

SAFETY DATA SHEET TINSTAB BL277

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product name	TINSTAB BL277
Product No.	P15415
REACH Registration number	01-2119496068-27-0003
CAS-No.	77-58-7

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

Identified uses Catalyst. Additive for polymer and rubber preparations. Additive for paint. Formulation of enamel coatings

1.3. Details of the supplier of the safety data sheet

Supplier	Akcros Chemicals Limited Lankro Way Eccles Manchester M30 0LX Tel. +44 (0) 161 785 1111 24hr Tel. + 44 (0) 161 785 1300 Fax. +44 (0) 161 788 7886 e-mail: RegAffairs@akcros.com
Contact Person	S P Malcomson

1.4. Emergency telephone number

Tel +44 (0) 161 785 1300 (24hrs)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (EC 1272/2008)

Physical and Chemical Hazards	Not classified.
Human health	Skin Corr. 1C - H314; Eye Dam. 1 - H318; Skin Sens. 1 - H317; Muta. 2 - H341; Repr. 1B - H360FD; STOT SE 1 - H370; STOT RE 1 - H372
Environment	Aquatic Acute 1 - H400; Aquatic Chronic 1 - H410

Classification (1999/45/EEC) T; R48/25. Repr. Cat. 2; R60, R61. Muta. Cat. 3; R68. C; R34. R43. N; R50/53.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

2.2. Label elements

Contains Dibutyltin dilaurate
Label In Accordance With (EC) No. 1272/2008



Signal Word Danger

Hazard Statements

H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H341	Suspected of causing genetic defects.
H360FD	May damage fertility or the unborn child.
H370	Causes damage to organs .

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Precautionary Statements	H372	Causes damage to organs through prolonged or repeated exposure.
	H410	Very toxic to aquatic life with long lasting effects.
	P202	Do not handle until all safety precautions have been read and understood.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P305+351+338+313	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
	P501	Dispose of contents/container to hazardous waste.
Supplementary Precautionary Statements	P201	Obtain special instructions before use.
	P260	Do not breathe dust/fume/gas/mist/vapours/spray.
	P264	Wash skin thoroughly after handling.
	P270	Do not eat, drink or smoke when using this product.
	P272	Contaminated work clothing should not be allowed out of the workplace.
	P301+330+331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P302+352	IF ON SKIN: Wash with plenty of soap and water.
	P303+361+353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P304+340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P308+313	IF exposed or concerned: Get medical advice/attention.
	P333+313	If skin irritation or rash occurs: Get medical advice/attention.
	P362	Take off contaminated clothing and wash before reuse.
	P391	Collect spillage.
	P405	Store locked up.

2.3. Other hazards

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2. Mixtures

Dibutyltin dilaurate		>99%
CAS-No.: 000077-58-7		EC No.: 201-039-8
Classification (EC 1272/2008)	Classification (67/548/EEC)	
Skin Corr. 1C - H314	T;R48/25.	
Eye Dam. 1 - H318	Repr. Cat. 2;R60,R61.	
Skin Sens. 1 - H317	Muta. Cat. 3;R68.	
Muta. 2 - H341	C;R34.	
Repr. 1B - H360FD	N;R50/53.	
STOT SE 1 - H370	R43.	
STOT RE 1 - H372		
Aquatic Acute 1 - H400		
Aquatic Chronic 1 - H410		

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

REACH Registration number 01-2119496068-27-0003

CAS-No. 77-58-7

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation

Move the exposed person to fresh air at once. Rinse nose and mouth with water. Get medical attention.

Ingestion

Do not induce vomiting. Rinse mouth thoroughly. Drink plenty of water. Get medical attention immediately!

Skin contact

Remove contaminated clothing. Wash skin thoroughly with soap and water for several minutes. Get medical attention. Wash contaminated clothing before reuse.

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Eye contact

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

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

General information

Danger of serious damage to health by prolonged exposure. May damage fertility or the unborn child.

Ingestion

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Skin contact

This chemical may cause skin/eye irritation and burns (corrosive).

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

For detailed information on the ingredients see Section 3. Symptomatic treatment is advised.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media

Extinguish with foam, carbon dioxide, dry powder or water fog.

5.2. Special hazards arising from the substance or mixture

Specific hazards

Metal oxides. Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

5.3. Advice for firefighters

Special Fire Fighting Procedures

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in Section 8 of this safety data sheet.

6.2. Environmental precautions

Do not discharge into drains, water courses or onto the ground. Waste air must be scrubbed prior to release to the environment

6.3. Methods and material for containment and cleaning up

Absorb in vermiculite, dry sand or earth and place into containers. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. For waste disposal, see section 13.

6.4. Reference to other sections

The product contains a substance which is hazardous to aquatic organisms and which may cause long term adverse effects in the aquatic environment. See section 12 as well.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid inhalation of vapours and contact with skin and eyes. All handling to take place in well-ventilated area.

