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

1.1 Product identifier

Trade name

Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%

MSK Code: 60010, 60019, 90022, 90023, 90025, 90029, 90030, 90043, 90045, 90049

Substance name	Acetic acid
REACH registration no.	01-2119475328-30-0018

Identification numbers

CAS no.	64-19-7
EC no.	200-580-7
Index no.	607-002-00-6

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

Relevant identified uses of the substance or mixture

Uses by workers in industrial settings
Manufacture
Distribution
Formulation
Intermediate
Use in cleaning agents
Use in oil field drilling and production operations
Use in laboratories
Water treatment chemicals

Uses by professional workers
Use in cleaning agents
Agrochemical uses
Use in laboratories
Water treatment chemicals

Uses by consumers
Use in cleaning agents
Agrochemical uses

Most common technical function of substance (what it does):
Chemical intermediates
Process chemical
Cleaning agents
Agrochemicals

Uses advised against

No data available.

Reference to relevant exposure scenarios

For an overview of the exact titles of the relevant exposure scenarios please refer to section 16 of this SDS.

1.3 Details of the supplier of the safety data sheet

Address

MSK a.d. Kikinda
Bečejski put 3
23300 Kikinda - Serbia

Telephone no.	+381 230 423 050 - 700
Fax no.	+381/230/424 - 009

Information provided by / telephone

tel: +381 230 423 050 ext. 700; fax: +381 230 426 296

Advice on Safety Data Sheet

g.vidovic@msk.co.rs

Only representative according to art. 8 Regulation (EC) 1907/2006

Address

UMCO Umwelt Consult GmbH
Georg-Wilhelm-Strasse 183
21107 Hamburg
GERMANY

Telephone no.	+49 (0) 40 / 79 02 36 300
Fax no.	+49 (0) 40 / 79 02 36 357

1.4 Emergency telephone number

For medical advice (in German and English):
+49 (0)551 192 40 (Giftinformationszentrum Nord)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification in accordance with Regulation (EC) No 1272/2008 (CLP)
Eye Dam. 1; H318
Flam. Liq. 3; H226
Skin Corr. 1A; H314

Classification information
This product is assessed and classified using the methods and criteria below referred to in Article 9 of Regulation (EC) n° 1272/2008:
Physical hazards: determined through assessment data based on the methods or standards referred to in part 2 of Annex I to CLP
Health hazards and environmental hazards: determined through toxicological and ecotoxicological assessment data based on the methods or standards referred to in Part 3 and 4 of Annex I to CLP.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 (CLP Regulation)

Product identifier
64-19-7 (Acetic acid)

Hazard pictograms


GHS02


GHS05

Signal word
Danger

Hazard statement(s)

H226	Flammable liquid and vapour.
H314	Causes severe skin burns and eye damage.

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P241	Use explosion-proof [electrical/ventilating/lighting/…] equipment.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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.
P363	Wash contaminated clothing before reuse.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
P501	Dispose of contents/container to hazardous or special waste collection point.

2.3 Other hazards

No data available.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical characterization
Substance name: Acetic acid

Identification numbers
CAS no.: 64-19-7
EC no.: 200-580-7
Index no.: 607-002-00-6

Other information

Note	Specific concentration limits	M-factor (acute)	M-factor (chronic)
B	Skin Irrit. 2; H315: C >= 10% Eye Irrit. 2; H319: C >= 10% Skin Corr. 1B; H314: C >= 25% Skin Corr. 1A; H314: C >= 90%	-	-

Full text for the notes: pls. see section 16 “Notes relating to the identification, classification and labelling of substances ((EC) No

1272/2008, Annex VI)".

3.2 Mixtures

Not applicable. The product is not a mixture.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
In case of accident or if you feel unwell, seek medical advice immediately. Remove contaminated clothing and shoes immediately, and launder thoroughly before reusing. If the patient is likely to become unconscious, place and transport in stable sideways position.

After inhalation
Remove affected person from the immediate area. Ensure supply of fresh air. Irregular breathing/no breathing: artificial respiration. Call a doctor immediately.

After skin contact
Wash off immediately with soap and water. Seek medical attention.

After eye contact
Separate eyelids, wash the eyes thoroughly with water (15 min.). Seek medical assistance.

After ingestion
Do not induce vomiting. Rinse out mouth and give plenty of water to drink. Call a doctor immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

No data available.

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
Foam; Extinguishing powder; Water spray jet; Carbon dioxide

Unsuitable extinguishing media
High power water jet

5.2 Special hazards arising from the substance or mixture

In the event of fire, the following can be released: Carbon dioxide (CO2); Carbon monoxide (CO); Combustion products of this material have to be classed invariably as respiratory poison.

5.3 Advice for firefighters

Use self-contained breathing apparatus. Wear protective clothing. Cool endangered containers with water spray jet.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Refer to protective measures listed in sections 7 and 8. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation.

For emergency responders
No data available. Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions

Do not discharge into the drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

6.3 Methods and material for containment and cleaning up

Take up with absorbent material (e.g., sand, kieselguhr, universal binder). When collected, handle material as described under the section heading "Disposal considerations".

6.4 Reference to other sections

No data available.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Risks inherent to handling the product must be minimised by applying the appropriate protective and preventive measures. Working processes should - so far as possible, according to the state of the art - be designed to rule out bodily contact or the release of hazardous substances.

General protective and hygiene measures

Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Avoid contact with eyes and skin. Remove soiled or soaked clothing immediately. Wash hands before breaks and after work. Provide eye wash fountain in work area. Have emergency shower available. Do not inhale vapours.

Advice on protection against fire and explosion
Keep away from sources of heat and ignition.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions
Keep container tightly closed in a cool, well-ventilated place.

Requirements for storage rooms and vessels
Containers which are opened must be carefully closed and kept upright to prevent leakage. Always keep in containers of same material as the original.

Incompatible products
Do not store with combustible materials. Do not store together with: oxidizing agents; Bases; Metals

7.3 Specific end use(s)
No data available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values

No	Substance name	CAS no.		EC no.	
1	**Acetic acid**	**64-19-7**		**200-580-7**	
	2017/164/EU				
	Acetic acid				
	WEL short-term (15 min reference period)	50	mg/m³	20	ppm
	WEL long-term (8-hr TWA reference period)	25	mg/m³	10	ppm
	List of approved workplace exposure limits (WELs) / EH40				
	Acetic acid				
	WEL short-term (15 min reference period)	50	mg/m³	20	ppm
	WEL long-term (8-hr TWA reference period)	25	mg/m³	10	ppm

DNEL, DMEL and PNEC values

DNEL values (worker)

No	Substance name			CAS / EC no	
	Route of exposure	Exposure time	Effect	Value	
1	**Acetic acid**			**64-19-7** **200-580-7**	
	inhalative	Long term (chronic)	local	25	mg/m³
	inhalative	Short term (acut)	local	25	mg/m³

DNEL value (consumer)

No	Substance name			CAS / EC no	
	Route of exposure	Exposure time	Effect	Value	
1	**Acetic acid**			**64-19-7** **200-580-7**	
	inhalative	Long term (chronic)	local	25	mg/m³
	inhalative	Short term (acut)	local	25	mg/m³

PNEC values

No	Substance name		CAS / EC no	
	ecological compartment	Type	Value	
1	**Acetic acid**		**64-19-7** **200-580-7**	
	water	fresh water	3.058	mg/L
	water	marine water	0.3058	mg/L
	water	fresh water sediment	11.36	mg/kg
	water	marine water sediment	1.136	mg/kg
	water	Aqua intermittent	30.58	mg/L
	soil	-	0.47	mg/kg
	sewage treatment plant	-	85	mg/L

8.2 Exposure controls

Appropriate engineering controls
No data available.

