

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

1.1. Product identifier

Product form	: Mixture
Name	: L-lactic acid
Trade name	: PURAC® 50-100 PURAC® 80 FG PURAC® 88-LT, 88-T PURAC® FCC 50, FCC 80, FCC 85, FCC 88 PURAC® FIT Plus 90 PURAC® HiPure 51, HiPure 90 PURAC® HS 50, HS 80, HS 88, HS 90, HS 93, HS 95, HS 100 PURAC® PF 90 PURAC® PH 91 PURAC® UltraPure 50, UltraPure 90 PURAC® Vin PURAC® DEX 185 PURAC® HS Pure 90 PURAC® HS Pure 50

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

1.2.1. Relevant identified uses

Use of the substance/mixture	: Food additive Speciality chemical See annex for more detailed information.
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1.2.2. Uses advised against:

Restrictions on use	: No additional information available
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1.3. Details of the supplier of the safety data sheet

Supplier

Purac Biochem bv
Arkelsedijk 46
4206 AC Gorinchem
T +31 183 695695 - F +31 183 695604
sds@corbion.com

1.4. Emergency telephone number

Emergency number	: Call CHEMTREC: +1 703-741-5970 / 1-800-424-9300 CCN 18135
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Country	Organisation/Company	Address	Emergency number	Comment
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals- 24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	
United Kingdom	National Health Service (NHS)		111 999 (in life-threatening emergencies)	
Wales	National Health Service (NHS)		0845 46 47	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation, Category 1, Sub-Category 1C H314
 Serious eye damage/eye irritation, Category 1 H318
 Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Causes severe skin burns and eye damage.

2.2. Label elements

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

Hazard pictograms (CLP) :



GHS05

Signal word (CLP) :

Danger

Contains :

L-(+)-lactic acid

Hazard statements (CLP) :

H314 - Causes severe skin burns and eye damage.

Precautionary statements (CLP) :

P260 - Do not breathe vapours, mist.
 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/shower.
 P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P363 - Wash contaminated clothing before reuse.

EUH-statements :

EUH071 - Corrosive to the respiratory tract.

2.3. Other hazards

Other hazards which do not result in classification :

No additional information.

Component	
L-(+)-lactic acid (79-33-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	Conc. (% w/w)	Classification according to Regulation (EC) No. 1272/2008 [CLP]
L-(+)-lactic acid	(CAS-No.) 79-33-4 (EC-No.) 201-196-2 (EC Index-No.) 607-743-00-5 (REACH-no) 01-2119474164-39-0000; 01-2119474164-39-0013	≥ 50	Skin Corr. 1C, H314 Eye Dam. 1, H318

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Call a physician immediately.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Take off immediately all contaminated clothing. Rinse skin with water/shower. Call a physician immediately.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
First-aid measures after ingestion	: Rinse mouth. Do not induce vomiting. Drink some glasses of water. Call a physician immediately.

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

Symptoms/effects after skin contact	: Burns. Rednesses. Pain.
Symptoms/effects after eye contact	: Burning sensation. Pain. Redness. Tears.
Symptoms/effects after ingestion	: Burns to the gastric/intestinal mucosa.

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

Treat symptomatically. If breathing is difficult, give oxygen. Keep victim under observation. Symptoms may be delayed.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Water spray. Dry powder. Foam. Carbon dioxide.
Unsuitable extinguishing media	: Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: No fire hazard.
Explosion hazard	: No direct explosion hazard.
Hazardous decomposition products in case of fire	: Under fire conditions, hazardous fumes will be present: Carbon monoxide, Carbon dioxide.

5.3. Advice for firefighters

Firefighting instructions	: Evacuate personnel to a safe area. Use water spray or fog for cooling exposed containers. Prevent fire fighting water from entering the environment.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Wear recommended personal protective equipment.
- Emergency procedures : Evacuate unnecessary personnel. Ventilate spillage area. Do not touch or walk on the spilled product. Avoid breathing mist, vapours. Avoid contact with skin and eyes.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

- For containment : Stop leak if safe to do so. Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
- Methods for cleaning up : Large amounts: Cover spill with non combustible material, e.g.: sand, earth, vermiculite. Shovel or sweep up and put in a closed container for disposal. Notify authorities if product enters sewers or public waters. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal. After cleaning, flush traces away with water. Flush contaminated areas with plenty of water. Never return spills in original containers for possible later re-use.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Avoid contact with skin and eyes. Wear personal protective equipment. Do not breathe vapours, mist. Handle in accordance with good industrial hygiene and safety procedures.
- Handling temperature : < 200 °C
- Hygiene measures : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep container tightly closed in a cool, well-ventilated place. Store locked up.
- Incompatible materials : Oxidizing agent. Bases. Acids. Metals.
- Storage temperature : < 200 °C
- Storage area : Store according to local legislation.

7.3. Specific end use(s)

Annex.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

No additional information available

8.1.2. Recommended monitoring procedures

No additional information available

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

No additional information available

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Do not expose to temperatures above 200 °C / 392 °F. Ensure good ventilation of the work station.

8.2.2. Personal protection equipment

Personal protective equipment:

Wear recommended personal protective equipment.

Personal protective equipment symbol(s):



8.2.2.1. Eye and face protection

Eye protection:			
Safety goggles. If there is a risk of liquid being splashed: Face shield			
Type	Field of application	Characteristics	Standard
Safety goggles	Droplet, Aerosols		EN 166
Face shield	Droplet, Aerosols		EN 166

8.2.2.2. Skin protection

Skin and body protection:	
Wear suitable protective clothing	
Type	Standard
Long sleeved protective clothing	EN 13034
Safety boots (above ankles)	EN 13832
Large amounts, If there is a risk of liquid being splashed: Apron	EN 14605

Hand protection:
Protective gloves

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Protective gloves	Butyl rubber, Chloroprene rubber (CR), Polyvinylchloride (PVC)	6 (> 480 minutes)	0.5		EN 374
Protective gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	0.35		EN 374
Protective gloves	Fluoroelastomer (FKM)	6 (> 480 minutes)	0.4		EN 374

8.2.2.3. Respiratory protection

Respiratory protection:			
During spraying wear suitable respiratory equipment. Open systems			
Device	Filter type	Condition	Standard
Full face mask	Type A - High-boiling (>65 °C) organic compounds	Aerosols, Droplet	EN 136, EN 14387

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Environmental exposure controls

Environmental exposure controls:

Avoid release to the environment.