7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well-ventilated place. Avoid Water, moisture.

7.3. Specific end use(s)

The identified uses for this product are detailed in Section 1.2.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Name	STD	TWA - 8 Hrs		STEL - 15 Min		Notes
Dibutyltin dilaurate	WEL		0,1 mg/m3		0,2 mg/m3	Sk, as Sn

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WEL = Workplace Exposure Limit.

Sk = Can be absorbed through skin.

Ingredient Comments

Workplace Exposure Limits 2005 - (EH40)

The following exposure limit(s) apply for:

Tin compounds (organic) 8 hours TWA WEL 0.1mg/m³. 15min. WEL 0.2mg/m³ (Can be absorbed through skin).

n-butyl tin compounds German MAK value of 0.02mg/m³ (calculated as total Tin)

WEL = Workplace Exposure Limits

DNEL

Industry	Dermal	Short Term	1	mg/kg/day
Industry	Inhalation.	Short Term	0.07	mg/m ³
Industry	Dermal	Long Term	0.2	mg/kg/day
Industry	Inhalation.	Long Term	0.01	mg/m ³
Consumer	Dermal	Short Term	0.5	mg/kg/day
Consumer	Inhalation.	Short Term	0.02	mg/m ³
Consumer	Oral	Short Term	0.01	mg/kg/day
Consumer	Dermal	Long Term	0.08	mg/kg/day
Consumer	Inhalation.	Long Term	0.003	mg/m ³

PNEC

Freshwater	0.000463	mg/l
Marinewater	0.000463	mg/l
STP	100	mg/l
Sediment	0.005	
Soil	0.0407	mg/kg

8.2. Exposure controls

Protective equipment



Engineering measures

Observe occupational exposure limits and minimize the risk of inhalation of vapours. Provide a good standard of controlled ventilation (10 to 15 air changes per hour based on a room size >1000m²).

Respiratory equipment

In case of inadequate ventilation or when the product is heated, use suitable respiratory equipment with gas filter (type A2).

Hand protection

Wear chemically-resistant gloves (tested to EN374) with breakthrough time > 480 minutes. PVC gloves are recommended. Be aware that the liquid may penetrate the gloves. Frequent change is advisable.

Eye protection

Wear goggles/face shield. (CEN EN166)

Other Protection

Wear appropriate clothing to prevent any possibility of skin contact. (CEN EN340) Wash contaminated clothing before reuse.

Hygiene measures

Observe good chemical hygiene practices. Wash hands at the end of each work shift and before eating, smoking and using the toilet.

Wash promptly if skin becomes wet or contaminated. Promptly remove any clothing that becomes wet or contaminated. When using do not eat, drink or smoke.

Personal protection

Users must receive appropriate training in the use of personal protective equipment to minimise the risk of exposure.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Liquid
Colour	Amber.
Odour	Characteristic.
Initial boiling point and boiling range (°C)	>200°C
Melting point (°C)	Freezing point < 20°C
Relative density	approx. 1.04 20°C
Bulk Density	
Not applicable.	

Vapour density (air=1)	
Not applicable.	
Vapour pressure	<0.0000077 Pa 25°C
Evaporation rate	
Not determined.	
Evaporation Factor	
Not determined.	
pH-Value, Conc. Solution	
Not applicable.	
Viscosity	approx. 50 mPas 20°C
Solubility Value (G/100G H ₂ O@20°C)	<0.1g/litre H ₂ O
Decomposition temperature (°C)	
Not determined.	
Odour Threshold, Lower	
Not determined.	
Flash point (°C)	178°C CC (Closed cup).
Auto Ignition Temperature (°C)	420°C
Flammability Limit - Lower(%)	
Not determined.	
Partition Coefficient (N-Octanol/Water)	log kow 4.44
Explosive properties	
Not applicable.	

9.2. Other information**SECTION 10: STABILITY AND REACTIVITY****10.1. Reactivity**

Reaction with: Oxidising materials. Water.

10.2. Chemical stability

Stable under normal temperature conditions.

10.3. Possibility of hazardous reactions

Not determined.

10.4. Conditions to avoid

Avoid excessive heat for prolonged periods of time.

10.5. Incompatible materials

Materials To Avoid

Avoid contact with oxidising agents. Water effects hydrolysis of product.

10.6. Hazardous decomposition products

Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

SECTION 11: TOXICOLOGICAL INFORMATION**11.1. Information on toxicological effects****Acute toxicity:**

Acute Toxicity (Oral LD₅₀)

2071 mg/kg Rat

Acute Toxicity (Dermal LD₅₀)

> 2000 mg/kg Rat

Acute Toxicity (Inhalation LC₅₀)

Not applicable.

Not relevant, due to the form of the product.

Skin Corrosion/Irritation:

Dose

1.91 mL/kg 24 hr Rat

Corrosive

Serious eye damage/irritation:

Skin corrosive; corrosivity to eyes is assumed. No testing is needed.

