

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

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

1.1. Product identifier

Product name

Vinyl acetate

REACH Registration Number

01-2119471301-50-0000

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

Identified uses

Monomer

Uses advised against

None known

1.3. Details of the supplier of the safety data sheet

Celanese Production Germany GmbH & Co. KG

Am Unisys-Park 1
65843 Sulzbach (Taunus)
Germany

Celanese Sales Germany GmbH

Am Unisys-Park 1
65843 Sulzbach (Taunus)
Germany

SDS Contact (email of responsible person)

HazCom@celanese.com

1.4. Emergency telephone number

CHEMTREC: +1 703 527 3887 (Collect calls accepted)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation 1272/2008/EC (CLP)

Basis for Classification

Following the requirements in Article 4 and/or Annex VI No. 1.2. of Regulation (EC) No. 1272/2008 (CLP), the classification provided on this SDS differs from the Harmonized Classification for this substance as listed in CLP Annex VI.

Classification

Hazards

Flammable liquid
Acute inhalation toxicity
Carcinogenicity
Specific target organ systemic toxicity (single exposure)
Chronic aquatic toxicity

Category

Category 2
Category 4
Category 2
Category 3
Category 3

2.2. Label elements

Safety data sheet according to regulation (EC) Nr. 1907/2006

Product name Vinyl acetate
MSDS number 80094
Revision Number 10.01

Revision Date
Issuing date

Mar.13.2018
Mar.13.2018

EU/EN

Symbol(s)



Signal Word

Danger

Hazard Statements

H225 - Highly flammable liquid and vapor
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H351 - Suspected of causing cancer
H412 - Harmful to aquatic life with long lasting effects

Precautionary Statements

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P261 - Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray
P273 - Avoid release to the environment
P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection
P308 + P313 - IF exposed or concerned: Get medical advice/ attention

2.3 Other Hazards

The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII.

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name Vinyl acetate
MSDS number 80094
Revision Number 10.01

Revision Date
Issuing date

Mar.13.2018
Mar.13.2018

EU/EN

SECTION 3: Composition/information on ingredients

3.1. Substances Details provided in the tables below

3.2. Mixtures not applicable

Components	CAS-No	EC-No.	Identification Number	Percent %
Vinyl acetate	108-05-4	203-545-4	607-023-00-0	min 99.9

Components	1272/2008/EC (CLP)	Hazard Statements
Vinyl acetate	Flammable liquid - Category 2 Acute inhalation toxicity - Category 4 STOT SE - Category 3 Carcinogenicity - Category 2 Chronic aquatic toxicity - Category 3	H225 H332 H335 H351 H412

Remarks Hydroquinone is present at 3 - 30 ppm as a polymerization inhibitor. Monomethyl ether of hydroquinone may be present upon request.
For the full text of the H-statements mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

General Information Remove contaminated, soaked clothing immediately and dispose of safely. Pay attention to own protection. In any case show the physician the Safety Data Sheet.

Inhalation Keep at rest. Move to fresh air. Call a physician immediately.

Skin Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If symptoms persist, call a physician.

Eyes Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

Ingestion Rinse with plenty of water. If conscious, drink plenty of water. If swallowed, do not induce vomiting - seek medical advice.

4.2. Most important symptoms and effects, both acute and delayed

Main symptoms Vapours may cause irritation to the eyes, respiratory system and the skin, Gastrointestinal discomfort.

Special hazard respiratory disorder.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically. In case of lung irritation first treatment with dexametason aerosol (spray). In case of ingestion: administration of activated charcoal and a saline laxative agent.. In the case of absorption of large volumes, use gastroscopy with suction cleaning.

SECTION 5: Firefighting measures

Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Foam, Dry chemical, Carbon dioxide (CO₂)

Extinguishing media which must not be used for safety reasons

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of

Carbon monoxide

Carbon dioxide (CO₂)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapors are heavier than air and may spread along floors

Vapors may cause flash fire or explosion

5.3. Advice for firefighters

Special protective equipment for fire-fighters

self-contained breathing apparatus (EN 133).

Environmental precautions

Water used to fight fire runoff can cause environmental damage.. Dike and collect water used to fight fire..

Other Information

Cool containers / tanks with water spray..

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with the skin and the eyes. Keep away from heat and sources of ignition. Provide adequate ventilation.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge into the drains/surface waters/groundwater. Material creates a special hazard because it floats on water.. Caution: Spontaneous polymerization can occur if material is released or mixed with incompatibles..

6.3. Methods and material for containment and cleaning up

Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal. Dispose of in accordance with local regulations.

6.4. Reference to other sections

Consult trained personnel. Consider the information for "Personal Protection" in chapter 8 of this Safety Data Sheet.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately Wash hands before breaks and immediately after handling the product.

Advice on safe handling

Provide sufficient air exchange and/or exhaust in work rooms.

