LEITFADEN

INTEGRATION VON ANWENDERWISSEN IN DIE ERSTELLUNG UND KOMMUNIKATION VON REACH EXPOSITIONSSZENARIEN – AM BEISPIEL SIEBDRUCK

ANLAGE 1, TEIL 5

1. Identification of the Substance/Preparation and of the Company/Undertaking

Designation/Trade Name: BDK

Use:
Functional use: Photochemical
Sectors of use: Industrial/professional manufacture of paints, varnishes and similar coatings, printing ink and mastics
Product categories: Inks; coatings and paints, fillers, putties
Process categories: Mixing or blending in batch processes for formulation of preparations (multistage and/or significant contact); transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Company:
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2. Hazards Identification

Classification required according to EU

Dangerous for the environment. .

R phrase(s):

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

3. Composition/Information on Ingredients

Chemical nature:

Hazardous ingredients		Classification*	Content (%)
CAS-No. 024650-42-8	2,2-dimethoxy-1,2-diphenylethan-1-one	N R50/53	100

*) The wording of the hazard symbols and R-phrases is specified in chapter 16 if dangerous ingredients are mentioned.

4. First-aid Measures

If inhaled:

Move to fresh air. In case of irritation of respiratory system or mucous membranes, seek medical attention. In case of indisposition, seek medical attention. In case of prolonged exposure, seek medical attention.

On skin contact:

Wash off with soap and plenty of water. Do not use organic solvents.

On contact with eyes:

Rinse immediately with plenty of water for at least 15 minutes. In case of eye irritation, seek medical attention.

If ingested:

Immediately give plenty (> 500 ml) of water (if possible charcoal slurry). In case of spontaneous vomiting be sure that vomitus can freely drain due to danger of suffocation. Give water repeatedly. Artificial induction of vomiting should be restricted to first aid staff. Give nothing by mouth in cases of unconsciousness or convulsion. Seek medical advice.

5. Fire-fighting Measures

Suitable extinguishing media:

Water spray, carbon dioxide (CO_2), foam, dry powder

Unsuitable extinguishing media for safety reasons:

High volume water jet

Combustion products:

Carbon oxides., Nitrogen oxides, toxic gases/vapours

Exposure hazards:

Contaminated water from fire hoses or sprinklers, etc., must be prevented from draining into watercourses, sewers, or the ground water. Sufficient measures must be taken to retain water used for extinguishing. Contaminated water and soil must be disposed of in conformity with local regulations.

Special protective equipment:

Wear full protective clothing. Wear a self-contained breathing apparatus.

Combustion products:

Oxides of carbon; toxic gases/vapours.

6. Accidental Release Measures

Personal precautions:

Do not breathe vapours/dust. Remove all sources of ignition. Avoid contact with skin, eyes and clothing.

Environmental precautions:

Do not flush into surface water, sanitary sewer or ground water system.

Methods for cleaning-up or taking-up:

Use mechanical handling equipment. Collect the spilled product into suitable containers, which must be tightly sealed and properly labelled. Avoid dust formation.

7. Handling and Storage

Handling

Handle and open container with care. Avoid dust formation and ignition sources. Ensure good local exhaust ventilation. Do not eat, drink or smoke at the workplace.

Protection against fire and explosion:

Protect from light. Danger! Explosion risk. Risk of explosion if an air-dust mixture forms. Empty only into earthed containers. If container is larger than 2000 liter in volume, or when flammable solvents are present inert container or use a system otherwise designed to prevent or contain an explosion -- seek expert advice.

Storage requirements:

Keep away from food and drink.
Keep only in the original container.
Keep container tightly closed.