Personal protective equipment

Respiratory protection
If workplace exposure limits are exceeded, a respiration protection approved for this particular job must be worn. In case of aerosol and mist formation, take appropriate measures for breathing protection in the event workplace threshold values are not specified.
Respiratory filter (gas) : E

Eye / face protection
Safety glasses with side protection shield (EN 166)

Hand protection
In case of intensive contact, wear protective gloves (EN 374). Sufficient protection is given wearing suitable protective gloves checked according to i.e. EN 374, in the event of risk of skin contact with the product. Before use, the protective gloves should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties). Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Appropriate Material	In case of longer-term contact:
Appropriate Material	viton
Appropriate Material	In case of short-term contact / splash protection:
Appropriate Material	nitrile

Other
Normal chemical work clothing.

Environmental exposure controls
No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

State of aggregation
liquid

Form/Colour
liquid
colourless

Odour
pungent

pH value		
Value	4	
Reference temperature	20	°C
Source	supplier	

Boiling point / boiling range		
Value	117.9	°C

Melting point/freezing point		
Value	16.64	°C
Source	supplier	

Decomposition temperature
No data available

Flash point		
Value	39	°C

Ignition temperature
No data available

Auto-ignition temperature		
Value	463	°C

Flammability
No data available

Lower explosion limit		
Value	4	% vol

Upper explosion limit		
Value	19.9	% vol

Vapour pressure		
Value	20.79	hPa
Reference temperature	25	°C

Relative vapour density
No data available

Evaporation rate	
Value	1.0

Reference substance	Butyl Acetate
Source	supplier

Relative density		
Value	1.050	
Reference temperature	20	°C
Source	supplier	

Density		
Value	1.0446	g/cm³
Reference temperature	25	°C

Solubility in water		
Value	602.9	g/l
Reference temperature	25	°C

Solubility		
Value	602.9	g/l
Reference temperature	25	°C
Source	supplier	

Partition coefficient n-octanol/water (log value)		
log Pow	-0.17	
Reference temperature	20	°C

Viscosity		
Value	1.056	mPa*s
Reference temperature	25	°C

Particle characteristics
No data available

9.2 Other information

Other information
No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available.

10.2 Chemical stability
Stable under recommended storage and handling conditions (See section 7).

10.3 Possibility of hazardous reactions
Dangerous reactions are not to be expected when handling product according to its intended use.

10.4 Conditions to avoid
Temperatures > 35 °C. Formation of explosive gas/air mixtures. Protect from heat and direct sunlight. Keep away sources of ignition.

10.5 Incompatible materials
Oxidizing agents; Bases; Metals

10.6 Hazardous decomposition products
No hazardous decomposition products known.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute oral toxicity			
LD50		3310	mg/kg
Species	rat		
Source	CSR		

Acute dermal toxicity	
Comments	No data available.

Acute inhalational toxicity			
LC50	>	16000	ppm
Duration of exposure		4	h
Species	rat		
Source	CSR		

Skin corrosion/irritation	
Species	Human
Source	CSR

Evaluation	corrosive

Serious eye damage/irritation	
Species	Human
Source	CSR
Evaluation	corrosive

Respiratory or skin sensitisation	
Route of exposure	Skin
Source	CSR
Evaluation	non-sensitizing

Germ cell mutagenicity	
Source	CSR
Evaluation	negative

Reproduction toxicity	
Source	CSR
Comments	No experimental information on reproduction toxic effects available.

Carcinogenicity	
Source	CSR
Comments	No experimental information on carcinogenic effects available.

STOT - single exposure
No data available

STOT - repeated exposure
No data available

Aspiration hazard
No data available

Delayed and immediate effects as well as chronic effects from short and long-term exposure
Corrosive action on the skin and mucous membrane.

11.2 Information on other hazards

Endocrine disrupting properties
No data available.

Other information
No data available.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish (acute)			
LC50	>	300.82	mg/l
Duration of exposure		96	h
Species	Oncorhynchus mykiss		
Source	CSR		

Toxicity to fish (chronic)
No data available

Toxicity to Daphnia (acute)			
EC50	>	300.82	mg/l
Duration of exposure		48	h
Species	Daphnia magna		
Source	CSR		

Toxicity to Daphnia (chronic)
No data available

Toxicity to algae (acute)			
EC50	>	300.82	mg/l
Duration of exposure		72	h
Species	Skeletonema costatum		
Source	CSR		

Toxicity to algae (chronic)
No data available

Bacteria toxicity
No data available

12.2 Persistence and degradability

Biodegradability

Source	CSR
Evaluation	readily biodegradable

Behaviour in sewers [waste treatment plants]
The product is an acid. Neutralization is normally necessary before a waste water is discharged into sewage treatment plants.

12.3 Bioaccumulative potential

Bioconcentration factor (BCF)	
Comments	Not potentially bioaccumulative.

Partition coefficient n-octanol/water (log value)		
log Pow	-0.17	
Reference temperature	20	°C

12.4 Mobility in soil
No data available.

12.5 Results of PBT and vPvB assessment
No data available.

12.6 Endocrine disrupting properties
No data available.

12.7 Other adverse effects
No data available.

12.8 Other information

Other information
Do not discharge into surface waters/groundwater. Product is not allowed to discharge into aquatic environment, drains or sewage treatment plants.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product
Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging
Residues must be removed from packaging and when emptied completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified by the regional disposer.

SECTION 14: Transport information

14.1 Transport ADR/RID/ADN

Class	8
Classification code	CF1
Packing group	II
Hazard identification no.	83
UN number	UN2789
Proper shipping name	ACETIC ACID SOLUTION
Tunnel restriction code	D/E
Label	8+3

14.2 Transport IMDG

Class	8
Subsidiary Risk	3
Packing group	II
UN number	UN2789
Proper shipping name	ACETIC ACID SOLUTION
EmS	F-E, S-C
Label	8+3

14.3 Transport ICAO-TI / IATA

Class	8
Subrisk	3
Packing group	II
UN number	UN2789
Proper shipping name	Acetic acid solution
Label	8+3

14.4 Other information
No data available.

14.5 Environmental hazards

Information on environmental hazards, if relevant, please see 14.1 - 14.3.

14.6 Special precautions for user
No data available.

14.7 Maritime transport in bulk according to IMO instruments
Not relevant

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)
In accordance with the REACH regulation (EC) 1907/2006, the product does not contain any substances that are considered as subject to listing in annex XIV, inventory of substances requiring authorisation.

REACH candidate list of substances of very high concern (SVHC) for authorisation
In accordance with article 57 and article 59 of the Reach regulation (EC) 1907/2006, this substance is not considered as subject to listing in annex XIV, inventory of substances requiring authorisation ("Authorization list").

Regulation (EC) No 1907/2006 (REACH) Annex XVII: RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES				
The product is considered being subject to REACH regulation (EC) 1907/2006 annex XVII.				No 3, 40
The substance is considered being subject to REACH regulation (EC) 1907/2006 annex XVII.				
No	**Substance name**	**CAS no.**	**EC no.**	**No**
1	**Acetic acid**	**64-19-7**	**200-580-7**	**75**

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances	
This product is subject to Part I of Annex I, risk category:	P5c

15.2 Chemical safety assessment
A chemical safety assessment has been carried out for this substance.

SECTION 16: Other information

Sources of key data used to compile the data sheet:
Regulation (EC) No 1907/2006 (REACH), 1272/2008 (CLP) as amended in each case.
Directives 2000/39/EC, 2006/15/EC, 2009/161/EU, (EU) 2017/164.
National Threshold Limit Values of the corresponding countries as amended in each case.
Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.
The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding section.

Full text of the H- and EUH- phrases drawn up in sections 2 and 3 (provided not already drawn up in these sections)

H318	Causes serious eye damage.

Notes relating to the identification, classification and labelling of substances and mixtures ((EC) No 1272/2008, Annex VI)

B	Some substances (acids, bases, etc.) are placed on the market in aqueous solutions at various concentrations and, therefore, these solutions require different classification and labelling since the hazards vary at different concentrations. In Part 3 entries with Note B have a general designation of the following type: 'nitric acid … %'. In this case the supplier must state the percentage concentration of the solution on the label. Unless otherwise stated, it is assumed that the percentage concentration is calculated on a weight/weight basis.