Other information:

Handle in accordance with good industrial hygiene and safety procedures. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Avoid contact with skin, eyes and clothing. Workers must be trained in the proper use and handling of this product as required under applicable regulations. Regular cleaning of equipment, work area and clothing.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colourless. Yellowish.
Appearance	: Clear.
Odour	: Characteristic.
Odour threshold	: Not available
Melting point	: Not available
Freezing point	: Not available
Boiling point	: 120 – 130 °C
Flammability	: Not available
Explosive limits	: Not available
Lower explosive limit (LEL)	: Not available
Upper explosive limit (UEL)	: Not available
Flash point	: Not available
Auto-ignition temperature	: > 400 °C (93% w/w)
Decomposition temperature	: > 200 °C
pH	: < 1.2 (25°C)
Viscosity, kinematic	: Not available
Viscosity, dynamic	: 5 – 60 mPa·s (25°C)
Solubility	: Miscible with water.
Partition coefficient n-octanol/water (Log Kow)	: Not available
Partition coefficient n-octanol/water (Log Pow)	: -0.62

Vapour pressure	: Not available
Vapour pressure at 50 °C	: Not available
Density	: 1.2 g/cm ³
Relative density	: Not available
Relative vapour density at 20 °C	: Not available
Particle size	: Not applicable
Particle size distribution	: Not applicable
Particle shape	: Not applicable
Particle aspect ratio	: Not applicable
Particle aggregation state	: Not applicable
Particle agglomeration state	: Not applicable
Particle specific surface area	: Not applicable
Particle dustiness	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

No additional information available

9.2.2. Other safety characteristics

Surface tension : 44 - 50 mN/m @50 - 90%

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Do not expose to temperatures above 200 °C / 392 °F.

10.5. Incompatible materials

Oxidizing agent. Bases. Acids. Metals.

10.6. Hazardous decomposition products

Under fire conditions, hazardous fumes will be present: Carbon dioxide, Carbon monoxide.

SECTION 11: Toxicological information

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

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

L-(+)-lactic acid (79-33-4)	
LD50 oral rat	3543 mg/kg bodyweight (EPA OPP 81-1 method)
LD50 dermal rabbit	> 2000 mg/kg bodyweight (EPA OPP 81-2 method)

LC50 Inhalation - Rat (Dust/Mist)	> 7.94 mg/l/4h (OECD 403 method)
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Skin corrosion/irritation	: Causes severe skin burns. pH: < 1.2 (25°C)
Serious eye damage/irritation	: Causes serious eye damage. pH: < 1.2 (25°C)
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties	: Not applicable
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11.2.2 Other information

Potential adverse human health effects and symptoms	: Redness, pain, Burns, Causes serious eye damage.
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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Before neutralisation, the product may represent a danger to aquatic organisms.
Hazardous to the aquatic environment, short-term (acute)	: Not classified
Hazardous to the aquatic environment, long-term (chronic)	: Not classified

L-(+)-lactic acid (79-33-4)	
LC50 - Fish [1]	130 – 320 mg/l
EC50 - Crustacea [1]	130 – 750 mg/l
ErC50 algae	3500 mg/l
NOEC chronic algae	1900 mg/l

12.2. Persistence and degradability

L-lactic acid	
Persistence and degradability	Readily biodegradable.

L-(+)-lactic acid (79-33-4)	
Persistence and degradability	Readily biodegradable.

12.3. Bioaccumulative potential

L-lactic acid	
Partition coefficient n-octanol/water (Log Pow)	-0.62

L-(+)-lactic acid (79-33-4)	
Partition coefficient n-octanol/water (Log Pow)	-0.54 (OECD 107 method)

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component	
L-(+)-lactic acid (79-33-4)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Endocrine disrupting properties

Adverse effects on the environment caused by endocrine disrupting properties : Not applicable

12.7. Other adverse effects

No additional information available






SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Dispose in a safe manner in accordance with local/national regulations.
 Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
 Sewage disposal recommendations : Disposal must be done according to official regulations.
 Product/Packaging disposal recommendations : Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.

SECTION 14: Transport information



In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number or ID number				
UN 3265	UN 3265	UN 3265	UN 3265	UN 3265
14.2. UN proper shipping name				
CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Lactic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Lactic acid)	Corrosive liquid, acidic, organic, n.o.s. (Lactic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Lactic acid)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (Lactic acid)
14.3. Transport hazard class(es)				
8	8	8	8	8
				

14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

Overland transport

Classification code (ADR)	: C3
Special provisions (ADR)	: 274
Limited quantities (ADR)	: 5I
Excepted quantities (ADR)	: E1
Packing instructions (ADR)	: P001, IBC03, LP01, R001
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T7
Portable tank and bulk container special provisions (ADR)	: TP1, TP28
Tank code (ADR)	: L4BN
Vehicle for tank carriage	: AT
Transport category (ADR)	: 3
Special provisions for carriage - Packages (ADR)	: V12
Hazard identification number (Kemler No.)	: 80
Orange plates	:  

Tunnel restriction code (ADR)	: E
EAC code	: 2X
APP code	: B

Transport by sea

Special provisions (IMDG)	: 223, 274
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P001, LP01
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T7
Tank special provisions (IMDG)	: TP1, TP28
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-B
Stowage category (IMDG)	: A
Stowage and handling (IMDG)	: SW2
Segregation (IMDG)	: SGG1, SG36, SG49
Properties and observations (IMDG)	: Causes burns to skin, eyes and mucous membranes.

Air transport

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y841
PCA limited quantity max net quantity (IATA)	: 1L
PCA packing instructions (IATA)	: 852
PCA max net quantity (IATA)	: 5L
CAO packing instructions (IATA)	: 856

CAO max net quantity (IATA) : 60L
 Special provisions (IATA) : A3, A803
 ERG code (IATA) : 8L

Inland waterway transport

Classification code (ADN) : C3
 Special provisions (ADN) : 274
 Limited quantities (ADN) : 5 L
 Excepted quantities (ADN) : E1
 Carriage permitted (ADN) : T
 Equipment required (ADN) : PP, EP
 Number of blue cones/lights (ADN) : 0

Rail transport

Classification code (RID) : C3
 Special provisions (RID) : 274
 Limited quantities (RID) : 5L
 Excepted quantities (RID) : E1
 Packing instructions (RID) : P001, IBC03, LP01, R001
 Mixed packing provisions (RID) : MP19
 Portable tank and bulk container instructions (RID) : T7
 Portable tank and bulk container special provisions (RID) : TP1, TP28
 Tank codes for RID tanks (RID) : L4BN
 Transport category (RID) : 3
 Special provisions for carriage – Packages (RID) : W12
 Colis express (express parcels) (RID) : CE8
 Hazard identification number (RID) : 80

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:		
Reference code	Applicable on	Entry title or description
3(b)	L-lactic acid ; L-(+)-lactic acid	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Other information, restriction and prohibition regulations : Young people below the age of 18 years are not allowed to use the product.

15.1.2. National regulations

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

Classification. Label elements. First aid measures. Exposure controls/personal protection. Toxicological information. Ecological information. Transport information.

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
ED	Endocrine disrupting properties
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail

SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

Training advice : Ensure staff are informed of and trained on the nature of exposure and basic actions to minimise exposure.