8. Exposure Controls and Personal Protection

Exposure limit values:

DNEL oral - workers	2.8 mg/kg bw
DNEL oral - general population	1.4 mg/kg bw
DNEL inhalation - workers	19.6 mg/m^3
DNEL inhalation - general population	4.2 mg /m^3
PNEC aqua - freshwater	0.00017 mg/l
PNEC aqua - marine water	0.000017 mg/l
PNEC sediment - freshwater	0.00288 mg/kg
PNEC sediment - marine	0.00288 mg/kg

Technical measures/precautions:
Exposure limit(s) should be monitored using suitable analytical equipments

Respiratory protection:
Dust Filter - Half-Mask P1

Hand protection:
Suitable protective gloves - chemical resistant, breakthrough time >480 min, nitrile rubber/nitrile latex / NBR (≥0.3 mm), polyvinyl chloride / PVC (≥0.3 mm), or polychloroprene / CR (≥0.3 mm)

Eye protection:
Safety goggles – not specified, or face shield

Skin and body protection:
Working clothes
Closed footwear

9. Physical and Chemical Properties

Form:	powder	
Colour:	white to off-white	
Odour:	typical	
Melting point:	64-67 °C	
Boiling point:	not applicable	
Flash point:	> 190 °C	
Flammability:	not tested	
Ignition temperature:	370 °C	BAM
Self-ignition temperature:	not tested	
Oxidising properties:	not tested	
Vapour pressure:	1.1E-3 Pa (20 °C)	OECD 104 / EEC A4
Density:	1.21 g/cm^3 (20 °C)	EEC A3
Solubility in water:	< 0.01% (20 °C)	
Solubility:	not tested	
Partitioning coefficient n-octanol/water (log Pow):	3.42 (20 - 25 °C)	
pH-value:	not tested	
Explosive properties:	not tested	

10. Stability and Reactivity

Decomposition temperature: > 300 °C

Conditions to avoid: electro-static discharge

Materials to avoid: strong acids, strong bases, strong oxidizing agents

Hazardous decomposition products: carbon oxides , toxic gases/vapours

11. Toxicological Information

Acute oral toxicity:

Rat	LD50	> 2000 mg/kg	

Acute dermal toxicity:

Rat	LD50	> 2000 mg/kg	

Acute inhalation toxicity: not tested

Acute dermal irritation/corrosion:

Rabbit	not irritant		

Eye irritation/corrosion:

Rabbit	not irritant		

Skin Sensitization:

Guinea pig	not sensitizing		

12. Ecological Information

Toxicity to fish:

Bluegill 96h	LC50	6 mg/l	

Toxicity to aquatic invertebrates:

Daphnia magna 24h	EC50	26 mg/l	(OECD 202)

Toxicity to aquatic plants:

Scenedesmus sp. 72h	EC50	0.17 mg/l	(OECD 201)

Toxicity to microorganisms:

activated sludge 3h	IC50	> 100 mg/l	(OECD 209)

Biodegradation: not biodegradable (OECD 301B)

Additional remarks environmental fate and pathway:
Do not discharge product uncontrolled into the environment.

13. Disposal Considerations

Waste from residue/unused products:
Residual chemical should be disposed by incineration or by other modes of disposal in compliance with local legislation.

Contaminated packaging:
Contaminated packaging material should be treated equivalent to residual chemical. Clean packaging material should be subjected to waste management schemes (recovery recycling, reuse) according to local legislation.

14. Transport Information

Land transport (ADR):

Class:	9
UN number:	UN 3077
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical name:	2,2-DIMETHOXY-1,2-DIPHENYLETHAN-1-ONE
Hazard Identification Number:	90
Label:	9
Packing Group:	III

Land transport (RID):

Class:	9
UN number:	UN 3077
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical name:	2,2-DIMETHOXY-1,2-DIPHENYLETHAN-1-ONE
Hazard Identification Number:	90
Label:	9
Packing Group:	III

Sea transport (IMDG):

Class:	9
UN number:	UN 3077
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical name:	2,2-DIMETHOXY-1,2-DIPHENYLETHAN-1-ONE
Label:	9
Packing Group:	III
Marine pollutant:	NO

Air transport (ICAO/IATA):

Class:	9
UN/ID-number:	UN 3077
Proper shipping name:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Technical name:	2,2-DIMETHOXY-1,2-DIPHENYLETHAN-1-ONE
Label:	9MI
Packing Group:	III

15. Regulatory Information

Regulations of the European Union (Labelling) / National legislation/regulations

Classification required according to EU

Hazard symbol(s):

N Dangerous for the environment.

R phrase(s):

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S phrase(s):

S61 Avoid release to the environment. Refer to special instructions/safety data sheets.