List of existing exposition scenarios

ES001	Use as an intermediate, process chemical - industrial use
ES002	Formulation and (re)packing of substance and mixtures - industrial use
ES003	Use in cleaning agents - industrial use
ES004	Agrochemicals - professional use
ES005	Use as a laboratory reagent - professional use
ES006	Water treatment - industrial use

Creation of the safety data sheet
UMCO GmbH
Georg-Wilhelm-Str. 187, D-21107 Hamburg
Tel.: +49 40 / 555 546 300 Fax: +49 40 / 555 546 357 e-mail: umco@umco.de

This information is based on our present knowledge and experience.
The safety data sheet describes products with a view to safety requirements.
It does not however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

Alterations/supplements:
Alterations to the previous edition are marked in the left-hand margin.

Prod-ID 44268

Trade name: Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%

Current version : 2.2.0, issued: 11.06.2019 **Replaced version:** 2.1.0, issued: 06.02.2019 **Region:** GB

SECTION 1: Title and scope of exposure scenario (ES)

1.1 Title exposure scenario (ES)

ES1 Use as an intermediate, process chemical - industrial use

1.2 Scope of exposure scenario (ES)

ES Type	Worker Exposure Scenario for substance/mixture
Life cycle stage	Industrial end use

Product identifier

Trade name	Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%
	MSK Code: 60010, 60019, 90022, 90023, 90025, 90029, 90030, 90043, 90045, 90049
Substance name	Acetic acid
REACH registration no.	01-2119475328-30-0018
CAS no.	64-19-7
EC no.	200-580-7

Use descriptors

Sector of use (SU)		
Category	Code	Use description
Main user group	SU3	Industrial uses
Environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)
Process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC15	Use as laboratory reagent

Other information

The information in this ES originate from the CSR.

SECTION 2: Operational conditions (OC) and risk management measures (RMM) controlling exposure towards environment and men

2.1 Product characteristics

State of aggregation		
liquid		
Reference temperature	25	°C

Dustiness
Not applicable

Vapour pressure		
Value	20.79	hPa
Reference temperature	25	°C

Other information
The efficiency of a risk management measure is a theoretical value. The efficiency describes to which extend (in percent) the calculated exposure can be diminished by applying a certain measure. If the described operational conditions and risk management measures are fulfilled by a downstream user, the efficiency as highlighted in the ES can be applied. A downstream user might check whether the efficiency of the LEV or general ventilation corresponds to his site.

2.2 Contributing scenario controlling environmental exposure

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)

Risk management measures (RMM) controlling environmental exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)
No special measures are required.

Organisational measures
No special measures are required.

Measures related to wastewater treatment and efficiency of the risk managment measures (in exposure calculation model)		
ERC6a	Measures	Ensure all waste water is collected and treated via a WWTP.

Measures related to waste treatment
For further instructions related to waste management please refer to section 13 of the Safety Data Sheet.

2.3 Contributing scenario controlling worker exposure

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC15	Use as laboratory reagent

Operational conditions controlling worker exposure

Concentration of substance						
	PROC1		PROC2		PROC3, PROC4	
Value	≤ 100	%	≤ 100	%	≤ 100	%
	PROC8a		PROC8b		PROC15	
Value	≤ 100	%	≤ 100	%	≤ 100	%

Amounts used			
	PROC1	PROC2	PROC3, PROC4
	Not relevant	Not relevant	Not relevant
	PROC8a	PROC8b	PROC15
	Not relevant	Not relevant	Not relevant

Use conditions						
	PROC1		PROC2		PROC3, PROC4	
Location of use	Indoor and outdoor use.		Indoor and outdoor use.		Indoor use	
Duration of use	≤ 8	hours/day	≤ 8	hours/day	≤ 8	hours/day
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year
	PROC8a		PROC8b		PROC15	
Location of use	Indoor and outdoor use.		Indoor use		Indoor use	
Duration of use	≤ 8	hours/day	≤ 8	hours/day	≤ 8	hours/day
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year

Further operational conditions	
PROC1	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC2	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
	Assumes a good basic standard of occupational hygiene is implemented.
PROC3, PROC4	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
	Assumes a good basic standard of occupational hygiene is implemented.
PROC8a	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
	Assumes a good basic standard of occupational hygiene is implemented.
PROC8b	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
	Assumes a good basic standard of occupational hygiene is implemented.
PROC15	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM) controlling worker exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)		
PROC1	Measures	No special measures are required.
PROC2	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC3, PROC4	Measures	Handle only at a place with local exhaust system (or another appropriate exhaust).
	Efficiency (%)	90
PROC8a	Measures	No special measures are required.
PROC8b	Measures	Ensure material transfers are under containment or extract ventilation.
	Efficiency (%)	97
PROC15	Measures	Handle in a fume cupboard or under extract ventilation.
	Efficiency (%)	90

Organisational measures	
PROC1	No special measures are required.
PROC2	No special measures are required.
PROC3, PROC4	No special measures are required.
PROC8a	Drain down and flush system prior to equipment break-in or maintenance.
PROC8b	No special measures are required.
PROC15	No special measures are required.

Personal protective equipment and efficiency of the risk managment measures (in exposure calculation model)

Advice	
PROC1	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC2	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC3, PROC4	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8a	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8b	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC15	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.

Hand protection		
PROC1	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC2	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC3, PROC4	Measures	No special measures are required.
PROC8a	Measures	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
	Efficiency (%)	80
PROC8b	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC15	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur

SECTION 3: Exposure estimation and reference to sources

3.1 Advice

The Risk Characterization Ratio (RCR) is the quotient of predicted human/environmental exposure and the related DNEL/PNEC. Exposure is calculated based on exposure models as stated below. If RCR ≤ 1 a use is considered as safe under operational conditions and risk management measures as specified in the exposure szenario.

For DNEL/PNEC values please refer to section 8 of the safety data sheet.

3.2 Exposure estimation - Environment

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC6a	Industrial use resulting in manufacture of another substance (use of intermediates)

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

3.3 Exposure estimation - Worker

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC15	Use as laboratory reagent

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Risk characterisation ratio (RCR)				
	Exposure estimation	**inhalative**	**dermal**	**total**
PROC1	Long-term local	0.00	0.03	0.03
PROC2	Long-term local	0.70	0.14	0.84
PROC3	Long-term local	0.25	0.00	0.25
PROC4	Long-term local	0.20	0.07	0.27
PROC8a	Long-term local	0.50	0.27	0.77
PROC8b	Long-term local	0.15	0.07	0.22
PROC15	Long-term local	0.10	0.00	0.10

SECTION 4: Guidance to DU to evaluate whether he works inside the boundaries set by the ES

4.1 Recommendations and advice

Recommendations and general advice

If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
- For additional instructions relating to adaptation of conditions of use in view of a scaling, pls. see the VCI practice guide, part I, section 7.7. https://www.vci.de/Themen/Chemikaliensicherheit/REACH/Seiten/REACH-Praxisfuehrer.aspx

Scaling advice

Type of ventilation

If the type of ventilation at the use site of a downstream user (DU) differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the type of ventilation exists. Following scaling factors (f) apply: General ventilation (< 3 air changes per hour) =1; good general ventilation (3 to 5 air changes per hour, corresponds to outdoor use) = 0,7; enhanced general ventilation (> 5 air changes per hour) = 0,3.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (type of ventilation stated in ES)
In the same manner a scaling for the efficiency of the local extract ventilation (LEV) can by applied.

Duration of use

If the duration of the use by a worker at a downstream user (DU) site differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the duration of use exist. Following scaling factors (f) apply: duration > 4 hours/day = 1; duration: 1-4 hours/day = 0,6; duration: 15 min/day – 1 hour/day = 0,2; duration < 15 min/day = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (duration in ES)

Concentration of the substance in the product

If the downstream user (DU) uses the substance in a different concentration than the one stated in the ES, a linear correlation between the RCR (Inhalation)and the RCR (dermal) and the concentration exists. Following scaling factors (f) apply: Concentration >25% =1; concentration >= 5% = 0,6; concentration >= 1% = 0,2; concentration < 1% = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (concentration in ES).

4.2 Exposure estimation - Environment

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

4.3 Exposure estimation - Worker

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Other information	
PROC8a	For the organizational measure an efficiency of 90% was assumed.