Full text of H- and EUH-statements:	
EUH071	Corrosive to the respiratory tract.
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
Skin Corr. 1C	Skin corrosion/irritation, Category 1, Sub-Category 1C

Corbion SDS EU

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

EXPOSURE SCENARIO FOR COMMUNICATION

Substance Name: L-(+)-lactic acid

EC Number: 201-196-2

CAS Number: 79-33-4

Registration Number: 01-2119474164-39-0000 & 01-2119474164-39-0013

Date of Generation/Revision: 07/10/2021

Author: PURAC Biochem BV

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1. ES 1: Manufacture

1.1. Title section

ES name: Manufacture

Environment	
1: Manufacture of the substance	ERC 1
Worker	
2: <i>Chemical production in closed process without likelihood of exposure</i>	PROC 1
3: <i>Chemical production in closed continuous process with occasional controlled exposure</i>	PROC 2
4: <i>Manufacture in closed batch processes with occasional controlled exposure</i>	PROC 3
5: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
6: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
7: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
8: <i>Transfer of substance or mixture into small containers</i>	PROC 9
9: <i>Use as laboratory reagent</i>	PROC 15
10: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

1.2. Conditions of use affecting exposure

1.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes)

	<ul style="list-style-type: none"> ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Liquid
Covers concentrations up to 100 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

1.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

2. ES 2: Formulation or re-packing

2.1. Title section

ES name: *Formulation into mixture*

Environment	
1: <i>Formulation into matrix</i>	ERC 2
Worker	
2: <i>Chemical production in closed process without likelihood of exposure</i>	PROC 1
3: <i>Chemical production in closed continuous process with occasional controlled exposure</i>	PROC 2
4: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
5: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
6: <i>Mixing or blending in batch processes</i>	PROC 5
7: <i>Calendering operations</i>	PROC 6
8: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
9: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
10: <i>Transfer of substance or mixture into small containers</i>	PROC 9
11: <i>Treatment of articles by dipping and pouring</i>	PROC 13
12: <i>Tabletting, compression, extrusion, pelletisation, granulation</i>	PROC 14
13: <i>Use as laboratory reagent</i>	PROC 15
14: <i>Manual activities involving hand contact</i>	PROC 19
15: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
16: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

2.2. Conditions of use affecting exposure

2.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes);

	<ul style="list-style-type: none"> ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) ● Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) ● Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes ● Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) ● In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Liquid
Covers concentrations up to 100 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

2.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

3. ES 3: Formulation or re-packing

3.1. Title section

ES name: *Formulation into solid matrix*

Environment	
1: <i>Formulation into solid matrix</i>	ERC 3
Worker	
2: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions	PROC 1
3: <i>Chemical production in closed continuous process with occasional controlled exposure</i>	PROC 2
4: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
5: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
6: <i>Mixing or blending in batch processes</i>	PROC 5
7: Calendering operations	PROC 6
8: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
9: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
10: <i>Transfer of substance or mixture into small containers</i>	PROC 9
11: Treatment of articles by dipping and pouring	PROC 13
12: Tableting, compression, extrusion, pelettisation, granulation	PROC 14
13: <i>Use as laboratory reagent</i>	PROC 15
14: Manual activities involving hand contact	PROC 19
15: Handling of solid inorganic substances at ambient temperature	PROC 26
16: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

3.2. Conditions of use affecting exposure

3.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard

	<p>EN374; pictograms: yes);</p> <ul style="list-style-type: none"> ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) <ul style="list-style-type: none"> ● Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) ● Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes ● Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) ● In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Liquid
Covers concentrations up to 100 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

3.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES



Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

4. ES 4: Use at industrial sites; Various products; Various sectors

4.1. Title section

ES name: *Industrial use of L-(+)-lactic acid as a non-reactive processing aid*

Product category: Adhesives, Sealants (PC 1), Adsorbents (PC 2), Coatings and Paints, Thinners, paint removers (PC 9a), Fertilizers (PC 12), Metal surface treatment products (PC 14), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Laboratory Chemicals (PC 21), Lubricants, Greases, Release Products (PC 24), Metal Working Fluids (PC 25), Polishes and Wax Blends (PC 31), Washing and Cleaning Products (PC 35), Water softeners (PC 36), Water treatment chemicals (PC 37)

Sector of use: Agriculture, forestry, fishery (SU 1), Mining (without offshore industries) (SU 2a), Offshore industries (SU 2b), Manufacture of food products (SU 4), Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8), Manufacture of fine chemicals (SU 9)

Environment	
1: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)	ERC 4
Worker	
2: <i>Chemical production in closed continuous process with occasional controlled exposure</i>	PROC 2
3: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
4: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
5: <i>Mixing or blending in batch processes</i>	PROC 5
6: <i>Calendering operations</i>	PROC 6
7: <i>Industrial spraying</i>	PROC 7
8: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
9: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
10: <i>Transfer of substance or mixture into small containers</i>	PROC 9
11: <i>Roller application or brushing</i>	PROC 10
12: <i>Treatment of articles by dipping and pouring</i>	PROC 13
13: <i>Tabletting, compression, extrusion, pelletisation, granulation</i>	PROC 14
14: <i>Use as laboratory reagent</i>	PROC 15
15: <i>Using material as fuel sources, limited exposure to un-burned product to be expected</i>	PROC 16
16: <i>Lubrication at high energy conditions and in partly open process</i>	PROC 17
17: <i>General greasing/lubrication at high kinetic energy conditions</i>	PROC 18
18: <i>Hand-mixing with intimate contact and only PPE available</i>	PROC 19
19: <i>Heat and pressure transfer fluids in dispersive, professional use but closed systems</i>	PROC 20
20: <i>Low energy manipulation and handling of substances bound in/on materials or articles</i>	PROC 21
21: <i>High (mechanical) energy work-up of substances bound in materials and/or articles</i>	PROC 24
22: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
23: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

4.2. Conditions of use affecting exposure

4.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and



machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

4.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

5. ES 5: Use at industrial sites; Various products (PC 1, PC 3, PC 4, PC 8, PC 9a, PC 9b, PC 9c, PC 14, PC 15, PC 20, PC 21, PC 24, PC 25, PC 31, PC 35, PC 37, PC 38); Various sectors (SU 8, SU 9)

5.1. Title section

ES name: *Industrial use of L-(+)-lactic acid as a reactive processing aid*

Product category: Adhesives, Sealants (PC 1), Air care products (PC 3), Anti-Freeze and De-icing products (PC 4), Biocidal Products (PC 8), Coatings and Paints, Thinners, paint removers (PC 9a), Fillers, putties, plasters, modelling clay (PC 9b), Finger paints (PC 9c), Metal surface treatment products (PC 14), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Laboratory Chemicals (PC 21), Lubricants, Greases, Release Products (PC 24), Metal Working Fluids (PC 25), Polishes and Wax Blends (PC 31), Washing and Cleaning Products (PC 35), Water treatment chemicals (PC 37), Welding and soldering products, flux products (PC 38)

Sector of use: Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8), Manufacture of fine chemicals (SU 9)