Contains:

2,2-dimethoxy-1,2-diphenylethan-1-one

EC Number: 246-386-6

16. Other Information

Use:

Restricted use: THIS MATERIAL IS NOT INTENDED FOR USE IN PRODUCTS FOR WHICH PROLONGED CONTACT WITH MUCOUS MEMBRANES, BODY FLUIDS OR ABRADED SKIN, OR IMPLANTATION WITHIN THE HUMAN BODY, IS SPECIFICALLY INTENDED, UNLESS THE FINISHED PRODUCT HAS BEEN TESTED IN ACCORDANCE WITH NATIONALLY AND INTERNATIONALLY APPLICABLE SAFETY TESTING REQUIREMENTS. BECAUSE OF THE WIDE RANGE OF SUCH POTENTIAL USES, CIBA IS NOT ABLE TO RECOMMEND THIS MATERIAL AS SAFE AND EFFECTIVE FOR SUCH USES AND ASSUMES NO LIABILITY FOR SUCH USES.

R phrases and hazard symbols:

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

N Dangerous for the environment.

This product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with any legal regulation. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.

Short Title	Chemical formulation and packaging (SU10) of inks (PC18) through mixing or blending in multistage batch processes (PROC5)
Description of activities and processes	• Filling in open vessels/containers • Pre-mixing in open vessels/containers • Grinding or milling in open or closed mills • Product adjustment in open vessels/containers • Filtering and filling in open systems • Manual cleaning of machinery and facilities using rags and solvent based cleaners • Cleaning of machine parts using washing machines • Disposal of packaging, contaminated material and residuals
Duration and frequency of use	• 220 days/year • Worker exposure: 1 shift/day
Physical form	powder
Concentration	Typical concentration in ink: 5%
Assumed amount	500 kg / year / site
Other Operational Conditions	The emission from open handling and cleaning is assumed not to exceed the following emission factors, if suitable RMM in operation: Fraction of tonnage released to wastewater: 0.002 Fraction of tonnage released to air: 0.0025 Fraction of tonnage to solid waste as residue in bags: 0.0001 Effluent discharge rate of local STP: 2000 m^3/day Dilution factor (rivers): 10
Risk Management Measures	**Handling, occupational** • General good hygiene and housekeeping[1] • Protect from light • Empty only into earthed containers. If container is larger than 2000 litre in volume, or when flammable solvents are present inert container or use a system otherwise designed to prevent or contain an explosion • When prolonged or frequently repeated contact and exposure may occur o wear suitable protective gloves - chemical resistant breakthrough time >480 min, nitrile rubber/nitrile latex / NBR (>0.3 mm), polyvinyl chloride / PVC (>0.3 mm), or polychloroprene / CR (>0.3 mm), o wear goggles - not specified or face shield, o use dust Filter - Half-Mask P1 (efficiency: 75%), o Local Exhaust Ventilation - with receptor hood for dust (efficiency: 80%). **Handling, environment** • Air filtration - Fabric filter (efficiency: 99.9%) • Do not flush into surface water, sanitary sewer or ground water system. Closed sinks/basins to prevent discharge to waste- and/or surface water (efficiency: >90 %) **Formulation, occupational** • General good hygiene and housekeeping • When prolonged or frequently repeated exposure may occur o wear goggles - not specified or face shield. • Local Exhaust Ventilation - with receptor hood for dust (efficiency: 80%)

[1] General measures such as: - Regular cleaning of contaminated walls, surfaces etc. - Provision of adequate facilities for washing, changing and storage of clothing, including arrangements for laundering contaminated clothing. General personal hygiene measures: Prohibition of eating, chewing, drinking and smoking in contaminated areas

