1 Classification of the substance or mixture**
· **Classification according to Regulation (EC) No 1272/2008**


GHS08 health hazard

Muta. 2	H341	Suspected of causing genetic defects.
Carc. 2	H351	Suspected of causing cancer.


GHS05 corrosion

Eye Dam. 1	H318	Causes serious eye damage.


GHS09 environment

Aquatic Acute 1	H400	Very toxic to aquatic life.


GHS07

Skin Irrit. 2	H315	Causes skin irritation.
Skin Sens. 1	H317	May cause an allergic skin reaction.

· **2.2 Label elements**
· **Labelling according to Regulation (EC) No 1272/2008**
The product is classified and labelled according to the CLP regulation.

(Contd. on page 2)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 1)

· **Hazard pictograms**



GHS05 GHS07 GHS08 GHS09

· **Signal word** Danger

· **Hazard-determining components of labelling:**
hydroquinone

· **Hazard statements**
H315 Causes skin irritation.
H318 Causes serious eye damage.
H317 May cause an allergic skin reaction.
H341 Suspected of causing genetic defects.
H351 Suspected of causing cancer.
H400 Very toxic to aquatic life.

· **Precautionary statements**

P273	Avoid release to the environment.
P280	Wear protective gloves / eye protection.
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.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P501	Dispose of contents/container in accordance with local/regional/national/ international regulations.

· **2.3 Other hazards**
· **Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.

*

SECTION 3: Composition/information on ingredients

· **3.2 Mixtures**
· **Description:** Mixture of the substances listed below with harmless additions.

· **Dangerous components:**

CAS: 123-31-9 EINECS: 204-617-8 Index number: 604-005-00-4 Reg.nr.: 01-2119524016-51-xxxx	hydroquinone Muta. 2, H341; Carc. 2, H351 Eye Dam. 1, H318 Aquatic Acute 1, H400 (M=10) Acute Tox. 4, H302; Skin Sens. 1, H317	≥3-≤5%
CAS: 139-89-9 EINECS: 205-381-9 Reg.nr.: 01-2119972845-22-xxxx	Hydroxyethylethylenediaminetriacetic acid, trisodium salt, solution Skin Irrit. 2, H315; Eye Irrit. 2, H319	0.5-2%
CAS: 1310-58-3 EINECS: 215-181-3 Index number: 019-002-00-8 Reg.nr.: 01-2119487136-33-xxxx	potassium hydroxide Met. Corr.1, H290; Skin Corr. 1A, H314 Acute Tox. 4, H302	≥0.5-<2%
CAS: 13047-13-7 EINECS: 235-920-3	4-(hydroxymethyl)-4-methyl-1-phenylpyrazolidin-3-one Aquatic Chronic 2, H411 Acute Tox. 4, H302; Skin Sens. 1, H317	≥0.25-<0.5%

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

(Contd. on page 3)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 2)

SECTION 4: First aid measures

· **4.1 Description of first aid measures**
· **General information**
Personal protection for the First Aider.
Instantly remove any clothing soiled by the product.

· **After inhalation** Supply fresh air.

· **After skin contact** Instantly wash with water and soap and rinse thoroughly.

· **After eye contact**
Rinse opened eye for several minutes under running water (at least 15 minutes).
Remove contact lenses, if present and easy to do.
Use eye protection.
Call a doctor immediately.

· **After swallowing**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; instantly call for medical help.
· **4.2 Most important symptoms and effects, both acute and delayed**
No known symptoms to date.
· **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**
CO2, extinguishing powder or water jet. Fight larger fires with water spray jet or alcohol-resistant foam.
Use fire fighting measures that suit the environment.

· **For safety reasons unsuitable extinguishing agents** Water with a full water jet.
· **5.2 Special hazards arising from the substance or mixture**
Can be released in case of fire
Sulphur oxides (SOx)
Carbon monoxide
· **5.3 Advice for firefighters**

· **Protective equipment:**
Do not inhale explosion gases or combustion gases.
At formation of toxic gases:
Put on breathing apparatus.

· **Additional information** The product is not flammable

SECTION 6: Accidental release measures

· **6.1 Personal precautions, protective equipment and emergency procedures**
Wear protective clothing.
· **6.2 Environmental precautions:** Do not allow to enter drainage system, 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).
Dispose of contaminated material as waste according to item 13.
Small amounts may be diluted with plenty of water and washed away. Dispose of bigger amounts in accordance with Local Authority requirements.
· **6.4 Reference to other sections**
See Section 8 for information on personal protection equipment.

(Contd. on page 4)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 3)

See Section 13 for information on disposal.