Environment	
1: <i>Use of reactive processing aid (no inclusion)</i>	ERC 6b
Worker	
2: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
3: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
4: <i>Mixing or blending in batch processes</i>	PROC 5
5: <i>Calendering operations</i>	PROC 6
6: <i>Industrial spraying</i>	PROC 7
7: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
8: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
9: <i>Transfer of substance or mixture into small containers</i>	PROC 9
10: <i>Roller application or brushing</i>	PROC 10
11: <i>Treatment of articles by dipping and pouring</i>	PROC 13
12: <i>Tabletting, compression, extrusion, pelletisation, granulation</i>	PROC 14
13: <i>Use as laboratory reagent</i>	PROC 15
14: <i>Using material as fuel sources, limited exposure to un-burned product to be expected</i>	PROC 16
15: <i>Lubrication at high energy conditions and in partly open process</i>	PROC 17
16: <i>General greasing/lubrication at high kinetic energy conditions</i>	PROC 18
17: <i>Hand-mixing with intimate contact and only PPE available</i>	PROC 19
18: <i>Heat and pressure transfer fluids in dispersive, professional use but closed systems</i>	PROC 20
19: <i>Low energy manipulation and handling of substances bound in/on materials or articles</i>	PROC 21
20: <i>High (mechanical) energy work-up of substances bound in materials and/or articles</i>	PROC 24
21: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
22: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

5.2. Conditions of use affecting exposure

5.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and



machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

5.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

6. ES 6: Use at industrial sites; Various products (PC 4, PC 21, PC 24); Various sectors (SU 2a, SU 2b, SU 17, SU 19, SU 23)

6.1. Title section

ES name: *Industrial use of L-(+)-lactic acid in functional fluids*

Product category: Anti-Freeze and De-icing products (PC 4), Laboratory Chemicals (PC 21), Lubricants, Greases, Release Products (PC 24)

Sector of use: Mining (without offshore industries) (SU 2a), Offshore industries (SU 2b), General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment. (SU 17), Building and construction work (SU 19), Electricity, steam, gas water supply and sewage treatment (SU 23)

Environment	
1: <i>Use of functional fluid</i>	ERC 7
Worker	
2: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
3: <i>Mixing or blending in batch processes</i>	PROC 5
4: <i>Industrial spraying</i>	PROC 7
5: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
6: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
7: <i>Transfer of substance or mixture into small containers</i>	PROC 9
8: <i>Roller application or brushing</i>	PROC 10
9: <i>Treatment of articles by dipping and pouring</i>	PROC 13
10: <i>Tabletting, compression, extrusion, pelletisation, granulation</i>	PROC 14
11: <i>Use as laboratory reagent</i>	PROC 15
12: <i>Using material as fuel sources, limited exposure to un-burned product to be expected</i>	PROC 16
13: <i>Lubrication at high energy conditions and in partly open process</i>	PROC 17
14: <i>General greasing/lubrication at high kinetic energy conditions</i>	PROC 18
15: <i>Hand-mixing with intimate contact and only PPE available</i>	PROC 19
16: <i>Heat and pressure transfer fluids in dispersive, professional use but closed systems</i>	PROC 20
17: <i>High (mechanical) energy work-up of substances bound in materials and/or articles</i>	PROC 24
18: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
19: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

6.2. Conditions of use affecting exposure

6.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed

For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use

Assumes process temperature up to 40 °C

6.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

7. ES 7: Use at industrial sites; Various products (PC 1, PC 9a, PC 18, PC 20, PC 23, PC 26, PC 32, PC 34); Various sectors (SU 4, SU 5, SU 6a, SU 6b, SU 7, SU 11, SU 12, SU 13, SU 18)

7.1. Title section

ES name: *Industrial use of L-(+)-lactic acid for producing articles*

Product category: Adhesives, Sealants (PC 1), Coatings and Paints, Thinners, paint removers (PC 9a), Ink and Toners (PC 18), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Leather treatment products (PC 23), Paper and board treatment products (PC 26), Polymer Preparations and Compounds (PC 32), Textile dyes and impregnating products (PC 34)

Sector of use: Manufacture of food products (SU 4), Manufacture of textiles, leather, fur (SU 5), Manufacture of wood and wood products (SU 6a), Manufacture of pulp, paper and paper products (SU 6b), Printing and reproduction of recorded media (SU 7), Manufacture of rubber products (SU 11), Manufacture of plastics products, including compounding and conversion (SU 12), Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13), Manufacture of furniture (SU 18)

Environment	
1: Use leading to inclusion into/onto article	ERC 5
Worker	
2: Mixing or blending in batch processes	PROC 5
3: Industrial spraying	PROC 7
4: Transfer of substance or mixture at non-dedicated facilities	PROC 8a
5: Transfer of substance or mixture at dedicated facilities	PROC 8b
6: Roller application or brushing	PROC 10
7: Treatment of articles by dipping and pouring	PROC 13
8: Manual maintenance (cleaning and repair) of machinery	PROC 28
Subsequent service life exposure scenario(s)	
ES 18: Service life (worker at industrial site); Various articles	
ES 19: Service life (worker at industrial site); Various articles (AC 0, AC 1, AC 7, AC 10, AC 11, AC 13)	
ES 20: Service life (professional worker); Various articles (AC 4a, AC 4g)	
ES 21: Service life (consumers); Various articles	

7.2. Conditions of use affecting exposure

7.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling,	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process

cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

7.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

8. ES 8: Use at industrial sites; Various products; Various sectors

8.1. Title section

ES name: *Industrial use as process regulator in polymerisation processes*

Product category: Coatings and Paints, Thinners, paint removers (PC 9a), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Laboratory Chemicals (PC 21), Washing and Cleaning Products (PC 35), Water treatment chemicals (PC 37)

Sector of use: Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8), Manufacture of fine chemicals (SU 9), Manufacture of plastics products, including compounding and conversion (SU 12)

Environment	
1: <i>Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers</i>	ERC 6d
Worker	
2: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
3: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
4: <i>Mixing or blending in batch processes</i>	PROC 5
5: <i>Calendering operations</i>	PROC 6
6: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
7: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
8: <i>Transfer of substance or mixture into small containers</i>	PROC 9
9: <i>Use as laboratory reagent</i>	PROC 15
10: <i>Low energy manipulation and handling of substances bound in/on materials or articles</i>	PROC 21
11: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
12: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

8.2. Conditions of use affecting exposure

8.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride

	<p>(Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes);</p> <ul style="list-style-type: none"> ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) <ul style="list-style-type: none"> ● Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) ● Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes ● Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) ● In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Liquid
Covers concentrations up to 100 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

8.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

8.4. Guidance to DU to evaluate whether he works inside the

boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

9. ES 9: Use at industrial sites; Various products; Various sectors

9.1. Title section

ES name: *Industrial use as intermediate*

Product category: Adsorbents (PC 2), Coatings and Paints, Thinners, paint removers (PC 9a), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Laboratory Chemicals (PC 21), Washing and Cleaning Products (PC 35), Water softeners (PC 36), Water treatment chemicals (PC 37)

Sector of use: Manufacture of food products (SU 4), Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8), Manufacture of fine chemicals (SU 9)