Trade name: Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%

Current version : 2.2.0, issued: 11.06.2019 **Replaced version:** 2.1.0, issued: 06.02.2019 **Region:** GB

SECTION 1: Title and scope of exposure scenario (ES)

1.1 Title exposure scenario (ES)

ES2 Formulation and (re)packing of substance and mixtures - industrial use

1.2 Scope of exposure scenario (ES)

ES Type	Worker Exposure Scenario for substance/mixture
Life cycle stage	Formulation

Product identifier

Trade name	Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%
	MSK Code: 60010, 60019, 90022, 90023, 90025, 90029, 90030, 90043, 90045, 90049
Substance name	Acetic acid
REACH registration no.	01-2119475328-30-0018
CAS no.	64-19-7
EC no.	200-580-7

Use descriptors

Sector of use (SU)		
Category	Code	Use description
Main user group	SU3	Industrial uses
Sector of end-use	SU8	Manufacture of bulk, large scale chemicals (including petroleum products)
	SU9	Manufacture of fine chemicals
	SU10	Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC2	Formulation of preparations

Process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	PROC14	Production of preparations or articles by tabletting, compression, extrusion, pelettisation
	PROC15	Use as laboratory reagent

Other information

The information in this ES originate from the CSR.

SECTION 2: Operational conditions (OC) and risk management measures (RMM) controlling exposure towards environment and men

2.1 Product characteristics

State of aggregation		
liquid		
Reference temperature	25	°C

Dustiness
Not relevant

Vapour pressure		
Value	20.79	hPa
Reference temperature	25	°C

Other information
The efficiency of a risk management measure is a theoretical value. The efficiency describes to which extend (in percent) the calculated exposure can be diminished by applying a certain measure. If the described operational conditions and risk management measures are fulfilled by a downstream user, the efficiency as highlighted in the ES can be applied. A downstream user might check whether the efficiency of the LEV or general ventilation corresponds to his site.

2.2 Contributing scenario controlling environmental exposure

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC2	Formulation of preparations

Risk management measures (RMM) controlling environmental exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)
No special measures are required.

Organisational measures
No special measures are required.

Measures related to wastewater treatment and efficiency of the risk managment measures (in exposure calculation model)		
ERC2	Measures	Ensure all waste water is collected and treated via a WWTP.

Measures related to waste treatment
For further instructions related to waste management please refer to section 13 of the Safety Data Sheet.

2.3 Contributing scenario controlling worker exposure

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	PROC14	Production of preparations or articles by tabletting, compression, extrusion, pelettisation
	PROC15	Use as laboratory reagent

Operational conditions controlling worker exposure

Concentration of substance							
	PROC1		PROC2		PROC3		
Value	≤ 100	%	≤ 100	%	≤ 100	%	
	PROC4		PROC5		PROC8a		
Value	≤ 100	%	≤ 100	%	≤ 100	%	
	PROC8b		PROC9		PROC14		
Value	≤ 100	%	≤ 100	%	≤ 100	%	
	PROC15						
Value	≤ 100	%					

Amounts used			
	PROC1	PROC2	PROC3
	Not relevant	Not relevant	Not relevant
	PROC4	PROC5	PROC8a
	Not relevant	Not relevant	Not relevant
	PROC8b	PROC9	PROC14
	Not relevant	Not relevant	Not relevant
	PROC15		
	Not relevant		

Use conditions						
	PROC1		PROC2		PROC3	
Location of use	Indoor and outdoor use.		Indoor and outdoor use.		Indoor use	
Duration of use	≤ 8	hours/day	≤ 8	hours/day	≤ 4	hours/day
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year
	PROC4		PROC5		PROC8a	
Location of use	Indoor use		Indoor use		Indoor use	
Duration of use	≤ 8	hours/day	≤ 8	hours/day	≤ 8	hours/day
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year
	PROC8b		PROC9		PROC14	
Location of use	Indoor use		Indoor use		Indoor use	
Duration of use	≤ 8	hours/day	≤ 8	hours/day	≤ 8	hours/day
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year
	PROC15					
Location of use	Indoor use					
Duration of use	≤ 8	hours/day				
Frequency of use	≤ 220	days/year				

Further operational conditions	
PROC1	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC2	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC3	Assumes a good basic standard of occupational hygiene is implemented.
	Operation is carried out at elevated temperature (> 20°C above ambient temperature)
PROC4	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC5	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8a	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8b	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC9	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC14	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC15	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM) controlling worker exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)		
PROC1	Measures	No special measures are required.
PROC2	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC3	Measures	Handle only at a place with local exhaust system (or another appropriate exhaust).
	Efficiency (%)	90
PROC4	Measures	Provide extract ventilation to points where emissions occur.
	Efficiency (%)	90
PROC5	Measures	Provide extract ventilation to points where emissions occur.
	Efficiency (%)	90
PROC8a	Measures	Provide extract ventilation to points where emissions occur.
	Efficiency (%)	90
PROC8b	Measures	Provide extract ventilation to points where emissions occur.
	Efficiency (%)	97
PROC9	Measures	Ensure material transfers are under containment or extract ventilation.
	Efficiency (%)	90
PROC14	Measures	Provide extract ventilation to points where emissions occur.
	Efficiency (%)	90
PROC15	Measures	Handle in a fume cupboard or under extract ventilation.
	Efficiency (%)	90

Organisational measures	
PROC1	No special measures are required.
PROC2	No special measures are required.
PROC3	Avoid carrying out activities involving exposure for more than 4 hours.
PROC4	No special measures are required.
PROC5	No special measures are required.
PROC8a	Drain down and flush system prior to equipment break-in or maintenance.
PROC8b	Clear transfer lines prior to de-coupling.
	Avoid spillage when withdrawing pump.
PROC9	Clear spills immediately.
	Put lids on containers immediately after use.
PROC14	No special measures are required.
PROC15	No special measures are required.

Personal protective equipment and efficiency of the risk managment measures (in exposure calculation model)

Advice	
PROC1	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC2	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC3	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC4	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC5	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8a	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8b	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC9	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC14	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC15	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.

Hand protection		
PROC1	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC2	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC3	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC4	Measures	No special measures are required.
PROC5	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC8a	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80
PROC8b	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC9	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC14	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC15	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur

Other		
PROC8b	Measures	If above technicall control measures are not feasible, then adopt following PPE:
	Measures	Wear a respirator conforming to EN140 with Type A filter or better.
	Measures	Wear suitable gloves tested to EN374.

SECTION 3: Exposure estimation and reference to sources

3.1 Advice

The Risk Characterization Ratio (RCR) is the quotient of predicted human/environmental exposure and the related DNEL/PNEC. Exposure is calculated based on exposure models as stated below. If RCR ≤ 1 a use is considered as safe under operational conditions and risk management measures as specified in the exposure szenario.

For DNEL/PNEC values please refer to section 8 of the safety data sheet.

3.2 Exposure estimation - Environment

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC2	Formulation of preparations

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

3.3 Exposure estimation - Worker

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
	PROC14	Production of preparations or articles by tabletting, compression, extrusion, pelettisation
	PROC15	Use as laboratory reagent

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Risk characterisation ratio (RCR)				
	Exposure estimation	**inhalative**	**dermal**	**total**
PROC1	Long-term local	0.00	0.03	0.03
PROC2	Long-term local	0.70	0.14	0.84
PROC3	Long-term local	0.60	0.00	0.60
PROC4	Long-term local	0.20	0.07	0.27
PROC5	Long-term local	0.50	0.01	0.51
PROC8a	Long-term local	0.50	0.27	0.77
PROC8b	Long-term local	0.15	0.69	0.84
PROC9	Long-term local	0.50	0.07	0.57
PROC14	Long-term local	0.50	0.03	0.53
PROC15	Long-term local	0.10	0.00	0.10

SECTION 4: Guidance to DU to evaluate whether he works inside the boundaries set by the ES

4.1 Recommendations and advice

Recommendations and general advice

- For additional instructions relating to adaptation of conditions of use in view of a scaling, pls. see the VCI practice guide, part I, section 7.7. https://www.vci.de/Themen/Chemikaliensicherheit/REACH/Seiten/REACH-Praxisfuehrer.aspx

If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.