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Incompatible products

oxidizing agents, radical initiators, strong acids, amines

Protection - fire and explosion:

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge. Ground and bond containers when transferring material. In case of fire, emergency cooling with water spray should be available.

Blanketing vinyl acetate under an inert atmosphere eliminates flammable vapor in the head space and contamination with atmospheric moisture.. Bulk storage of vinyl acetate at ambient temperatures is an acceptable practice when there is a routine turnover of the tank contents every 60 days or less. Inhibitor levels should be monitored if a stability problem is suspected..

Reduce the release of the substance or mixture to the environment

See Section 8: Environmental exposure controls

Temperature class

T2

7.2. Conditions for safe storage, including any incompatibilities

Material storage

Store locked up.. Keep in a dry, cool and well-ventilated place.

Incompatible products

oxidizing agents, radical initiators, strong acids, amines

Technical measures/Storage conditions

Keep tightly closed in a dry, cool and well-ventilated place. Handle an open container with care. Recommended storage temperature 30°C / 85°F max. Store at temperatures not exceeding 38 °C/ 100.4 °F.

German storage class

3A: Flammable liquids

7.3. Specific end use(s)

None known

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

EC Exposure Limit Values

Components	EU TWA	
Vinyl acetate	17.6 mg/m ³	5 ppm

Components	EU STEL	
Vinyl acetate	35.5 mg/m ³	10 ppm

DNELs

Acute - Systemic Effect

Worker (oral):	not required
Worker (dermal):	not required
Worker (inhalation):	35.2 mg/m ³
General Population (oral):	not required

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

General Population (dermal):	not required
General Population (inhalation):	not required
Acute - Local Effect	
Worker (oral):	not required
Worker (dermal):	not required
Worker (inhalation):	35.2 mg/m ³
General Population (oral):	not required
General Population (dermal):	not required
General Population (inhalation):	not required
Long-term - Systemic Effects	
Worker (oral):	not required
Worker (dermal):	0.42 mg/kg bw/d
Worker (inhalation):	17.6 mg/m ³
General Population (oral):	not required
General Population (dermal):	not required
General Population (inhalation):	not required
Long-term - Local Effects	
Worker (oral):	not required
Worker (dermal):	not required
Worker (inhalation):	17.6 mg/m ³
General Population (oral):	not required
General Population (dermal):	not required
General Population (inhalation):	not required
PNECs	
Environment (water):	0.016 mg/l
Environment (air):	not required
Environment (soil):	0.0035 mg/kg soil dw
Environment (sediment):	0.067 mg/kg sediment dw
Environment (STP):	6 mg/l

8.2. Exposure controls

Engineering measures General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

General advice Avoid contact with skin and eyes. Do not breathe vapors or spray mist. Use only in an area equipped with a safety shower. Hold eye wash fountain available.

Hygiene measures When using, do not eat, drink or smoke. Take off all contaminated clothing immediately Wash hands before breaks and immediately after handling the product.

Respiratory protection respirator with A filter.

Eye protection Tightly fitting safety goggles In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face Equipment should conform to EN 166

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Skin protection	impervious clothing
Hand protection	Chemicals resistant gloves
Suitable material	Butyl-rubber
Type	Butoject (Company KCL) or comparable article; or refer to glove manufacturer's recommendation
Evaluation	according to EN 374: level 5
Material thickness	approx. 0.7 mm
Break through time	approx. 240 min

Environmental exposure controls

If possible use in closed systems If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger Observe the exposure limits, clean exhaust air if needed If recycling is not practicable, dispose of in compliance with local regulations Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soils and drains

Environmental Precautions

Should not be released into the environment

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Form	liquid
Color	colourless
Odor	sweet, fruity

Odor Threshold	0.12 ppm (gas in air)
Molecular Weight	86.09 g/mol
Flash point	-8°C
Method	closed cup
Ignition temperature	402°C
Decomposition	Not determined
Temperature	
Lower explosion limit	2.6 Vol. %
Upper explosion limit	13.4 Vol. %
Flammability (solids)	not applicable
Melting point/range	-93.2°C
Boiling point/range	72.7°C @ 1013 hPa
Density	0.932 g/ml @ 20°C
pH	neutral
Viscosity	0.42 - 0.43 mPa*s @ 20°C
Vapor pressure	113 hPa @ 20°C 445 hPa @ 50°C
Vapor density	3.0 (Air=1)
Evaporation Rate	8.9 (n-Butyl acetate = 1)
Water solubility	20 g/l @ 20°C
Solubility in other solvents	miscible with, Ethanol, soluble in, Diethyl ether, Acetone, Benzene, Chloroform
Partition coefficient (n-octanol/water)	0.73 (measured)
Explosive Properties	not applicable based on consideration of the structure

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Oxidizing Properties not applicable based on consideration of the structure

Surface Tension 23.95 mN/m @ 20°C

Dissociation constant not applicable based on consideration of the structure

Self-Accelerating > 50 °C

polymerization

temperature (SAPT)

9.2. Other information The product was not tested for properties not listed on the SDS.

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions of handling, use and transportation..