Environment	
1: <i>Use of intermediate</i>	ERC 6a
Worker	
2: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
3: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
4: <i>Mixing or blending in batch processes</i>	PROC 5
5: <i>Calendering operations</i>	PROC 6
6: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
7: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
8: <i>Transfer of substance or mixture into small containers</i>	PROC 9
9: <i>Use as laboratory reagent</i>	PROC 15
10: <i>Low energy manipulation and handling of substances bound in/on materials or articles</i>	PROC 21
11: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
12: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

9.2. Conditions of use affecting exposure

9.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride

	<p>(Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes);</p> <ul style="list-style-type: none"> ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) <ul style="list-style-type: none"> ● Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) ● Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes ● Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) ● In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Liquid
Covers concentrations up to 100 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

9.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

9.4. Guidance to DU to evaluate whether he works inside the

boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

10. ES 10: Use at industrial sites; Other (PC 0)

10.1. Title section

ES name: *Industrial use of L-(+)-lactic acid as a monomer*

Product category: Other (PC 0)

Environment	
1: <i>Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)</i>	ERC 6c
Worker	
2: <i>Chemical production in closed process without likelihood of exposure</i>	PROC 1
3: <i>Chemical production in closed continuous process with occasional controlled exposure</i>	PROC 2
4: <i>Manufacture in closed batch processes with occasional controlled exposure</i>	PROC 3
5: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
6: <i>Mixing or blending in batch processes</i>	PROC 5
7: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

10.2. Conditions of use affecting exposure

10.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes)

	<ul style="list-style-type: none"> • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

10.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

10.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

11. ES 11: Use at industrial sites; Other (PC 0); Building and construction work (SU 19)

11.1. Title section

ES name: *Building and construction preparations*

Product category: Other (PC 0)

Sector of use: Building and construction work (SU 19)

Environment	
1: <i>Use leading to inclusion into/onto article</i>	ERC 5
Worker	
2: <i>Mixing or blending in batch processes</i>	PROC 5
3: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
4: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
5: <i>Transfer of substance or mixture into small containers</i>	PROC 9
6: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28
Subsequent service life exposure scenario(s)	
ES 18: Service life (worker at industrial site); Various articles	
ES 20: Service life (professional worker); Various articles (AC 4a, AC 4g)	
ES 21: Service life (consumers); Various articles	

11.2. Conditions of use affecting exposure

11.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield

	<ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

11.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

11.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

12. ES 12: Widespread use by professional workers; Various products; Various sectors

12.1. Title section

ES name: *Professional use of L-(+)-lactic acid as a non-reactive processing aid*

Product category: Adhesives, Sealants (PC 1), Air care products (PC 3), Anti-Freeze and De-icing products (PC 4), Biocidal Products (PC 8), Coatings and Paints, Thinners, paint removers (PC 9a), Fillers, putties, plasters, modelling clay (PC 9b), Finger paints (PC 9c), Fertilizers (PC 12), Metal surface treatment products (PC 14), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Laboratory Chemicals (PC 21), Lubricants, Greases, Release Products (PC 24), Metal Working Fluids (PC 25), Polishes and Wax Blends (PC 31), Washing and Cleaning Products (PC 35), Welding and soldering products, flux products (PC 38)

Sector of use: Agriculture, forestry, fishery (SU 1), Health services (SU 20)

Environment	
1: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8d, ERC 8a
Worker	
2: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
3: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
4: <i>Mixing or blending in batch processes</i>	PROC 5
5: <i>Industrial spraying</i>	PROC 7
6: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
7: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
8: <i>Transfer of substance or mixture into small containers</i>	PROC 9
9: <i>Roller application or brushing</i>	PROC 10
10: <i>Non industrial spraying</i>	PROC 11
11: <i>Treatment of articles by dipping and pouring</i>	PROC 13
12: <i>Tabletting, compression, extrusion, pelletisation, granulation</i>	PROC 14
13: <i>Use as laboratory reagent</i>	PROC 15
14: <i>Using material as fuel sources, limited exposure to un-burned product to be expected</i>	PROC 16
15: <i>Lubrication at high energy conditions in metal working operations</i>	PROC 17
16: <i>General greasing/lubrication at high kinetic energy conditions</i>	PROC 18
17: <i>Hand-mixing with intimate contact and only PPE available</i>	PROC 19
18: <i>Use of functional fluids in small devices</i>	PROC 20
19: <i>High (mechanical) energy work-up of substances bound in /on materials and/or articles</i>	PROC 24
20: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
21: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

12.2. Conditions of use affecting exposure

12.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure



Indoor use
Assumes process temperature up to 40 °C

12.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

12.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

13. ES 13: Widespread use by professional workers; Various products; Other

13.1. Title section

ES name: *Professional use of L-(+)-lactic acid as a reactive processing aid*

Product category: Adhesives, Sealants (PC 1), Air care products (PC 3), Anti-Freeze and De-icing products (PC 4), Biocidal Products (PC 8), Coatings and Paints, Thinners, paint removers (PC 9a), Fillers, putties, plasters, modelling clay (PC 9b), Finger paints (PC 9c), Fertilizers (PC 12), Metal surface treatment products (PC 14), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Laboratory Chemicals (PC 21), Lubricants, Greases, Release Products (PC 24), Metal Working Fluids (PC 25), Polishes and Wax Blends (PC 31), Washing and Cleaning Products (PC 35), Welding and soldering products, flux products (PC 38)

Sector of use: Other (SU 0)

Environment	
1: <i>Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)</i>	ERC 8e, ERC 8b
Worker	
2: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
3: <i>Mixing or blending in batch processes</i>	PROC 5
4: <i>Industrial spraying</i>	PROC 7
5: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
6: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
7: <i>Transfer of substance or mixture into small containers</i>	PROC 9
8: <i>Roller application or brushing</i>	PROC 10
9: <i>Non industrial spraying</i>	PROC 11
10: <i>Treatment of articles by dipping and pouring</i>	PROC 13
11: <i>Tabletting, compression, extrusion, pelletisation, granulation</i>	PROC 14
12: <i>Use as laboratory reagent</i>	PROC 15
13: <i>Using material as fuel sources, limited exposure to un-burned product to be expected</i>	PROC 16
14: <i>Lubrication at high energy conditions in metal working operations</i>	PROC 17
15: <i>General greasing/lubrication at high kinetic energy conditions</i>	PROC 18
16: <i>Hand-mixing with intimate contact and only PPE available</i>	PROC 19
17: <i>Use of functional fluids in small devices</i>	PROC 20
18: <i>High (mechanical) energy work-up of substances bound in /on materials and/or articles</i>	PROC 24
19: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
20: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

13.2. Conditions of use affecting exposure

13.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures	• Training of staff on good practice.

and advice for operating a closed system:	<ul style="list-style-type: none"> • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