Scaling advice

Type of ventilation

If the type of ventilation at the use site of a downstream user (DU) differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the type of ventilation exists. Following scaling factors (f) apply: General ventilation (< 3 air changes per hour) =1; good general ventilation (3 to 5 air changes per hour, corresponds to outdoor use) = 0,7; enhanced general ventilation (> 5 air changes per hour) = 0,3.

RCR (DU) = f(DU) * RCR (as stated in ES) / f (type of ventilation stated in ES)

In the same manner a scaling for the efficiency of the local extract ventilation (LEV) can by applied.

Duration of use
If the duration of the use by a worker at a downstream user (DU) site differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the duration of use exist. Following scaling factors (f) apply: duration > 4 hours/day = 1; duration: 1-4 hours/day = 0,6; duration: 15 min/day – 1 hour/day = 0,2; duration < 15 min/day = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (duration in ES)

Concentration of the substance in the product
If the downstream user (DU) uses the substance in a different concentration than the one stated in the ES, a linear correlation between the RCR (Inhalation)and the RCR (dermal) and the concentration exists. Following scaling factors (f) apply: Concentration >25% =1; concentration >= 5% = 0,6; concentration >= 1% = 0,2; concentration < 1% = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (concentration in ES).

4.2 Exposure estimation - Environment

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

4.3 Exposure estimation - Worker

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Trade name: Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%

Current version : 2.2.0, issued: 11.06.2019 **Replaced version:** 2.1.0, issued: 06.02.2019 **Region:** GB

SECTION 1: Title and scope of exposure scenario (ES)

1.1 Title exposure scenario (ES)

ES3 Use in cleaning agents - industrial use

1.2 Scope of exposure scenario (ES)

ES Type	Worker Exposure Scenario for substance/mixture
Life cycle stage	Industrial end use

Product identifier

Trade name	Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%
	MSK Code: 60010, 60019, 90022, 90023, 90025, 90029, 90030, 90043, 90045, 90049
Substance name	Acetic acid
REACH registration no.	01-2119475328-30-0018
CAS no.	64-19-7
EC no.	200-580-7

Use descriptors

Sector of use (SU)		
Category	Code	Use description
Main user group	SU3	Industrial uses
Sector of end-use	SU5	Manufacture of textiles, leather, fur
	SU6	Manufacture of paper and paper products
Environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
Process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC7	Industrial spraying
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC10	Roller application or brushing
	PROC13	Treatment of articles by dipping and pouring

Other information

The information in this ES originate from the CSR.

SECTION 2: Operational conditions (OC) and risk management measures (RMM) controlling exposure towards environment and men

2.1 Product characteristics

State of aggregation		
liquid		
Reference temperature	25	°C

Dustiness
Not applicable

Vapour pressure		
Value	20.79	hPa
Reference temperature	25	°C

Other information
The efficiency of a risk management measure is a theoretical value. The efficiency describes to which extend (in percent) the calculated exposure can be diminished by applying a certain measure. If the described operational conditions and risk management measures are fulfilled by a downstream user, the efficiency as highlighted in the ES can be applied. A downstream user might check whether the efficiency of the LEV or general ventilation corresponds to his site.

2.2 Contributing scenario controlling environmental exposure

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC4	Industrial use of processing aids in processes and products, not becoming part of articles

Risk management measures (RMM) controlling environmental exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)
No special measures are required.

Organisational measures
No special measures are required.

Measures related to wastewater treatment and efficiency of the risk managment measures (in exposure calculation model)		
ERC4	Measures	Ensure all waste water is collected and treated via a WWTP.

Measures related to waste treatment
For further instructions related to waste management please refer to section 13 of the Safety Data Sheet.

2.3 Contributing scenario controlling worker exposure

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC7	Industrial spraying
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC10	Roller application or brushing
	PROC13	Treatment of articles by dipping and pouring

Operational conditions controlling worker exposure

Concentration of substance							
	PROC2		PROC3		PROC4		
Value	≤ 100	%	≤ 100	%	≤ 100	%	
	PROC7		PROC8a		PROC8b		
Value	≤ 5	%	≤ 100	%	≤ 100	%	
	PROC10		PROC13				
Value	≤ 5	%	≤ 100	%			

Amounts used			
	PROC2	PROC3	PROC4
	Not relevant	Not relevant	Not relevant
	PROC7	PROC8a	PROC8b
	Not relevant	Not relevant	Not relevant
	PROC10	PROC13	
	Not relevant	Not relevant	

Use conditions								
	PROC2		PROC3		PROC4			
Location of use	Indoor and outdoor use.		Indoor and outdoor use.		Indoor use			
Duration of use	≤ 8	hours/day	≤ 1	hours/day	≤ 4	hours/day		
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year		
	PROC7		PROC8a		PROC8b			
Location of use	Indoor and outdoor use.		Indoor use		Indoor use			
Duration of use	≤ 1	hours/day	≤ 8	hours/day	≤ 8	hours/day		
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year		
	PROC10		PROC13					
Location of use	Indoor and outdoor use.		Indoor use					
Duration of use	≤ 4	hours/day	≤ 8	hours/day				
Frequency of use	≤ 220	days/year	≤ 220	days/year				

Further operational conditions	
PROC2	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC3	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC4	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC7	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8a	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8b	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC10	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC13	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM) controlling worker exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)		
PROC2	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC3	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC4	Measures	Ensure material transfers are under containment or extract ventilation.
	Efficiency (%)	90
PROC7	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC8a	Measures	Ensure material transfers are under containment or extract ventilation.
	Efficiency (%)	90
PROC8b	Measures	Ensure material transfers are under containment or extract ventilation.
	Efficiency (%)	97
PROC10	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC13	Measures	Provide extract ventilation to points where emissions occur.
	Efficiency (%)	90

Organisational measures	
PROC2	No special measures are required.
PROC3	Avoid carrying out activities involving exposure for more than 1 hour.
PROC4	Avoid carrying out activities involving exposure for more than 4 hours.
PROC7	For this PROC(s) no further measures are called.
PROC8a	Drain down and flush system prior to equipment break-in or maintenance.
	Clear transfer lines prior to de-coupling.
PROC8b	Clear transfer lines prior to de-coupling.
PROC10	Avoid carrying out activities involving exposure for more than 4 hours.
PROC13	Clear spills immediately.

Personal protective equipment and efficiency of the risk managment measures (in exposure calculation model)

Advice	
PROC2	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC3	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC4	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC7	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8a	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8b	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC10	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC13	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.

Hand protection		
PROC2	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC3	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC4	Measures	No special measures are required.
PROC7	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80
PROC8a	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC8b	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC10	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC13	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur

SECTION 3: Exposure estimation and reference to sources

3.1 Advice

The Risk Characterization Ratio (RCR) is the quotient of predicted human/environmental exposure and the related DNEL/PNEC. Exposure is calculated based on exposure models as stated below. If RCR ≤ 1 a use is considered as safe under operational conditions and risk management measures as specified in the exposure szenario.

For DNEL/PNEC values please refer to section 8 of the safety data sheet.

3.2 Exposure estimation - Environment

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC4	Industrial use of processing aids in processes and products, not becoming part of articles

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

3.3 Exposure estimation - Worker

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC7	Industrial spraying
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC10	Roller application or brushing
	PROC13	Treatment of articles by dipping and pouring

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Risk characterisation ratio (RCR)				
	Exposure estimation	**inhalative**	**dermal**	**total**
PROC2	Long-term local	0.70	0.14	0.84
PROC3	Long-term local	0.35	0.03	0.38
PROC4	Long-term local	0.60	0.07	0.67
PROC7	Long-term local	0.70	0.17	0.87
PROC8a	Long-term local	0.50	0.01	0.51
PROC8b	Long-term local	0.15	0.07	0.22
PROC10	Long-term local	0.42	0.55	0.97
PROC13	Long-term local	0.50	0.07	0.57

SECTION 4: Guidance to DU to evaluate whether he works inside the boundaries set by the ES

4.1 Recommendations and advice

Recommendations and general advice

- For additional instructions relating to adaptation of conditions of use in view of a scaling, pls. see the VCI practice guide, part I, section 7.7. https://www.vci.de/Themen/Chemikaliensicherheit/REACH/Seiten/REACH-Praxisfuehrer.aspx

If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.