Short Title	Chemical formulation and packaging (SU10) of inks (PC18) through mixing or blending in multistage batch processes (PROC5)
	Formulation, environment • Air filtration - Fabric filter (efficiency: 99.9%) • Do not flush into surface water, sanitary sewer or ground water system. Closed sinks/basins to prevent discharge to waste- and/or surface water (efficiency: >90 %)
Waste related measures	Contaminated rags (cleaning cloths) should be treated equivalent to residual substance. The clothes should be subjected to waste management schemes according to local legislation. Suitable techniques: Incineration or other modes of disposal in compliance with local legislation. Alternatively, they can be recycled by professional fabric washing by industrial and institutional laundry companies. Contaminated packaging material should be emptied as far as possible and disposed of in the same manner. Suitable techniques: Incineration or other modes of disposal in compliance with local legislation. Clean packaging should be subject to waste management schemes (recovery recycling, reuse) according to local legislation.
Prediction of exposure	Predicted concentration in air (inhalable dust): 1- 10 mg/m^3 (COSSH - BAuA, control approach 1: General ventilation) Maximum emission to waste water: $Elocal_{subst\_water}$ = 4.6 g/day Predicted concentration in surface water during emission episode: < 0.14 µg/L (TGD, EUSES)
Methods to check whether activity is within the ES boundaries	Local emission to waste water: $Elocal_{subst\_water} = Qink \cdot Fuv\_ink \cdot Fsubst\_ink \cdot Csubst \cdot (1 - F_{abat}) \cdot \frac{F_{emission}}{T_{emission}}$ Qink: Annual quantity of ink applied in one facility Fuv_ink: Fraction of UV curable ink per year Fsubst_ink: Fraction ink containing the same photochemical (curing agent) Csubst Concentration of substance (photochemical) in the ink F_{abat}: Efficiency of any abatement or control technology that reduces the emission $F_{emission}$: Fraction of tonnage released to waste water $T_{emission}$: Emission period (working days per year in one facility)

Short Title	Printing (SU7) with inks (PC18) on paper products (AC11) with no intended release
Description of activities and processes	• Storing • Ink mixing and colour matching (manually) • Ink handling (manually) • Printing (semi-automatically or automatically) • UV-Curing (open or covered equipment) • Printed product handling (manually) • Manual cleaning of machinery using rags and solvent based cleaners • Manual cleaning of parts using rags and solvent based cleaners • Screen cleaning using automatic washing machines • Disposal of ink packaging • When BDK is used in pure form as an additive, then the following exposure scenario applies: Chemical formulation and packaging (SU10) of inks (PC18) through mixing or blending in multistage batch processes (PROC5)
Duration and frequency of use	• 220 days/year • Worker exposure: 1 shift/day
Physical form	Viscous liquid
Concentration	• Typical concentration in ink before UV curing: 5% • Typical concentration in ink after UV curing 1.5%
Assumed amount	• 6 tonnes ink / year / site
Other Operational Conditions	Ambient temperature (< 40°C), room size > 600 m^3 The emission from open handling and cleaning is assumed not to exceed the following emission factors, if suitable RMM in operation: Fraction of tonnage released to wastewater: 0.004 Effluent discharge rate of local STP: 2000 m^3/day Dilution factor (rivers): 10
Risk Management Measures	**Handling, occupational** • General good hygiene and housekeeping[2] • When prolonged or frequently repeated contact and exposure may occur o wear suitable protective gloves - chemical resistant breakthrough time >480 min, nitrile rubber/nitrile latex / NBR (>0.3 mm), polyvinyl chloride / PVC (>0.3 mm), or polychloroprene / CR (>0.3 mm), o wear goggles - not specified or face shield, **Handling, environment** • Do not flush into surface water, sanitary sewer or ground water system. Closed sinks/basins to prevent discharge to waste- and/or surface water (efficiency: >90 %)
Waste related measures	Contaminated rags (cleaning cloths) should be treated equivalent to residual substance. The clothes should be subjected to waste management schemes according to local legislation. Suitable techniques: Incineration or other modes of disposal in compliance with local legislation. Alternatively, they can be recycled by professional fabric washing by industrial and institutional laundry companies. Contaminated packaging material should be emptied as far as possible and disposed of in the same manner. Suitable techniques: Incineration or other modes of disposal in compliance with local legislation. Clean packaging should be subject to waste management schemes (recovery recycling, reuse) according to local legislation.