10.2. Chemical Stability

No decomposition if used as directed. If heated to thermal decomposition the following decomposition products may occur depending on the conditions:.. carbon oxides.

10.3. Possibility of hazardous reactions

Polymerization can occur. May polymerize violently or explosively if contaminated or overheated. Uncontrolled polymerization can cause rapid evolution of heat and increased pressure which can result in violent rupture of storage vessels or containers..

10.4. Conditions to avoid

Avoid any source of ignition.. Avoid contact with heat, sparks, open flame, and static discharge.. Avoid temperatures above 30 °C / 86 °F..

10.5. Incompatible Materials

Keep away from:., oxidizing agents, radical initiators, strong acids, amines

10.6. Hazardous decomposition products

No hazardous decomposition products are known

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Vinyl acetate

Acute oral toxicity

Species

LD50: 3500 mg/kg

rat

Acute dermal toxicity

Species

LD50: 7440 mg/kg

rabbit, male

Method

Standard Acute Method

Acute inhalation toxicity

Species

LC50 (4h): 15810 mg/m³

rat

Method

Standard Acute Method

Skin corrosion/irritation

Species

Not irritating

rabbit

Method

OECD 404

Serious eye damage/eye irritation

Species

Not irritating

rabbit eye

Method

OECD 405

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018
Skin Sensitization		nonsensitizer	
Species		mouse, female	
Method		OECD 429	
in vitro Mutagenicity		Ames Test: negative - with and without metabolic activation - Method: OECD 471	
		Chromosome aberrations in cultured human lymphocytes: positive - with and without metabolic activation - Method: OECD 473	
		Cytotoxicity and micronucleos assay in human lymphoblastoid cells (TK6): positive - Method: OECD 487	
in vivo Mutagenicity		Mammalian Erythrocyte Micronucleus Test in mice: ambiguous - Method: OECD 474	
		Effects on sperm morphology and meiotic micronuclei in mice: negative	
Carcinogenic effects		Has been shown to cause cancer in lifetime rat and mouse inhalation studies at the site of contact at non-physiologically relevant doses	
Species		rats and mice	
		NOAEC: 176 mg/m ³	
Study		104-week inhalation study	
Carcinogenic Effects		Has been shown to cause cancer in lifetime rat and mouse drinking water studies at the site of contact at non-physiologically relevant doses	
Species		rats and mice	
		LOAEL: 31 mg/kg bw/day	
Study		104-week oral gavage study	
Reproductive toxicity		No toxicity to reproduction	
Routes of exposure		oral drinking water	
Species		rat	
Method		OECD 416	
		NOAEL= 1000 ppm	
Developmental effects		no adverse developmental effects	
Routes of exposure		oral drinking water and Inhalation	
Species		rat	
Method		OECD 414	
Repeated exposure		No adverse effects	
Routes of exposure		oral gavage	
Species		rats and mice	
Method		OECD 408	
		NOAEL: 281 mg/kg bw/day	
Type of study		90-day oral subchronic toxicity study	
Repeated Exposure		No adverse effects	
Routes of exposure		Inhalation	
Species		rats and mice	
Method		OECD 453	
		NOAEC: 176 mg/m ³	
Type of study		104-weeks inhalation study	

SECTION 12: Ecological information

Vinyl acetate

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

SECTION 12: Ecological information

Chronic fish toxicity	NOEC (34d): 0.16 mg/l
Species:	Pimephales promelas (Fathead minnow)
Method	OECD 210
Acute daphnia toxicity	EC50: 12.6 mg/l (48h)
Species:	Daphnia magna
Method	OECD 202
Toxicity to aquatic plants	EC50: 12.7 mg/l (72h)
Species:	Pseudokirchneriella subcapitata
Method	OECD 201
Toxicity to bacteria	EC3 (16h): 6 mg/l
Species:	Pseudomonas putida
Biodegradation	Readily biodegradable
Species:	activated sludge
Method	OECD 301 C
Bioaccumulation	Does not bioaccumulate
Mobility in soil	Only a low potential to adsorb to soils or sediments
Other potential hazards	The substance does not meet the criteria for PBT / vPvB according to REACH, Annex XIII

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product information	Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.
Uncleaned empty packaging	Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

ADR/RID

UN/ID No.	UN 1301
Proper Shipping Name	Vinyl Acetate, stabilized
Hazard Class	3
Classification Code	F1
Packing group	II
Environmentally hazardous	no
Tunnel Restriction Code	(D/E)
Hazard Label(s)	3
Hazard Number	339

ADN

	ADN: Container and Tanker
UN/ID No.	UN 1301
Proper Shipping Name	Vinyl Acetate, stabilized
Hazard Class	3
Classification Code	F1
Packing group	II

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

SECTION 14: Transport information

Environmentally hazardous
Hazard Labels

no
3

ICAO/IATA

UN-No.
Proper Shipping Name
Hazard Class
Packing group
Environmentally hazardous
Hazard Labels

UN 1301
Vinyl Acetate, stabilized
3
II
no
3

IMDG

UN/ID No.
Proper Shipping Name
Hazard Class
Packing group
Marine pollutant
Hazard Labels
EmS Code

UN 1301
Vinyl Acetate, stabilized
3
II
no
3
F-E, S-D

Remarks

Special provision 386 taken into account.