Scaling advice

Type of ventilation

If the type of ventilation at the use site of a downstream user (DU) differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the type of ventilation exists. Following scaling factors (f) apply: General ventilation (< 3 air changes per hour) =1; good general ventilation (3 to 5 air changes per hour, corresponds to outdoor use) = 0,7; enhanced general ventilation (> 5 air changes per hour) = 0,3.

RCR (DU) = f(DU) * RCR (as stated in ES) / f (type of ventilation stated in ES)

In the same manner a scaling for the efficiency of the local extract ventilation (LEV) can by applied.

Duration of use

If the duration of the use by a worker at a downstream user (DU) site differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the duration of use exist. Following scaling factors (f) apply: duration > 4 hours/day = 1; duration: 1-4 hours/day = 0,6; duration: 15 min/day – 1 hour/day = 0,2; duration < 15 min/day = 0,1.

RCR (DU) = f(DU) * RCR (as stated in ES) / f (duration in ES)

Concentration of the substance in the product
If the downstream user (DU) uses the substance in a different concentration than the one stated in the ES, a linear correlation between the RCR (Inhalation)and the RCR (dermal) and the concentration exists. Following scaling factors (f) apply: Concentration >25% =1; concentration >= 5% = 0,6; concentration >= 1% = 0,2; concentration < 1% = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (concentration in ES).

4.2 Exposure estimation - Environment

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

4.3 Exposure estimation - Worker

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Trade name: Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%

Current version : 2.2.0, issued: 11.06.2019 **Replaced version:** 2.1.0, issued: 06.02.2019 **Region:** GB

SECTION 1: Title and scope of exposure scenario (ES)

1.1 Title exposure scenario (ES)

ES4 Agrochemicals - professional use

1.2 Scope of exposure scenario (ES)

ES Type	Worker-ES for products.
Life cycle stage	Professional end use

Product identifier

Trade name	Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5% MSK Code: 60010, 60019, 90022, 90023, 90025, 90029, 90030, 90043, 90045, 90049
Substance name	Acetic acid
REACH registration no.	01-2119475328-30-0018
CAS no.	64-19-7
EC no.	200-580-7

Use descriptors

Sector of use (SU)		
Category	Code	Use description
Main user group	SU22	Professional uses
Environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC8d	Wide dispersive outdoor use of processing aids in open systems
Process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC11	Non industrial spraying
	PROC13	Treatment of articles by dipping and pouring

Other information

The information in this ES originate from the CSR.

SECTION 2: Operational conditions (OC) and risk management measures (RMM) controlling exposure towards environment and men

2.1 Product characteristics

State of aggregation		
liquid		
Reference temperature	25	°C

Dustiness
Not applicable

Vapour pressure		
Value	20.79	hPa
Reference temperature	25	°C

Other information
The efficiency of a risk management measure is a theoretical value. The efficiency describes to which extend (in percent) the calculated exposure can be diminished by applying a certain measure. If the described operational conditions and risk management measures are fulfilled by a downstream user, the efficiency as highlighted in the ES can be applied. A downstream user might check whether the efficiency of the LEV or general ventilation corresponds to his site.

2.2 Contributing scenario controlling environmental exposure

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC8d	Wide dispersive outdoor use of processing aids in open systems

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

2.3 Contributing scenario controlling worker exposure

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC11	Non industrial spraying
	PROC13	Treatment of articles by dipping and pouring

Operational conditions controlling worker exposure

Concentration of substance						
	PROC1		PROC2		PROC4	
Value	≤ 100	%	≤ 100	%	≤ 100	%
	PROC8a		PROC8b		PROC11	
Value	≤ 5	%	≤ 100	%	≤ 5	%
	PROC13					
Value	≤ 5	%				

Amounts used			
	PROC1	PROC2	PROC4
	Not relevant	Not relevant	Not relevant
	PROC8a	PROC8b	PROC11
	Not relevant	Not relevant	Not relevant
	PROC13		
	Not relevant		

Use conditions						
	PROC1		PROC2		PROC4	
Location of use	Indoor and outdoor use.		Indoor and outdoor use.		Indoor and outdoor use.	
Duration of use	≤ 8	hours/day	≤ 4	hours/day	≤ 1	hours/day
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year
	PROC8a		PROC8b		PROC11	
Location of use	Indoor and outdoor use.		Indoor and outdoor use.		Indoor and outdoor use.	
Duration of use	≤ 1	hours/day	≤ 4	hours/day	≤ 4	hours/day
Frequency of use	≤ 220	days/year	≤ 220	days/year	≤ 220	days/year
	PROC13					
Location of use	Indoor and outdoor use.					
Duration of use	≤ 1	hours/day				
Frequency of use	≤ 220	days/year				

Further operational conditions	
PROC1	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC2	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC4	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8a	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8b	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC11	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC13	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM) controlling worker exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)		
PROC1	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC2	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC4	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC8a	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC8b	Measures	Use drum pumps or carefully pour from container.
	Efficiency (%)	80
PROC11	Measures	Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.
	Efficiency (%)	95
PROC13	Measures	No special measures are required.

Organisational measures	
PROC1	No special measures are required.
PROC2	Avoid carrying out activities involving exposure for more than 4 hours.
PROC4	Avoid carrying out activities involving exposure for more than 1 hour.
PROC8a	Avoid carrying out activities involving exposure for more than 1 hour.
PROC8b	Avoid carrying out activities involving exposure for more than 4 hours.
PROC11	Avoid carrying out activities involving exposure for more than 4 hours.
PROC13	Avoid carrying out activities involving exposure for more than 1 hour.

Personal protective equipment and efficiency of the risk managment measures (in exposure calculation model)

Advice	
PROC1	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC2	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC4	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8a	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8b	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC11	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC13	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.

Hand protection		
PROC1	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC2	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC4	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80
PROC8a	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC8b	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80
PROC11	Measures	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
	Efficiency (%)	90
PROC13	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur

Other		
PROC11	Measures	If above technicall control measures are not feasible, then adopt following PPE:
	Measures	Wear a respirator conforming to EN140 with Type A filter or better.
	Efficiency (%)	90

SECTION 3: Exposure estimation and reference to sources

3.1 Advice

The Risk Characterization Ratio (RCR) is the quotient of predicted human/environmental exposure and the related DNEL/PNEC. Exposure is calculated based on exposure models as stated below. If RCR ≤ 1 a use is considered as safe under operational conditions and risk management measures as specified in the exposure szenario.

For DNEL/PNEC values please refer to section 8 of the safety data sheet.

3.2 Exposure estimation - Environment

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC8d	Wide dispersive outdoor use of processing aids in open systems

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

3.3 Exposure estimation - Worker

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC11	Non industrial spraying
	PROC13	Treatment of articles by dipping and pouring

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Risk characterisation ratio (RCR)				
	Exposure estimation	**inhalative**	**dermal**	**total**
PROC1	Long-term local	0.00	0.00	0.00
PROC2	Long-term local	0.84	0.01	0.85
PROC4	Long-term local	0.70	0.14	0.84
PROC8a	Long-term local	0.28	0.27	0.55
PROC8b	Long-term local	0.60	0.14	0.74
PROC11	Long-term local	0.21	0.60	0.81
PROC13	Long-term local	0.40	0.27	0.67

SECTION 4: Guidance to DU to evaluate whether he works inside the boundaries set by the ES

4.1 Recommendations and advice

Recommendations and general advice

If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
- For additional instructions relating to adaptation of conditions of use in view of a scaling, pls. see the VCI practice guide, part I, section 7.7. https://www.vci.de/Themen/Chemikaliensicherheit/REACH/Seiten/REACH-Praxisfuehrer.aspx

Scaling advice

Type of ventilation

If the type of ventilation at the use site of a downstream user (DU) differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the type of ventilation exists. Following scaling factors (f) apply: General ventilation (< 3 air changes per hour) =1; good general ventilation (3 to 5 air changes per hour, corresponds to outdoor use) = 0,7; enhanced general ventilation (> 5 air changes per hour) = 0,3.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (type of ventilation stated in ES)
In the same manner a scaling for the efficiency of the local extract ventilation (LEV) can by applied.