SECTION 7: Handling and storage

· **7.1 Precautions for safe handling**
Do not handle until all safety precautions have been read and understood.
No special precautions necessary if used correctly.
· **Information about protection against explosions and fires:**
No special measures required.
The product is not flammable

· **7.2 Conditions for safe storage, including any incompatibilities**
· **Storage**
· **Requirements to be met by storerooms and containers:**
Store only in unopened original containers.
Keep container tightly closed in a cool, well-ventilated place.
· **Information about storage in one common storage facility:**
Keep away from foodstuffs, beverages and food.
Do not store together with acids.
Store away from oxidising agents.
· **Further information about storage conditions:**
Protect from heat and direct sunlight.
Store in a cool place.
· **Recommended storage temperature:** 5-25°C
· **Storage class**
LGK 12
(German Technical Rule for Hazardous Substance – TRGS 510)
· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· **Additional information about design of technical systems:** No further data; see section 7.

· **8.1 Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
123-31-9 hydroquinone	
WEL	Long-term value: 0.5 mg/m³
1310-58-3 potassium hydroxide	
WEL	Short-term value: 2 mg/m³

· **Additional information:** The lists that were valid during the compilation were used as basis.
WEL (reference value). National occupational exposure limits apply.

· **8.2 Exposure controls**
· **Personal protective equipment**
· **General protective and hygienic measures**
The usual precautionary measures should be adhered to general rules for handling chemicals.
Keep away from foodstuffs, beverages and food.
Do not eat, drink or smoke while working.
Take off immediately all contaminated clothing.
Wash contaminated clothing before reuse.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.

· **Breathing equipment:** Not required.

· **Protection of hands:**
Protective gloves.
The protective gloves to be used must comply with the specifications of the EC directive 89/686/EEC and the resultant standard EN 374.

(Contd. on page 5)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 4)

This recommendation applies only to the product stated in the Safety Data Sheet and supplied by us as well as to the purpose specified by us.
Only use chemical-protective gloves with CE-labelling of category III.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

	Thickness (mm)	Breakthrough time (min)
Nitril rubber	0,38	> 480
Neoprene	0,65	> 240
Butyl rubber	0,36	> 480

Avoid natural rubber gloves.

· **As protection from splashes gloves made of the following materials are suitable:**
Synthetic gloves
Value for permeation: Level:
≥ 3 (60 min)

· **Eye protection:** Safety glasses

· **Body protection:** Protective work clothing.

SECTION 9: Physical and chemical properties

· **9.1 Information on basic physical and chemical properties**	
· **General Information**	
· **Appearance:**	
Form:	Fluid
Colour:	Light yellow Clear
· **Odour:**	Not characteristic
· **pH-value at 25 °C:**	11.1
· **Change in condition**	
Melting point/freezing point:	< 5 °C
Initial boiling point and boiling range:	> 100 °C
· **Flash point:**	Not applicable
· **Self-inflammability:**	Product is not selfigniting.
· **Explosive properties:**	Product is not explosive.
· **Critical values for explosion:**	
Oxidising properties	None
· **Vapour pressure at 20 °C:**	23 hPa
· **Density at 20 °C**	1.29 g/cm³
· **Solubility in / Miscibility with**	
Water:	miscible
· **Viscosity:**	
dynamic:	Not determined
kinematic:	Not determined
· **Solvent content:**	
Organic solvents:	0.0 %
Water:	~ 65 %

(Contd. on page 6)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 5)

· **9.2 Other information** No further relevant information available.

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**
Reacts with strong acids
Reacts with acids releasing sulphur dioxide
· **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 toxicological effects**
· **Acute toxicity** Based on available data, the classification criteria are not met.

· **LD/LC50 values that are relevant for classification:**		
123-31-9 hydroquinone		
Oral	LD50	320 mg/kg
1310-58-3 potassium hydroxide		
Oral	LD50	365 mg/kg (rat)

· **Primary irritant effect:**
· **Skin corrosion/irritation**
Causes skin irritation.
· **Serious eye damage/irritation**
Causes serious eye damage.
· **Respiratory or skin sensitisation**
May cause an allergic skin reaction.

· **Additional toxicological information:**
At present there are no animal experimental data.
This statement was deduced from the properties of the single components.
· **CMR effects (carcinogenity, mutagenicity and toxicity for reproduction)**
· **Germ cell mutagenicity**
Suspected of causing genetic defects.
· **Carcinogenicity**
Suspected of causing cancer.
· **Reproductive toxicity** Based on available data, the classification criteria are not met.
· **STOT-single exposure** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure** Based on available data, the classification criteria are not met.
· **Aspiration hazard** Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

· **12.1 Toxicity**

· **Aquatic toxicity:**
Not determined

(Contd. on page 7)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 6)

123-31-9 hydroquinone	
EC50/48 h	0.29 mg/l (Daphnia magna)
IC50/72 h	0.335 mg/l (Selenastrum capricornutum)
LC50/96 h	0.044 mg/l (Pimephales promelas)
584-08-7 potassium carbonate	
EC50/48 h	380-820 mg/l (Daphnia magna)
LC50/96 h	310-750 mg/l (Pimephales promelas)

· **12.2 Persistence and degradability** Not determined
· **12.3 Bioaccumulative potential** Not determined

· **Behaviour in environmental systems:** Not determined
· **12.4 Mobility in soil** No further relevant information available.