13.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

13.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

14. ES 14: Widespread use by professional workers; Various products; Various sectors

14.1. Title section

ES name: *Professional use of L-(+)-lactic acid in functional fluids*

Product category: Adhesives, Sealants (PC 1), Air care products (PC 3), Anti-Freeze and De-icing products (PC 4), Biocidal Products (PC 8), Coatings and Paints, Thinners, paint removers (PC 9a), Fillers, putties, plasters, modelling clay (PC 9b), Finger paints (PC 9c), Fertilizers (PC 12), Metal surface treatment products (PC 14), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Laboratory Chemicals (PC 21), Lubricants, Greases, Release Products (PC 24), Metal Working Fluids (PC 25), Polishes and Wax Blends (PC 31), Washing and Cleaning Products (PC 35), Water treatment chemicals (PC 37), Welding and soldering products, flux products (PC 38)

Sector of use: Other (SU 0), Agriculture, forestry, fishery (SU 1), Manufacture of bulk, large scale chemicals (including petroleum products) (SU 8), Manufacture of fine chemicals (SU 9)

Environment	
1: <i>Widespread use of functional fluid</i>	ERC 9b, ERC 9a
Worker	
2: <i>Formulation in closed batch processes with occasional controlled exposure</i>	PROC 3
3: <i>Chemical production where opportunity for exposure arises</i>	PROC 4
4: <i>Mixing or blending in batch processes</i>	PROC 5
5: <i>Calendering operations</i>	PROC 6
6: <i>Industrial spraying</i>	PROC 7
7: <i>Transfer of substance or mixture at non-dedicated facilities</i>	PROC 8a
8: <i>Transfer of substance or mixture at dedicated facilities</i>	PROC 8b
9: <i>Transfer of substance or mixture into small containers</i>	PROC 9
10: <i>Roller application or brushing</i>	PROC 10
11: <i>Non industrial spraying</i>	PROC 11
12: <i>Treatment of articles by dipping and pouring</i>	PROC 13
13: <i>Tabletting, compression, extrusion, pelletisation, granulation</i>	PROC 14
14: <i>Use as laboratory reagent</i>	PROC 15
15: <i>Using material as fuel sources, limited exposure to un-burned product to be expected</i>	PROC 16
16: <i>Lubrication at high energy conditions in metal working operations</i>	PROC 17
17: <i>General greasing/lubrication at high kinetic energy conditions</i>	PROC 18
18: <i>Hand-mixing with intimate contact and only PPE available</i>	PROC 19
19: <i>Use of functional fluids in small devices</i>	PROC 20
20: <i>Low energy manipulation and handling of substances bound in/on materials or articles</i>	PROC 21
21: <i>High (mechanical) energy work-up of substances bound in /on materials and/or articles</i>	PROC 24
22: <i>Handling of solid inorganic substances at ambient temperature</i>	PROC 26
23: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 28

14.2. Conditions of use affecting exposure

14.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those



described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

14.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

14.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

15. ES 15: Widespread use by professional workers; Various products; Various sectors

15.1. Title section

ES name: *Professional use of L-(+)-lactic acid for producing articles*

Product category: Adhesives, Sealants (PC 1), Anti-Freeze and De-icing products (PC 4), Biocidal Products (PC 8), Fillers, putties, plasters, modelling clay (PC 9b), Finger paints (PC 9c), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Lubricants, Greases, Release Products (PC 24), Polishes and Wax Blends (PC 31)

Sector of use: Manufacture of food products (SU 4), Manufacture of textiles, leather, fur (SU 5), Manufacture of wood and wood products (SU 6a), Manufacture of pulp, paper and paper products (SU 6b), Printing and reproduction of recorded media (SU 7), Manufacture of rubber products (SU 11), Manufacture of plastics products, including compounding and conversion (SU 12), Manufacture of other non-metallic mineral products, e.g. plasters, cement (SU 13), Manufacture of furniture (SU 18)

Environment	
1: Widespread use leading to inclusion into/onto article (outdoor)	ERC 8f
Worker	
2: Chemical production where opportunity for exposure arises	PROC 4
3: Mixing or blending in batch processes	PROC 5
4: Transfer of substance or mixture at non-dedicated facilities	PROC 8a
5: Transfer of substance or mixture at dedicated facilities	PROC 8b
6: Transfer of substance or mixture into small containers	PROC 9
7: Roller application or brushing	PROC 10
8: Non industrial spraying	PROC 11
9: Treatment of articles by dipping and pouring	PROC 13
10: Tableting, compression, extrusion, pelletisation, granulation	PROC 14
11: Use as laboratory reagent	PROC 15
12: General greasing/lubrication at high kinetic energy conditions	PROC 18
13: Hand-mixing with intimate contact and only PPE available	PROC 19
14: Handling of solid inorganic substances at ambient temperature	PROC 26
15: Manual maintenance (cleaning and repair) of machinery	PROC 28
Subsequent service life exposure scenario(s)	
ES 18: Service life (worker at industrial site); Various articles	
ES 19: Service life (worker at industrial site); Various articles (AC 0, AC 1, AC 7, AC 10, AC 11, AC 13)	
ES 21: Service life (consumers); Various articles	

15.2. Conditions of use affecting exposure

15.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene.

system:	<ul style="list-style-type: none"> • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.

Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

15.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

15.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

16. ES 16: Consumer use; Various products

16.1. Title section

ES name: *Consumer use (with service life)*

Product category: Adhesives, Sealants (PC 1), Anti-Freeze and De-icing products (PC 4), Biocidal Products (PC 8), Fillers, putties, plasters, modelling clay (PC 9b), Finger paints (PC 9c), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Lubricants, Greases, Release Products (PC 24), Polishes and Wax Blends (PC 31), Washing and Cleaning Products (PC 35)

Environment	
1: <i>Widespread use leading to inclusion into/onto article (outdoor)</i>	ERC 8f
Consumer	
2: <i>Adhesives, Sealants</i>	PC 1
3: <i>Anti-Freeze and De-icing products</i>	PC 4
4: <i>Biocidal Products (e.g. Disinfectants, pest control)</i>	PC 8
5: <i>Fillers, Putties</i>	PC 9b
6: <i>Finger Paints</i>	PC 9c
7: <i>Non-metal-surface treatment products</i>	PC 15
8: <i>Products such as ph-regulators, flocculants, precipitants, neutralization agents, other unspecific</i>	PC 20
9: <i>Lubricants, Greases and Release Products</i>	PC 24
10: <i>Polishes and Wax Blends</i>	PC 31
11: <i>Washing and Cleaning Products (including solvent based products)</i>	PC 35
Subsequent service life exposure scenario(s)	
ES 21: Service life (consumers); Various articles	

16.2. Conditions of use affecting exposure

16.2.1. Control of consumer exposure: *Adhesives, Sealants (PC 1)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.2. Control of consumer exposure: *Anti-Freeze and De-icing products (PC 4)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.3. Control of consumer exposure: *Biocidal Products (e.g. Disinfectants, pest control) (PC 8)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.4. Control of consumer exposure: *Fillers, Putties (PC 9b)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.5. Control of consumer exposure: *Finger Paints (PC 9c)*