Duration of use

If the duration of the use by a worker at a downstream user (DU) site differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the duration of use exist. Following scaling factors (f) apply: duration > 4 hours/day = 1; duration: 1-4 hours/day = 0,6; duration: 15 min/day – 1 hour/day = 0,2; duration < 15 min/day = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (duration in ES)

Concentration of the substance in the product

If the downstream user (DU) uses the substance in a different concentration than the one stated in the ES, a linear correlation between the RCR (Inhalation)and the RCR (dermal) and the concentration exists. Following scaling factors (f) apply: Concentration >25% =1; concentration >= 5% = 0,6; concentration >= 1% = 0,2; concentration < 1% = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (concentration in ES).

4.2 Exposure estimation - Environment

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

4.3 Exposure estimation - Worker

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2

Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Trade name: Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%

Current version : 2.2.0, issued: 11.06.2019 **Replaced version:** 2.1.0, issued: 06.02.2019 **Region:** GB

SECTION 1: Title and scope of exposure scenario (ES)

1.1 Title exposure scenario (ES)

ES5 Use as a laboratory reagent - professional use

1.2 Scope of exposure scenario (ES)

ES Type	Worker Exposure Scenario for substance/mixture
Life cycle stage	Professional end use

Product identifier

Trade name	Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%
	MSK Code: 60010, 60019, 90022, 90023, 90025, 90029, 90030, 90043, 90045, 90049
Substance name	Acetic acid
REACH registration no.	01-2119475328-30-0018
CAS no.	64-19-7
EC no.	200-580-7

Use descriptors

Sector of use (SU)		
Category	Code	Use description
Main user group	SU22	Professional uses
Environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC8a	Wide dispersive indoor use of processing aids in open systems
Process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC10	Roller application or brushing
	PROC15	Use as laboratory reagent

Other information

The information in this ES originate from the CSR.

SECTION 2: Operational conditions (OC) and risk management measures (RMM) controlling exposure towards environment and men

2.1 Product characteristics

State of aggregation		
liquid		
Reference temperature	25	°C

Dustiness
Not applicable

Vapour pressure		
Value	20.79	hPa
Reference temperature	25	°C

Other information
The efficiency of a risk management measure is a theoretical value. The efficiency describes to which extend (in percent) the calculated exposure can be diminished by applying a certain measure. If the described operational conditions and risk management measures are fulfilled by a downstream user, the efficiency as highlighted in the ES can be applied. A downstream user might check whether the efficiency of the LEV or general ventilation corresponds to his site.

2.2 Contributing scenario controlling environmental exposure

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC8a	Wide dispersive indoor use of processing aids in open systems

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

2.3 Contributing scenario controlling worker exposure

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC10	Roller application or brushing
	PROC15	Use as laboratory reagent

Operational conditions controlling worker exposure

Concentration of substance					
	PROC10		PROC15		
Value	≤ 100	%	≤ 100	%	

Amounts used			
	PROC10	PROC15	
	Not relevant		
Value		< 1000 ml	

Use conditions					
	PROC10		PROC15		
Location of use	Indoor use		Indoor use		
Duration of use	≤ 1	hours/day	≤ 8	hours/day	
Frequency of use	≤ 220	days/year	≤ 220	days/year	

Further operational conditions	
PROC10	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
	Assumes a good basic standard of occupational hygiene is implemented.
PROC15	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM) controlling worker exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)		
PROC10	Measures	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
	Efficiency (%)	70
PROC15	Measures	Handle in a fume cupboard or under extract ventilation.
	Efficiency (%)	80

Organisational measures	
PROC10	Avoid carrying out activities involving exposure for more than 1 hour.
PROC15	No special measures are required.

Personal protective equipment and efficiency of the risk managment measures (in exposure calculation model)

Advice	
PROC10	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC15	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.

Hand protection		
PROC10	Measures	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
	Efficiency (%)	90
PROC15	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur

Further risk management measures	
PROC10	Use long handled tools where possible.

SECTION 3: Exposure estimation and reference to sources

3.1 Advice

The Risk Characterization Ratio (RCR) is the quotient of predicted human/environmental exposure and the related DNEL/PNEC. Exposure is calculated based on exposure models as stated below. If RCR ≤ 1 a use is considered as safe under operational conditions and risk management measures as specified in the exposure szenario.

For DNEL/PNEC values please refer to section 8 of the safety data sheet.

3.2 Exposure estimation - Environment

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC8a	Wide dispersive indoor use of processing aids in open systems

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

3.3 Exposure estimation - Worker

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC10	Roller application or brushing
	PROC15	Use as laboratory reagent

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Risk characterisation ratio (RCR)				
	Exposure estimation	**inhalative**	**dermal**	**total**
PROC10	Long-term local	0.60	0.27	0.87
PROC15	Long-term local	0.20	0.00	0.20

SECTION 4: Guidance to DU to evaluate whether he works inside the boundaries set by the ES

4.1 Recommendations and advice

Recommendations and general advice

- For additional instructions relating to adaptation of conditions of use in view of a scaling, pls. see the VCI practice guide, part I, section 7.7. https://www.vci.de/Themen/Chemikaliensicherheit/REACH/Seiten/REACH-Praxisfuehrer.aspx

If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.

Scaling advice

Type of ventilation

If the type of ventilation at the use site of a downstream user (DU) differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the type of ventilation exists. Following scaling factors (f) apply: General ventilation (< 3 air changes per hour) =1; good general ventilation (3 to 5 air changes per hour, corresponds to outdoor use) = 0,7; enhanced general ventilation (> 5 air changes per hour) = 0,3.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (type of ventilation stated in ES)
In the same manner a scaling for the efficiency of the local extract ventilation (LEV) can by applied.

Duration of use

If the duration of the use by a worker at a downstream user (DU) site differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the duration of use exist. Following scaling factors (f) apply: duration > 4 hours/day = 1; duration: 1-4 hours/day = 0,6; duration: 15 min/day – 1 hour/day = 0,2; duration < 15 min/day = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (duration in ES)

Concentration of the substance in the product

If the downstream user (DU) uses the substance in a different concentration than the one stated in the ES, a linear correlation between the RCR (Inhalation)and the RCR (dermal) and the concentration exists. Following scaling factors (f) apply: Concentration >25% =1; concentration >= 5% = 0,6; concentration >= 1% = 0,2; concentration < 1% = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (concentration in ES).

4.2 Exposure estimation - Environment

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

4.3 Exposure estimation - Worker

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Trade name: Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5%

Current version : 2.2.0, issued: 11.06.2019 **Replaced version:** 2.1.0, issued: 06.02.2019 **Region:** GB

SECTION 1: Title and scope of exposure scenario (ES)

1.1 Title exposure scenario (ES)

ES6 Water treatment - industrial use

1.2 Scope of exposure scenario (ES)

ES Type	Worker Exposure Scenario for substance/mixture
Life cycle stage	Industrial end use

Product identifier

Trade name	Acetic Acid, technical/foodstuff 99.8%, pharmaceutical 99.5%-100,5% MSK Code: 60010, 60019, 90022, 90023, 90025, 90029, 90030, 90043, 90045, 90049
Substance name	Acetic acid
REACH registration no.	01-2119475328-30-0018
CAS no.	64-19-7
EC no.	200-580-7

Use descriptors

Sector of use (SU)		
Category	Code	Use description
Main user group	SU3	Industrial uses
Environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
Process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC13	Treatment of articles by dipping and pouring

Other information

The information in this ES originate from the CSR.