SECTION 15: Regulatory information

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

Directive 1996/82/EC Annex I, part 2

Water Hazard Class (WGK):

WGK Class 2
WGK Reg. No. 203
WGK Source Classification according to VwVwS, Annex 1 or 2

International Inventories

Listed on the chemical inventories of the following countries or qualifies for an exemption:

Australia (AICS)
Canada (DSL)
China (IECSC)
Europe (EINECS)
Japan (ENCS)
Japan (ISHL)
Korea (KECI)
New Zealand (NZIoC)
Philippines (PICCS)
United States (TSCA)

15.2 Chemical Safety Assessment

Chemical Safety Assessment is available

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Authorization - Reach Regulation, Title VII

This substance is not subject to authorization requirements

Restrictions - Reach Regulation, Titel VIII

This substance meets the criteria for Annex XVII, No.40

SECTION 16: Other information

Other Information:

- Observe national and local legal requirements

Changes against the previous version are marked by ***

Training advice

Make sure that employees are aware of the hazards / risks as detailed on this Safety Data Sheet. When wearing a breathing apparatus, the need for appropriate training needs to be considered.

Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on Celanese owned data and public sources deemed valid or acceptable.. The absence of data elements required by ANSI or 1907/2006/EC indicates that no data meeting these requirements is available..

Further information

This information is based on our present state of knowledge. It shall describe our products regarding safety requirements and shall not be construed as a guarantee or statement of condition and/or quality. For more information, other material safety data sheets or technical data sheets please consult the Celanese homepage (www.celanese.com).

Safety data sheet

according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Abbreviation and Acronym:

ADR = Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS = Chemical Abstracts Service (division of the American Chemical Society)
CLP = Classification, Labelling and Packaging
DNEL = Derived No Effect Level
EINECS = European Inventory of Existing Commercial Chemical Substances
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC Code = International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IMO)
ICAO = International Civil Aviation Organization
IMDG = International Maritime Code for Dangerous Goods
LC50 = Lethal Concentration
LD50 = Lethal Dose
LOAEC = Low Observed Adverse Effect Concentration
LOAEL = Low Observed Adverse Effect Level
LOEL = Low Observed Effect Level
MEST = Mouse Ear Swelling Test
NOAEC = No Observed Adverse Effect Concentration
NOAEL = No Observed Adverse Effect Level
NOEC = No Observed Effect Concentration
NOEL = No Observed Effect Level
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RCR = Risk Characterization Ratio
RID = Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
R-Phrases = Risk Phrases
S-Phrases = Safety Phrases
STOT RE = Specific Target Organ Toxicity Repeated Exposure
STOT SE = Specific Target Organ Toxicity Single Exposure
STP = Sewage Treatment Plant
vPvB = very Persistent and very Bioaccumulative

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Annex: Exposure Scenario(s)

See section 8: DNELs and PNECs

For industrial use only.

Please contact Celanese in case you are interested in consumer applications at REACH@celanese.com

Table of Contents

Exposure Scenario	Text
1. Exposure Scenario	Industrial uses: Uses of substances as such or in preparations at industrial sites Polymer production SU 10; SU 12
2. Exposure Scenario	Industrial uses: Uses of substances as such or in preparations at industrial sites Polymer production SU 10;

1. Exposure Scenario

- 1. Title of Exposure Scenario** SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
SU12 - Manufacture of plastics products, including compounding and conversion

Environment Polymer production

Worker

Use in closed process, no likelihood of exposure (PROC 1)
Use in closed, continuous process with occasional controlled exposure (PROC 2)
Use in closed batch process (synthesis or formulation) (PROC 3)
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)
Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)
Use as laboratory reagent (PROC 15)

2. Conditions of use affecting exposure

2.1 Control of environmental exposure Polymer production (ERC 6c)

Product characteristics	Not applicable
Amounts used, frequency and duration of use (or from service life)	Daily amount per site. <= 162.5 tonnes/day. Annual amount per site <= 48750 tonnes/year
Technical and organizational conditions and measures	Not applicable
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment. 89.5 %. Assumed domestic sewage treatment plant flow. >= 10000 m³/d. No application of sludge to soil