Product (article) characteristics
Covers concentrations up to 100 %

16.2.6. Control of consumer exposure: *Non-metal-surface treatment products (PC 15)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.7. Control of consumer exposure: *Products such as ph-regulators, flocculants, precipitants, neutralization agents, other unspecific (PC 20)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.8. Control of consumer exposure: *Lubricants, Greases and Release Products (PC 24)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.9. Control of consumer exposure: *Polishes and Wax Blends (PC 31)*

Product (article) characteristics
Covers concentrations up to 100 %

16.2.10. Control of consumer exposure: *Washing and Cleaning Products (including solvent based products) (PC 35)*

Product (article) characteristics
Covers concentrations up to 100 %

16.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

16.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

17. ES 17: Consumer use; Various products

17.1. Title section

ES name: *Consumer use (without service life)*

Product category: Adhesives, Sealants (PC 1), Anti-Freeze and De-icing products (PC 4), Biocidal Products (PC 8), Fillers, putties, plasters, modelling clay (PC 9b), Finger paints (PC 9c), Non-metal-surface treatment products (PC 15), Products such as ph-regulators, flocculants, precipitants, neutralization agents (PC 20), Lubricants, Greases, Release Products (PC 24), Polishes and Wax Blends (PC 31), Washing and Cleaning Products (PC 35)

Environment	
1: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)	ERC 8d, ERC 8a
Consumer	
2: <i>Adhesives, Sealants</i>	PC 1
3: <i>Anti-Freeze and De-icing products</i>	PC 4
4: <i>Biocidal Products (e.g. Disinfectants, pest control)</i>	PC 8
5: <i>Fillers, Putties</i>	PC 9b
6: <i>Finger paints</i>	PC 9c
7: <i>Non-metal-surface treatment products</i>	PC 15
8: <i>Products such as ph-regulators, flocculants, precipitants, neutralization agents, other unspecific</i>	PC 20
9: <i>Lubricants, Greases and Release Products</i>	PC 24
10: <i>Polishes and Wax Blends</i>	PC 31
11: <i>Washing and Cleaning Products (including solvent based products)</i>	PC 35

17.2. Conditions of use affecting exposure

17.2.1. Control of consumer exposure: *Adhesives, Sealants (PC 1)*

Product (article) characteristics
Covers concentrations up to 100 %

17.2.2. Control of consumer exposure: *Anti-Freeze and De-icing products (PC 4)*

Product (article) characteristics
Covers concentrations up to 100 %

17.2.3. Control of consumer exposure: *Biocidal Products (e.g. Disinfectants, pest control) (PC 8)*

Product (article) characteristics
Covers concentrations up to 100 %

17.2.4. Control of consumer exposure: *Fillers, Putties (PC 9b)*

Product (article) characteristics
Covers concentrations up to 100 %

17.2.5. Control of consumer exposure: *Finger paints (PC 9c)*

Product (article) characteristics



Covers concentrations up to 100 %

17.2.6. Control of consumer exposure: *Non-metal-surface treatment products (PC 15)*

Product (article) characteristics
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Covers concentrations up to 100 %

17.2.7. Control of consumer exposure: *Products such as ph-regulators, flocculants, precipitants, neutralization agents, other unspecific (PC 20)*

Product (article) characteristics
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Covers concentrations up to 100 %

17.2.8. Control of consumer exposure: *Lubricants, Greases and Release Products (PC 24)*

Product (article) characteristics
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Covers concentrations up to 100 %

17.2.9. Control of consumer exposure: *Polishes and Wax Blends (PC 31)*

Product (article) characteristics
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Covers concentrations up to 100 %

17.2.10. Control of consumer exposure: *Washing and Cleaning Products (including solvent based products) (PC 35)*

Product (article) characteristics
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Covers concentrations up to 100 %

17.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

17.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

18. ES 18: Service life (worker at industrial site); Various articles

18.1. Title section

ES name: *Industrial processing of articles*

Article category: Other (AC 0), Vehicles (AC 1), Metal articles (AC 7), Rubber articles (AC 10), Wood articles (AC 11), Plastic articles (AC 13)

Environment	
1: Processing of articles at industrial sites with low release	ERC 12b, ERC 12a
Worker	
2: Low energy manipulation and handling of substances bound in/on materials and/or articles	PROC 21
3: <i>High (mechanical) energy work-up of substances bound in /on materials and/or articles</i>	PROC 24
4: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 0
Exposure scenario of the uses leading to the inclusion of the substance into the article	
ES 7: Use at industrial sites; Various products (PC 1, PC 9a, PC 18, PC 20, PC 23, PC 26, PC 32, PC 34); Various sectors (SU 4, SU 5, SU 6a, SU 6b, SU 7, SU 11, SU 12, SU 13, SU 18)	
ES 11: Use at industrial sites; Other (PC 0); Building and construction work (SU 19)	
ES 15: Widespread use by professional workers; Various products; Various sectors	

18.2. Conditions of use affecting exposure

18.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374;

	<p>pictograms: yes)</p> <ul style="list-style-type: none"> • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Liquid
Covers concentrations up to 100 %
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

18.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

18.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

19. ES 19: Service life (worker at industrial site); Various articles (AC 0, AC 1, AC 7, AC 10, AC 11, AC 13)

19.1. Title section

ES name: *Industrial use of articles*

Article category: Other (AC 0), Vehicles (AC 1), Metal articles (AC 7), Rubber articles (AC 10), Wood articles (AC 11), Plastic articles (AC 13)

Environment	
1: <i>Use of articles at industrial sites with low release</i>	ERC 12c
Worker	
2: <i>Low energy manipulation and handling of substances bound in/on materials or articles</i>	PROC 21
3: <i>Manual maintenance (cleaning and repair) of machinery</i>	PROC 0
Exposure scenario of the uses leading to the inclusion of the substance into the article	
ES 7: Use at industrial sites; Various products (PC 1, PC 9a, PC 18, PC 20, PC 23, PC 26, PC 32, PC 34); Various sectors (SU 4, SU 5, SU 6a, SU 6b, SU 7, SU 11, SU 12, SU 13, SU 18)	
ES 15: Widespread use by professional workers; Various products; Various sectors	

19.2. Conditions of use affecting exposure

19.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g. sampling): face shield <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166;

	<ul style="list-style-type: none"> ○ pictograms: yes ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

19.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

19.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

20. ES 20: Service life (professional worker); Various articles (AC 4a, AC 4g)

20.1. Title section

ES name: *Use of articles/materials by professionals (high/low release)*

Article category: Stone, plaster, cement, glass and ceramic articles: Large surface area articles (AC 4a), Other articles made of stone, plaster, cement, glass or ceramic (AC 4g)