SECTION 2: Operational conditions (OC) and risk management measures (RMM) controlling exposure towards environment and men

2.1 Product characteristics

State of aggregation		
liquid		
Reference temperature	25	°C

Dustiness
Not applicable

Vapour pressure		
Value	20.79	hPa
Reference temperature	25	°C

Other information
The efficiency of a risk management measure is a theoretical value. The efficiency describes to which extend (in percent) the calculated exposure can be diminished by applying a certain measure. If the described operational conditions and risk management measures are fulfilled by a downstream user, the efficiency as highlighted in the ES can be applied. A downstream user might check whether the efficiency of the LEV or general ventilation corresponds to his site.

2.2 Contributing scenario controlling environmental exposure

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC4	Industrial use of processing aids in processes and products, not becoming part of articles

Risk management measures (RMM) controlling environmental exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)
No special measures are required.

Organisational measures
No special measures are required.

Measures related to wastewater treatment and efficiency of the risk managment measures (in exposure calculation model)		
ERC4	Measures	Ensure all waste water is collected and treated via a WWTP.

Measures related to waste treatment
For further instructions related to waste management please refer to section 13 of the Safety Data Sheet.

2.3 Contributing scenario controlling worker exposure

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC13	Treatment of articles by dipping and pouring

Operational conditions controlling worker exposure

Concentration of substance			
	PROC1	PROC2	PROC3
Value	≤ 100 %	≤ 100 %	≤ 100 %
	PROC4	PROC8a	PROC8b
Value	≤ 100 %	≤ 100 %	≤ 100 %
	PROC13		
Value	≤ 100 %		

Amounts used			
	PROC1	PROC2	PROC3
	Not relevant	Not relevant	Not relevant
	PROC4	PROC8a	PROC8b
	Not relevant	Not relevant	Not relevant
	PROC13		
	Not relevant		

Use conditions			
	PROC1	PROC2	PROC3
Location of use	Indoor and outdoor use.	Indoor and outdoor use.	Indoor and outdoor use.
Duration of use	≤ 8 hours/day	≤ 4 hours/day	≤ 1 hours/day
Frequency of use	≤ 220 days/year	≤ 220 days/year	≤ 220 days/year
	PROC4	PROC8a	PROC8b
Location of use	Indoor and outdoor use.	Indoor and outdoor use.	Indoor and outdoor use.
Duration of use	≤ 4 hours/day	≤ 8 hours/day	≤ 4 hours/day
Frequency of use	≤ 220 days/year	≤ 220 days/year	≤ 220 days/year
	PROC13		
Location of use	Indoor use		
Duration of use	≤ 4 hours/day		
Frequency of use	≤ 220 days/year		

Further operational conditions	
PROC1	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC2	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC3	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC4	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8a	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC8b	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.
PROC13	Assumes a good basic standard of occupational hygiene is implemented.
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Risk management measures (RMM) controlling worker exposure

Technical measures and efficiency of the risk managment measures (in exposure calculation model)		
PROC1	Measures	No special measures are required.
PROC2	Measures	No special measures are required.
PROC3	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC4	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC8a	Measures	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour, corresponds to outdoor use).
	Efficiency (%)	30
PROC8b	Measures	Use drum pumps.
	Efficiency (%)	80
PROC13	Measures	Provide extract ventilation to points where emissions occur.
	Efficiency (%)	80

Organisational measures	
PROC1	No special measures are required.
PROC2	Avoid carrying out activities involving exposure for more than 4 hours.
PROC3	Avoid carrying out activities involving exposure for more than 1 hour.
PROC4	Avoid carrying out activities involving exposure for more than 4 hours.
PROC8a	Drain down and flush system prior to equipment break-in or maintenance.
PROC8b	Avoid carrying out activities involving exposure for more than 4 hours.
PROC13	Avoid carrying out activities involving exposure for more than 4 hours.

Personal protective equipment and efficiency of the risk managment measures (in exposure calculation model)

Advice	
PROC1	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC2	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC3	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC4	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8a	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC8b	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.
PROC13	For further instructions related to "Personal protective equipment" please refer to section 8 of the Safety Data Sheet.

Hand protection		
PROC1	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC2	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC3	Measures	Wear suitable gloves for handling strong sensitizing and corrosive substances in cases where exposure can occur
PROC4	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80
PROC8a	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80
PROC8b	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80
PROC13	Measures	Wear suitable gloves tested to EN374.
	Efficiency (%)	80

SECTION 3: Exposure estimation and reference to sources

3.1 Advice

The Risk Characterization Ratio (RCR) is the quotient of predicted human/environmental exposure and the related DNEL/PNEC. Exposure is calculated based on exposure models as stated below. If RCR ≤ 1 a use is considered as safe under operational conditions and risk management measures as specified in the exposure szenario.

For DNEL/PNEC values please refer to section 8 of the safety data sheet.

3.2 Exposure estimation - Environment

Affected environmental release category (ERC)		
Category	Code	Use description
Environmental release category (ERC)	ERC4	Industrial use of processing aids in processes and products, not becoming part of articles

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

3.3 Exposure estimation - Worker

Affected process category (PROC)		
Category	Code	Use description
Process category (PROC)	PROC1	Use in closed process, no likelihood of exposure
	PROC2	Use in closed, continuous process with occasional controlled exposure
	PROC3	Use in closed batch process (synthesis or formulation)
	PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
	PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
	PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
	PROC13	Treatment of articles by dipping and pouring

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Risk characterisation ratio (RCR)				
	Exposure estimation	**inhalative**	**dermal**	**total**
PROC1	Long-term local	0.00	0.00	0.00
PROC2	Long-term local	0.60	0.14	0.74
PROC3	Long-term local	0.35	0.03	0.38
PROC4	Long-term local	0.84	0.14	0.98
PROC8a	Long-term local	0.70	0.27	0.97
PROC8b	Long-term local	0.60	0.14	0.74
PROC13	Long-term local	0.60	0.27	0.87

SECTION 4: Guidance to DU to evaluate whether he works inside the boundaries set by the ES

4.1 Recommendations and advice

Recommendations and general advice

If a downstream user uses the substance/preparation differently than stated in the ES (different operational conditions and/or risk management measures), he has the possibility to vary certain parameters of the exposure assessment. With the help of easy calculations he can check whether he still operates under safe circumstances. This process is called Scaling.
- For additional instructions relating to adaptation of conditions of use in view of a scaling, pls. see the VCI practice guide, part I, section 7.7. https://www.vci.de/Themen/Chemikaliensicherheit/REACH/Seiten/REACH-Praxisfuehrer.aspx

Scaling advice

Type of ventilation

If the type of ventilation at the use site of a downstream user (DU) differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the type of ventilation exists. Following scaling factors (f) apply: General ventilation (< 3 air changes per hour) =1; good general ventilation (3 to 5 air changes per hour, corresponds to outdoor use) = 0,7; enhanced general ventilation (> 5 air changes per hour) = 0,3.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (type of ventilation stated in ES)
In the same manner a scaling for the efficiency of the local extract ventilation (LEV) can by applied.

Duration of use

If the duration of the use by a worker at a downstream user (DU) site differs from the instructions in the ES, a linear correlation between the RCR (Inhalation) and the duration of use exist. Following scaling factors (f) apply: duration > 4 hours/day = 1; duration: 1-4 hours/day = 0,6; duration: 15 min/day – 1 hour/day = 0,2; duration < 15 min/day = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (duration in ES)

Concentration of the substance in the product

If the downstream user (DU) uses the substance in a different concentration than the one stated in the ES, a linear correlation between the RCR (Inhalation)and the RCR (dermal) and the concentration exists. Following scaling factors (f) apply: Concentration >25% =1; concentration >= 5% = 0,6; concentration >= 1% = 0,2; concentration < 1% = 0,1.
RCR (DU) = f(DU) * RCR (as stated in ES) / f (concentration in ES).

4.2 Exposure estimation - Environment

Used exposure estimation model for calculation of environmental exposure	
Used exposure estimation model	Qualitative approach used to conclude safe use.
Other information	The use is assessed to be safe.

4.3 Exposure estimation - Worker

Used exposure estimation model for calculation of worker exposure	
Used exposure estimation model	ECETOC TRA Version 2
Link to exposure estimation tool	ECETOC: http://www.ecetoc.org/tra

Other information	
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13	For the organizational measure an efficiency of 90% was assumed.