[2] General measures such as: - Regular cleaning of contaminated walls, surfaces etc. - Provision of adequate facilities for washing, changing and storage of clothing, including arrangements for laundering contaminated clothing. General personal hygiene measures: Prohibition of eating, chewing, drinking and smoking in contaminated areas

Short Title	Printing (SU7) with inks (PC18) on paper products (AC11) with no intended release
Prediction of exposure	Maximum emission to waste water: $Elocal_{subst\_water}$ = 5.4 g/day Predicted concentration in surface water during emission episode: < 0.16 µg/L (TGD, EUSES)
Methods to check whether activity is within the ES boundaries	Local emission to waste water: $Elocal_{subst\_water} = Qink \cdot Fuv\_ink \cdot Fsubst\_ink \cdot Csubst \cdot (1 - F_{abat}) \cdot \frac{F_{emission}}{T_{emission}}$ Qink: Annual quantity of ink applied in one facility Fuv_ink: Fraction of printing processes/campaigns with UV-cured printing inks per year Fsubst_ink: Fraction of production processes/campaigns for inks containing the same photochemical (curing agent) Csubst Concentration of substance (photochemical) in the ink F_{abat}: Efficiency of any abatement or control technology that reduces the emission $F_{emission}$: Fraction of tonnage released to waste water $T_{emission}$: Emission period (working days per year in one facility)

Short Title	Materials recovery (NACE 38.3) by industrial/professional treatment of articles by washing (PROC13)
Description of activities and processes	• Storing of rags contaminated with ink • Loading of washing machines • Industrial laundry in closed systems • Wastewater on-site treatment • Pre-treated wastewater to municipal STP
Duration and frequency of use	320 days/year
Concentration	300 kg ink per year on contaminated rags
Assumed amount	7.5 kg BDK / year / site
Other Operational Conditions	• Fraction of ink removal: 1 • Fraction of contaminated rags that are recovered by industrial laundry: 0.9 • Effluent discharge rate of local STP: 2000 m^3/day • Dilution factor (rivers): 10
Risk Management Measures	**Handling, occupational** • General good hygiene and housekeeping[3] • When prolonged or frequently repeated contact and exposure may occur o wear suitable protective gloves - chemical resistant breakthrough time >480 min, nitrile rubber/nitrile latex / NBR (>0.3 mm), polyvinyl chloride / PVC (>0.3 mm), or polychloroprene / CR (>0.3 mm), o wear goggles - not specified or face shield, **Handling, environment** • Waste water treatment by splitting/flotation/flocculation technologies or membrane filtration and reverse osmosis (efficiency: >80 %)
Waste related measures	Residuals from on-site waste water treatment should be disposed of. Suitable techniques: Incineration or other modes of disposal in compliance with local legislation.
Prediction of exposure	Maximum emission to waste water: $Elocal_{subst\_water}$ = 4.2 g/day Predicted concentration in surface water during emission episode: < 0.13 µg/L (TGD)

[3] General measures such as: - Regular cleaning of contaminated walls, surfaces etc. - Provision of adequate facilities for washing, changing and storage of clothing, including arrangements for laundering contaminated clothing. General personal hygiene measures: Prohibition of eating, chewing, drinking and smoking in contaminated areas

Short Title	Materials recovery (NACE 38.3) by industrial/professional treatment of articles by washing (PROC13)
Methods to check whether activity is within the ES boundaries	Local emission to waste water: $Elocalsubst\_water = Qink \cdot Fuv\_ink \cdot Fsubst\_ink \cdot Csubst \cdot F_{ink\_fabrics} \cdot F_{laundry} \cdot F_{removal} \cdot (1-F_{pretreatment}) \cdot f/T_{emission}$ Qink: Annual quantity of ink applied in one facility Fuv_ink: Fraction of printing processes/campaigns with UV-cured printing inks per year Fsubst_ink: Fraction of production processes/campaigns for inks containing the same photochemical (curing agent) Csubst: Concentration of substance (photochemical) in the ink $F_{ink\_fabrics}$: Fraction of tonnage in rags $F_{laundry}$: Fraction of contaminated rags that are recovered by industrial laundry $F_{removal}$: Fraction of ink removal $F_{pretreatment}$: Fraction of removed from waste-water during on-site treatment f Fraction of main source compared to the total number of laundry sites $T_{emission}$: Emission period (working days per year in one facility)