Environment	
1: <i>Use of articles by professionals</i>	ERC 10b, ERC 10a, ERC 11a, ERC 11b
Worker	
2: <i>Low energy manipulation and handling of substances bound in/on materials or articles</i>	PROC 21
3: <i>High (mechanical) energy work-up of substances bound in /on materials and/or articles</i>	PROC 24
Exposure scenario of the uses leading to the inclusion of the substance into the article	
ES 7: Use at industrial sites; Various products (PC 1, PC 9a, PC 18, PC 20, PC 23, PC 26, PC 32, PC 34); Various sectors (SU 4, SU 5, SU 6a, SU 6b, SU 7, SU 11, SU 12, SU 13, SU 18)	
ES 11: Use at industrial sites; Other (PC 0); Building and construction work (SU 19)	

20.2. Conditions of use affecting exposure

20.2.1. Control of worker exposure

The substance is classified for serious eye damage and skin corrosion (moderate hazard, respectively) and additionally labelled as EUH071. Implementation of the following RMMs will ensure that risks due to the irritating properties are controlled to a level of no concern:

Risk management measures	
General risk management measures and advice for operating a closed system:	<ul style="list-style-type: none"> • Training of staff on good practice. • Good standard of personal hygiene. • Management/supervision in place to check that the RMMs in place are being used correctly and OCs followed
For handling the substance outside a closed system (e.g. sampling, cleaning, etc.) additional safety measures have to be adopted:	<ul style="list-style-type: none"> • Minimization of staff exposed • Segregation of the emitting process • Effective contaminant extraction • Good standard of general ventilation • Minimization of manual phases • Avoidance of contact with contaminated tools and objects • Regular cleaning of equipment and work area
Additional risk management measures and advice:	<ul style="list-style-type: none"> • Protective gloves: <ul style="list-style-type: none"> ○ Material: Butyl rubber, chloroprene rubber, polyvinylchloride (Permeation 6 (> 480 minutes); thickness 0.5 mm; standard EN374; pictograms: yes); ○ Material: Nitrile rubber (permeation 6 (> 480 minutes); thickness 0.35 mm; Standard EN374; pictograms: yes) ○ Material: FKM; (thickness 0.4 mm; Standard EN374; pictograms: yes) • Eye protection: Safety goggles; if there is a risk of splashes (e.g.

	<p>sampling): face shield</p> <ul style="list-style-type: none"> ○ Safety goggles (use: aerosols, droplets; standard: EN166; pictograms: yes) ○ Face shield (use: aerosols, droplets; standard: EN166; pictograms: yes) <ul style="list-style-type: none"> • Skin and body protection: Wear suitable protective clothing; if there is a risk of large splashes (e.g. transfer): use protective apron. <ul style="list-style-type: none"> ○ Safety boots (high shoes): standard: EN13832; pictogram: yes ○ Long-sleeved protective clothing: standard: 13034; pictogram: yes ○ Protective apron: Standard: EN14605: type 3; pictograms: yes • Respiratory protection: In case of spraying (not closed system), respiratory protection equipment is required. <ul style="list-style-type: none"> ○ Full-face mask (filter type: A, high boiling point organic compound (> 65 °C); condition: aerosols, droplets; standard: EN 140) • In case of spills/calamities: Face shield, safety boots, long-sleeved protective clothing, protective gloves.
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Conditions of use applicable to all contributing scenarios

Product (article) characteristics
Covers concentrations up to 100 %
Liquid
Amount used (or contained in articles), frequency and duration of use/exposure
Covers use up to 8 h/day
Technical and organisational conditions and measures
Assumes that activities are undertaken with appropriate and well maintained equipment by trained personal operating under supervision.; Ensure regular inspection, cleaning and maintenance of equipment and machines.; Clear spills immediately.; Ensure daily cleaning of the equipment.
Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.; If skin contamination is expected to extend to other parts of the body, then these body parts should also be protected with impervious garments in a manner equivalent to those described for the hands.; For further specification, refer to section 8 of the SDS.
Use suitable eye protection.
Other conditions affecting workers exposure
Indoor use
Assumes process temperature up to 40 °C

20.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

20.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.

21. ES 21: Service life (consumers); Various articles

21.1. Title section

ES name: *Use of articles by consumers (high release)*

Article category: Vehicles (AC 1), Machinery, mechanical appliances, electrical/electronic articles (AC 2), Stone, plaster, cement, glass and ceramic articles: Large surface area articles (AC 4a), Other articles made of stone, plaster, cement, glass or ceramic (AC 4g), Metal articles (AC 7), Rubber articles (AC 10), Wood articles (AC 11), Plastic articles (AC 13)

Environment	
1: Widespread use of articles with high or intended release (outdoor)	ERC 10b, ERC 10a, ERC 11a, ERC 11b
Consumer	
2: <i>Vehicles</i>	AC 1
3: <i>Machinery, mechanical appliances, electrical/electronic articles</i>	AC 2
4: <i>Stone, plaster, cement, glass and ceramic articles: Large surface area articles</i>	AC 4a
5: <i>Concrete containing lactic acid as additive</i>	AC 4g
6: <i>Metal articles</i>	AC 7
7: <i>Rubber articles</i>	AC 10
8: <i>Wood articles</i>	AC 11
9: <i>Plastic articles</i>	AC 13
Exposure scenario of the uses leading to the inclusion of the substance into the article	
ES 7: Use at industrial sites; Various products (PC 1, PC 9a, PC 18, PC 20, PC 23, PC 26, PC 32, PC 34); Various sectors (SU 4, SU 5, SU 6a, SU 6b, SU 7, SU 11, SU 12, SU 13, SU 18)	
ES 11: Use at industrial sites; Other (PC 0); Building and construction work (SU 19)	
ES 15: Widespread use by professional workers; Various products; Various sectors	
ES 16: Consumer use; Various products	

21.2. Conditions of use affecting exposure

21.2.1. Control of consumer exposure: *Vehicles* (AC 1)

Product (article) characteristics
Covers concentrations up to 100 %

21.2.2. Control of consumer exposure: *Machinery, mechanical appliances, electrical/electronic articles* (AC 2)

Product (article) characteristics
Covers concentrations up to 100 %

21.2.3. Control of consumer exposure: *Stone, plaster, cement, glass and ceramic articles: Large surface area articles* (AC 4a)

Product (article) characteristics
Covers concentrations up to 100 %

21.2.4. Control of consumer exposure: *Concrete containing lactic acid as additive* (AC 4g)



Product (article) characteristics
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Covers concentrations up to 100 %

21.2.5. Control of consumer exposure: *Metal articles (AC 7)*

Product (article) characteristics
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Covers concentrations up to 100 %

21.2.6. Control of consumer exposure: *Rubber articles (AC 10)*

Product (article) characteristics
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Covers concentrations up to 100 %

21.2.7. Control of consumer exposure: *Wood articles (AC 11)*

Product (article) characteristics
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Covers concentrations up to 100 %

21.2.8. Control of consumer exposure: *Plastic articles (AC 13)*

Product (article) characteristics
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Covers concentrations up to 100 %

21.3. Exposure estimation and reference to its source

A quantitative risk assessment is not required based on the hazard profile of the substance (only acute local effects applicable).

21.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Scaling is not considered appropriate for this substance as no quantitative risk assessment was performed and a generic set of risk management measures is proposed.