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Conditions and measures related to treatment of waste (including article waste)	Dispose of waste or used sacks/containers according to local regulations
Other conditions affecting environmental exposure	Receiving surface water flow rate. $\geq 390000 \text{ m}^3/\text{d}$
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply beyond the REACH CSA	Not applicable

2.2 Control of worker exposure Use in closed process, no likelihood of exposure (PROC 1)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a basic standard of general ventilation (1 to 3 air changes per hour). Use in closed process, no likelihood of exposure. Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Not applicable
Other conditions affecting workers exposure	Indoor use. Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.3 Control of worker exposure Use in closed, continuous process with occasional controlled exposure (PROC 2)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
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Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in closed, continuous process with occasional controlled exposure Local exhaust ventilation - efficiency of at least 90.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374)
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.4 Control of worker exposure Use in closed batch process (synthesis or formulation) (PROC 3)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in closed batch process (synthesis or formulation) Local exhaust ventilation - efficiency of at least 90.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) Wear a respirator providing a minimum efficiency of 90.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.5 Control of worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Product (article) characteristic	Limit the concentration of the substance in the used product to 5 %.
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in semi-closed process with opportunity for exposure Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) Wear a respirator providing a minimum efficiency of 90.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.6 Control of worker exposure Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Local exhaust ventilation - efficiency of at least 90.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable
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2.7 Control of worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Product (article) characteristic	Limit the concentration of the substance in the used product to 5 %.
Amount used (or contained in articles), frequency and duration of use/exposure	Avoid carrying out activities involving exposure for more than 4 hours.
Technical and organizational conditions and measures	Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) Wear a respirator providing a minimum efficiency of 95.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Ensure operation is undertaken outdoors. Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.8 Control of worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Product (article) characteristic	Limit the concentration of the substance in the used product to 5 %.
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in semi-closed process with opportunity for exposure Local exhaust ventilation - efficiency of at least 95.0% Advanced (industrial) exposure controls assumed.

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Conditions and measures related to personal protection, hygiene and health evaluation	Not applicable
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.9 Control of worker exposure Use as laboratory reagent (PROC 15)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (5 to 10 air changes per hour). Local exhaust ventilation - efficiency of at least 90.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374)
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

3.Exposure estimation and reference to its source

Environment

Release route	Release rate (kg/day)	Release estimation method
Water	3.25	Release factor (EU RAR)
Air	162.5	Release factor (EU RAR)
Soil	0	ERC based

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Protection target	Exposure estimate (based on: EUSES)	RCR
Freshwater (pelagic)	0.001 mg/L	0.073
Freshwater (sediment)	0.007 mg/kg dw	0.105
Marine water (pelagic)	3.653E-4 mg/L	0.228
Marine water (sediment)	0.002 mg/kg dw	0.328
Freshwater food chain (predators)	#	#
Marine water food chain (predators)	#	#
Marine water food chain (top predators)	#	#
Effluent	0.034 mg/L	<0.01
Agricultural soil	0.003 mg/kg dw	0.943
Terrestrial food chain (predator)	#	#

Not required as an accumulation via the food chain is not expected

Worker exposure

Long-term, systemic

Contributing scenario:	Inhalation	Dermal:	Combined routes:	Exposure Estimation Method:
Use in closed process, no likelihood of exposure (PROC 1)	Exposure: 0.036 mg/m ³ RCR: <0.01	Exposure: 0.034 mg/kg bw/d RCR: 0.081	RCR: 0.083	Extended TRA workers
Use in closed, continuous process with occasional controlled exposure (PROC 2)	Exposure: 6.277 mg/m ³ RCR: 0.357	Exposure: 0.027 mg/kg bw/d RCR: 0.065	RCR: 0.422	Extended TRA workers
Use in closed batch process (synthesis or formulation) (PROC 3)	Exposure: 1.255 mg/m ³ RCR: 0.071	Exposure: 0.014 mg/kg bw/d RCR: 0.033	RCR: 0.104	Extended TRA workers
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)	Exposure: 5.022 mg/m ³ RCR: 0.285	Exposure: 0.274 mg/kg bw/d RCR: 0.653	RCR: 0.939	Extended TRA workers
Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)	Exposure: 6.277 mg/m ³ RCR: 0.357	Exposure: 0.137 mg/kg bw/d RCR: 0.326	RCR: 0.683	Extended TRA workers

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate			EU/EN
MSDS number	80094	Revision Date	Mar.13.2018	
Revision Number	10.01	Issuing date	Mar.13.2018	

Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)	Exposure: 3.766 mg/m ³ RCR: 0.214	Exposure: 0.329 mg/kg bw/d RCR: 0.783	RCR: 0.997	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)	Exposure: 3.766 mg/m ³ RCR: 0.214	Exposure: 0.137 mg/kg bw/d RCR: 0.326	RCR: 0.54	Extended TRA workers
Use as laboratory reagent (PROC 15)	Exposure: 5.381 mg/m ³ RCR: 0.306	Exposure: 0.007 mg/kg bw/d RCR: 0.016	RCR: 0.322	Extended TRA workers