· **Ecotoxical effects:** No further relevant information available.

· **Behaviour in sewage processing plants:** Not determined

· **Additional ecological information:**

· **General notes:**
At present there are no ecotoxicological assessments.
This statement was deduced from the properties of the single components.
Water hazard class 3 (German Regulation) (Self-assessment): highly water-endangering.
Do not allow product to reach ground water, water bodies or sewage system.
· **12.5 Results of PBT and vPvB assessment**
· **PBT:** Not applicable.
· **vPvB:** Not applicable.
· **12.6 Other adverse effects** No further relevant information available.

SECTION 13: Disposal considerations

· **13.1 Waste treatment methods**
· **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Must be specially treated under adherence to official regulations.

· **European waste catalogue**	
09 01 01*	water-based developer and activator solutions

· **Uncleaned packagings:**
· **Recommendation:**
Non contaminated packagings can be used for recycling.
Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning.
· **Recommended cleaning agent:** Water, if necessary with cleaning agent.

SECTION 14: Transport information

· **14.1 UN-Number**	
· **ADR/RID, IMDG, IATA**	UN 3082
· **14.2 UN proper shipping name**	
· **ADR/RID, IMDG, IATA**	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (hydroquinone)

(Contd. on page 8)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 7)

· **14.3 Transport hazard class(es)**	
· **ADR/RID, IMDG, IATA**	
· **Class**	9 Miscellaneous dangerous substances and articles.
· **Label**	9
· **14.4 Packing group**	
· **ADR/RID, IMDG, IATA**	III
· **14.5 Environmental hazards:**	Product contains environmentally hazardous substances: hydroquinone
· **Marine pollutant:**	Symbol (fish and tree)
· **Special marking (ADR/RID):**	Symbol (fish and tree)
· **Special marking (IATA):**	Symbol (fish and tree)
· **14.6 Special precautions for user**	Warning: Miscellaneous dangerous substances and articles.
· **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**	Not applicable.
· **Transport/Additional information:**	These substances when transported in single or combination packagings containing a net quantity per single or inner packaging of 5 l or less for liquids or having a net mass of 5 kg or less for solids, are not subject to any other provisions of these Regulations provided the packagings meet the general. See the following notes.
· **ADR/RID**	Goods are not subject to the provisions in accordance with the special provision 375 ADR.
· **IMDG**	Goods are not subject to the provisions in accordance with 2.10.2.7 IMDG-Code.
· **IATA**	Goods are not subject to the provisions in accordance with the special provision A197 IATA-DGR.
· **UN "Model Regulation":**	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (HYDROQUINONE), 9, III

*

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

(Contd. on page 9)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 8)

· **National regulations**

· **Information about limitation of use:**
Employment restrictions concerning pregnant and lactating women must be observed.

Class	Share in %
I	3.9

· **Water hazard class:** Water danger class 3 (Self-assessment): highly water-endangering.
· **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

*

SECTION 16: Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**
H290 May be corrosive to metals.
H302 Harmful if swallowed.
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.
H341 Suspected of causing genetic defects.
H351 Suspected of causing cancer.
H400 Very toxic to aquatic life.
H411 Toxic to aquatic life with long lasting effects.

· **Recommended restriction of use** No public product, only for commercial use
· **Classification according to Regulation (EC) No 1272/2008**
The classification of the mixture is generally based on the calculation method using substance data according to Regulation (EC) No 1272/2008.
· **Abbreviations and acronyms:**
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport 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
vPvB: very Persistent and very Bioaccumulative
Met. Corr.1: Corrosive to metals – Category 1
Acute Tox. 4: Acute toxicity – Category 4
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
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
Muta. 2: Germ cell mutagenicity – Category 2
Carc. 2: Carcinogenicity – Category 2
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2

· **Sources**
applicable EEC directives:

(Contd. on page 10)

Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 07.01.2026 Version 8 Revision: 07.01.2026

Trade name: GIRARDELLI X-3D Developer

(Contd. of page 9)

- 1907/2006
- 1272/2008

Internal physical tests, MSDS of the ingredients,
Information system on hazardous substances of the German Social Accident Insurance
(GESTIS-database on hazardous substances), http://www.dguv.de/ifa/en/gestis/stoffdb/index.jsp

GB

· *** Data compared to the previous version altered**
· **This Safety Data Sheet has been reviewed in accordance with Regulation (EC) No 1907/2006 (REACH) and Regulation (EC) No 1272/2008 (CLP).**
· **No changes were required to the composition, classification, labelling, or risk management measures.**
· **A review of applicable occupational exposure limit references was performed on 2026-01-07. No changes to the document content were made; however, national OEL applicability is country-specific and must be confirmed against current national publications (e.g., Germany: TRGS 900 / DFG MAK list).**