Acute systemic

Contributing Scenario:	Inhalation:	Dermal:	Combined routes:	Exposure Estimation Method:
Use in closed process, no likelihood of exposure (PROC 1)	Exposure: 0.144 mg/m ³ RCR: <0.01	Not applicable	RCR: <0.01	Extended TRA workers
Use in closed, continuous process with occasional controlled exposure (PROC 2)	Exposure: 25.11 mg/m ³ RCR: 0.713	Not applicable	RCR: 0.713	Extended TRA workers
Use in closed batch process (synthesis or formulation) (PROC 3)	Exposure: 5.022 mg/m ³ RCR: 0.143	Not applicable	RCR: 0.143	Extended TRA workers
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)	Exposure: 20.09 mg/m ³ RCR: 0.571	Not applicable	RCR: 0.571	Extended TRA workers
Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)	Exposure: 25.11 mg/m ³ RCR: 0.713	Not applicable	RCR: 0.713	Extended TRA workers

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate	EU/EN		
MSDS number	80094	Revision Date	Mar.13.2018	
Revision Number	10.01	Issuing date	Mar.13.2018	
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)	Exposure: 25.11 mg/m ³ RCR: 0.713	Not applicable	RCR: 0.713	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)	Exposure: 15.07 mg/m ³ RCR: 0.428	Not applicable	RCR: 0.428	Extended TRA workers
Use as laboratory reagent (PROC 15)	Exposure: 21.52 mg/m ³ RCR: 0.611	Not applicable	RCR: 0.611	Extended TRA workers

Local effects via inhalation route

Contributing scenario:	Acute:	Long term:	Exposure Estimation Method:
Use in closed process, no likelihood of exposure (PROC 1)	Exposure: 0.144 mg/m ³ RCR: <0.01	Exposure: 0.036 mg/m ³ RCR: <0.01	Extended TRA workers
Use in closed, continuous process with occasional controlled exposure (PROC 2)	Exposure: 25.11 mg/m ³ RCR: 0.713	Exposure: 6.277 mg/m ³ RCR: 0.357	Extended TRA workers
Use in closed batch process (synthesis or formulation) (PROC 3)	Exposure: 5.022 mg/m ³ RCR: 0.143	Exposure: 1.255 mg/m ³ RCR: 0.071	Extended TRA workers
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)	Exposure: 20.09 mg/m ³ RCR: 0.571	Exposure: 5.022 mg/m ³ RCR: 0.285	Extended TRA workers
Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)	Exposure: 25.11 mg/m ³ RCR: 0.713	Exposure: 6.277 mg/m ³ RCR: 0.357	Extended TRA workers

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8a)	Exposure: 25.11 mg/m ³ RCR: 0.713	Exposure: 3.766 mg/m ³ RCR: 0.214	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8b)	Exposure: 15.07 mg/m ³ RCR: 0.428	Exposure: 3.766 mg/m ³ RCR: 0.214	Extended TRA workers
Use as laboratory reagent (PROC 15)	Exposure: 21.52 mg/m ³ RCR: 0.611	Exposure: 5.381 mg/m ³ RCR: 0.306	Extended TRA workers

Local effects via dermal route

Not required as no hazard identified

4.Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

The Use Descriptors assigned based on the ECHA guidance on use descriptors R-12 represent the current understanding of the uses of our product

(http://echa.europa.eu/documents/10162/13632/information_requirements_r12_en.pdf).

Please carefully consider whether the listed Exposure Scenarios reflect your uses of Celanese's product. Different uses can be addressed in the same exposure scenario if the same operational conditions and risk management measures apply to all these uses. In addition, various types of activities can be expressed by one category for workers' exposure and one category for environmental exposure.

ECHA's "Guidance for Downstream Users" provides details how to decide whether or not your use is covered by the exposure scenarios and what to do if this is not the case

(http://echa.europa.eu/documents/10162/13634/du_en.pdf).

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

2. Exposure Scenario

1. Title of Exposure Scenario SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

Environment Polymer production (ERC 6c)

Worker

Use in closed process, no likelihood of exposure (PROC 1)
 Use in closed, continuous process with occasional controlled exposure (PROC 2)
 Use in closed batch process (synthesis or formulation) (PROC 3)
 Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)
 Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)
 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)
 Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)
 Use as laboratory reagent (PROC 15)

2. Conditions of use affecting exposure

2.1 Control of environmental exposure Polymer production (ERC 6c)

Product characteristics	Not applicable
Amounts used, frequency and duration of use (or from service life)	Daily amount per site <=366.7 tonnes/day Annual amount per site <=110000 tonnes/year
Technical and organizational conditions and measures	Not applicable
Conditions and measures related to sewage treatment plant	Estimated substance removal from wastewater via domestic sewage treatment 89.6 % Assumed domestic sewage treatment plant flow .=2000 m³/d No application of sludge to soil
Conditions and measures related to treatment of waste (including article waste)	Dispose of waste or used sacks/containers according to local regulations
Other conditions affecting environmental exposure	Receiving surface water flow rate >=18000 m³/d

2.2 Control of worker exposure Use in closed process, no likelihood of exposure (PROC 1)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
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Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a basic standard of general ventilation (1 to 3 air changes per hour) Use in closed process, no likelihood of exposure Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Not applicable
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.3 Control of worker exposure Use in closed, continuous process with occasional controlled exposure (PROC 2)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in closed, continuous process with occasional controlled exposure Local exhaust ventilation - efficiency of at least 90.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374)
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.4 Control of worker exposure Use in closed batch process (synthesis or formulation) (PROC 3)

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in closed batch process (synthesis or formulation) Local exhaust ventilation - efficiency of at least 90.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) Wear a respirator providing a minimum efficiency of 90.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.5 Control of worker exposure Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)

Product (article) characteristic	Limit the concentration of the substance in the used product to 5 %.
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in semi-closed process with opportunity for exposure Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) Wear a respirator providing a minimum efficiency of 90.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

2.6 Control of worker exposure Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Local exhaust ventilation - efficiency of at least 90.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training Wear a respirator providing a minimum efficiency of 90.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.7 Control of worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)

Product (article) characteristic	Limit the concentration of the substance in the used product to 5 %.
Amount used (or contained in articles), frequency and duration of use/exposure	Avoid carrying out activities involving exposure for more than 4 hours.
Technical and organizational conditions and measures	Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) Wear a respirator providing a minimum efficiency of 95.0% For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure	Ensure operation is undertaken outdoors. Processing not higher than 40.0°C

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable
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2.8 Control of worker exposure Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)

Product (article) characteristic	Limit the concentration of the substance in the used product to 5 %.
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (3 to 5 air changes per hour). Use in semi-closed process with opportunity for exposure Local exhaust ventilation - efficiency of at least 95.0% Advanced (industrial) exposure controls assumed.
Conditions and measures related to personal protection, hygiene and health evaluation	Not applicable
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

2.9 Control of worker exposure Use as laboratory reagent (PROC 15)

Product (article) characteristic	Covers percentage substance in the product up to 100 % (unless stated differently)
Amount used (or contained in articles), frequency and duration of use/exposure	Covers daily exposures up to 8 hours (unless stated differently)
Technical and organizational conditions and measures	Provide a good standard of general or controlled ventilation. (5 to 10 air changes per hour). Advanced (industrial) exposure controls assumed.

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374)
Other conditions affecting workers exposure	Indoor use Processing not higher than 40.0°C
Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply	Not applicable

3.Exposure estimation and reference to its source

Environment

Release route	Release rate (kg/day)	Release estimation method
Water	0.282	Measured data
Air	0	Release factor
Soil	0	ERC based

Protection target	Exposure estimate (based on: EUSES)	RCR
Freshwater (pelagic)	0.002 mg/L	0.112
Freshwater (sediment)	0.011 mg/kg dw	0.161
Marine water (pelagic)	1.729E-4 mg/L	0.108
Marine water (sediment)	0.001 mg/kg dw	0.155
Freshwater food chain (predators)	#	#
Marine water food chain (predators)	#	#
Marine water food chain (top predators)	#	#
Effluent	0.015 mg/L	<0.01
Agricultural soil	7.746E-7 mg/kg dw	<0.01
Terrestrial food chain (predator)	#	#

Not required as an accumulation via the food chain is not expected

Worker exposure

Long-term, systemic

Contributing scenario:	Inhalation	Dermal:	Combined routes:	Exposure Estimation Method:
Use in closed process, no likelihood of exposure (PROC 1)	Exposure: 0.036 mg/m ³ RCR: <0.01	Exposure: 0.034 mg/kg bw/d RCR: 0.081	RCR: 0.083	Extended TRA workers

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate			EU/EN
MSDS number	80094	Revision Date	Mar.13.2018	
Revision Number	10.01	Issuing date	Mar.13.2018	

Use in closed, continuous process with occasional controlled exposure (PROC 2)	Exposure: 6.277 mg/m ³ RCR: 0.357	Exposure: 0.027 mg/kg bw/d RCR: 0.065	RCR: 0.422	Extended TRA workers
Use in closed batch process (synthesis or formulation) (PROC 3)	Exposure: 1.255 mg/m ³ RCR: 0.071	Exposure: 0.014 mg/kg bw/d RCR: 0.033	RCR: 0.104	Extended TRA workers
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)	Exposure: 5.022 mg/m ³ RCR: 0.285	Exposure: 0.274 mg/kg bw/d RCR: 0.653	RCR: 0.939	Extended TRA workers
Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)	Exposure: 6.277 mg/m ³ RCR: 0.357	Exposure: 0.137 mg/kg bw/d RCR: 0.326	RCR: 0.683	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)	Exposure: 3.766 mg/m ³ RCR: 0.214	Exposure: 0.329 mg/kg bw/d RCR: 0.783	RCR: 0.007	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)	Exposure: 3.766 mg/m ³ RCR: 0.214	Exposure: 0.137 mg/kg bw/d RCR: 0.326	RCR: 0.54	Extended TRA workers
Use as laboratory reagent (PROC 15)	Exposure: 5.381 mg/m ³ RCR: 0.306	Exposure: 0.007 mg/kg bw/d RCR: 0.016	RCR: 0.322	Extended TRA workers

Acute systemic

Contributing Scenario:	Inhalation:	Dermal:	Combined routes:	Exposure Estimation Method:
Use in closed process, no likelihood of exposure (PROC 1)	Exposure: 0.144 mg/m ³ RCR: <0.01	Not applicable	RCR: <0.01	Extended TRA workers

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate			EU/EN
MSDS number	80094	Revision Date	Mar.13.2018	
Revision Number	10.01	Issuing date	Mar.13.2018	

Use in closed, continuous process with occasional controlled exposure (PROC 2)	Exposure: 25.11 mg/m ³ RCR: 0.713	Not applicable	RCR: 0.713	Extended TRA workers
Use in closed batch process (synthesis or formulation) (PROC 3)	Exposure: 5.022 mg/m ³ RCR: 0.143	Not applicable	RCR: 0.143	Extended TRA workers
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)	Exposure: 20.09 mg/m ³ RCR: 0.571	Not applicable	RCR: 0.571	Extended TRA workers
Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)	Exposure: 25.11 mg/m ³ RCR: 0.713	Not applicable	RCR: 0.713	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)	Exposure: 25.11 mg/m ³ RCR: 0.713	Not applicable	RCR: 0.713	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)	Exposure: 15.07 mg/m ³ RCR: 0.428	Not applicable	RCR: 0.428	Extended TRA workers
Use as laboratory reagent (PROC 15)	Exposure: 21.51 mg/m ³ RCR: 0.611	Not applicable	RCR: 0.611	Extended TRA workers

Local effects via inhalation route

Contributing scenario:	Acute:	Long term:	Exposure Estimation Method:
Use in closed, continuous process with occasional controlled exposure (PROC 2)	Exposure: 25.11 mg/m ³ RCR: 0.713	Exposure: 6.277 mg/m ³ RCR: 0.357	Extended TRA workers

Safety data sheet
according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
Revision Number	10.01	Issuing date	Mar.13.2018

Use in closed batch process (synthesis or formulation) (PROC 3)	Exposure: 5.022 mg/m ³ RCR: 0.143	Exposure: 1.255 mg/m ³ RCR: 0.071	Extended TRA workers
Use in closed process, no likelihood of exposure (PROC 1)	Exposure: 0.144 mg/m ³ RCR: <0.01	Exposure: 0.036 mg/m ³ RCR: <0.01	Extended TRA workers
Use in batch and other process (synthesis) where opportunity for exposure arises (PROC 4)	Exposure: 20.09 mg/m ³ RCR: 0.571	Exposure: 5.022 mg/m ³ RCR: 0.285	Extended TRA workers
Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) (PROC 5)	Exposure: 25.11 mg/m ³ RCR: 0.713	Exposure: 6.277 mg/m ³ RCR: 0.357	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities (PROC 8a)	Exposure: 25.11 mg/m ³ RCR: 0.713	Exposure: 3.766 mg/m ³ RCR: 0.214	Extended TRA workers
Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities (PROC 8b)	Exposure: 15.07 mg/m ³ RCR: 0.428	Exposure: 3.766 mg/m ³ RCR: 0.214	Extended TRA workers
Use as laboratory reagent (PROC 15)	Exposure: 21.52 mg/m ³ RCR: 0.611	Exposure: 5.381 mg/m ³ RCR: 0.306	Extended TRA workers

Local effects via dermal route

Not required as no hazard identified

Safety data sheet according to regulation (EC) Nr. 1907/2006



Product name	Vinyl acetate		EU/EN
MSDS number	80094	Revision Date	Mar.13.2018
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4.Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

The Use Descriptors assigned based on the ECHA guidance on use descriptors R-12 represent the current understanding of the uses of our product

(http://echa.europa.eu/documents/10162/13632/information_requirements_r12_en.pdf).

Please carefully consider whether the listed Exposure Scenarios reflect your uses of Celanese's product. Different uses can be addressed in the same exposure scenario if the same operational conditions and risk management measures apply to all these uses. In addition, various types of activities can be expressed by one category for workers' exposure and one category for environmental exposure.

ECHA's "Guidance for Downstream Users" provides details how to decide whether or not your use is covered by the exposure scenarios and what to do if this is not the case

(http://echa.europa.eu/documents/10162/13634/du_en.pdf).