Respiratory or skin sensitisation:

Respiratory sensitisation

Not determined.

Skin sensitisation

Guinea pig maximization test (GPMT): Guinea Pig

Sensitising. Similar products

Germ cell mutagenicity:

Genotoxicity - In Vivo

Chromosome aberration:

Suspected of causing genetic defects.

Positive.

Carcinogenicity:

Carcinogenicity

NOAEL 133 ppm Oral Rat

NOAEL 152 ppm Oral Mouse

This substance has no evidence of carcinogenic properties.

Similar products

Reproductive Toxicity:

Reproductive Toxicity - Fertility

One-generation study: NOAEL 0.3 mg/kg Oral

Known reproductive toxicant based on animal evidence.

Reproductive Toxicity - Development

Teratogenicity: NOAEL 5 mg/kg

Known reproductive toxicant based on animal evidence.

Specific target organ toxicity - single exposure:

STOT - Single exposure

No information available.

Specific target organ toxicity - repeated exposure:

STOT - Repeated exposure

NOAEL 0.3 mg/kg Oral

Target Organs

Glands

Aspiration hazard:

Viscosity

Kinematic viscosity > 20.5 mm²/s.

General information

Butyltin compounds hydrolyses (in the stomach) - to Butyltin Chlorides.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity

Butyltin compounds - In the aqueous environment the product is converted substantially into Butyltin Chlorides and Butyltin oxide(s) (R50/53 Classification). Dangerous for the environment: May cause long-term adverse effects in the aquatic environment.

12.1. Toxicity

Acute Toxicity - Fish

LC50 3.1 mg/l

Acute Toxicity - Aquatic Invertebrates
 EC50 48 hours < 0.463 mg/l Daphnia magna
 Acute Toxicity - Aquatic Plants
 EC50 72 hours > 1 mg/l

12.2. Persistence and degradability

Degradability

The product is not readily biodegradable.

Phototransformation

Not available.

Biodegradation

Degradation (%)

No biodegradation observed under test conditions.

12.3. Bioaccumulative potential

Bioaccumulative potential

Bioaccumulation is unlikely to be significant because of the low water solubility of this product.

Partition coefficient log_Kow 4.44

12.4. Mobility in soil

Mobility:

The product has poor water-solubility.

12.5. Results of PBT and vPvB assessment

Not Classified as PBT/vPvB by current EU criteria.

12.6. Other adverse effects

SECTION 13: DISPOSAL CONSIDERATIONS

General information

Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority.
 Number. EWC 070214.

13.1. Waste treatment methods

Incinerate with provision for removal of effluent gases by scrubber. Sewage and waste water must be processed via a sewage treatment plant prior to release to the environment. Releases to waste water must not exceed 0.0001%

SECTION 14: TRANSPORT INFORMATION

14.1. UN number

UN No. (ADR/RID/ADN)	UN1760
UN No. (IMDG)	1760
UN No. (ICAO)	1760

14.2. UN proper shipping name

Proper Shipping Name	CORROSIVE LIQUID, N.O.S. (contains dibutyltin dilaurate)
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14.3. Transport hazard class(es)

ADR/RID/ADN Class	Class 8: Corrosive substances.
IMDG Class	8
ICAO Class/Division	8
Transport Labels	



14.4. Packing group

ADR/RID/ADN Packing group	III
IMDG Packing group	III
ICAO Packing group	III

14.5. Environmental hazards

Environmentally Hazardous Substance/Marine Pollutant

**14.6. Special precautions for user**

Tunnel Restriction Code (E)

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

SECTION 15: REGULATORY INFORMATION

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

Statutory Instruments

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (S.I 2009 No. 716).

Approved Code Of Practice

Classification and Labelling of Substances and Preparations Dangerous for Supply. Safety Data Sheets for Substances and Preparations.

Guidance Notes

Workplace Exposure Limits EH40. CHIP for everyone HSG(108).

EU Legislation

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

National Regulations

Korea: Occupational safety and health act:

TIN AND ITS COMPOUNDS: Preparations containing more than 1% by weight

Hazardous material management regulation:

Not applicable

Dangerous goods management regulation:

ORGANIC METAL COMPOUNDS (EXCEPT ALKYL ALUMINUM AND ALKYL LITHIUM). Threshold quantity: 50 kg

PRODUCTS WHICH CONTAIN AT LEAST ONE CLASS 3 SUBSTANCE. Class: 3

Waste management regulation:

Not applicable

Other regulations in Korea:

Ministerial decree of the Clean Air conservation act: TIN AND ITS COMPOUNDS

Toxic Release Inventory: DIBUTYLTIN DILAURATE: Reporting threshold of 10 tons per year

Water hazard classification

WGK 3

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

Revision Comments

Changes were made in section:- 1, 7, 8, 9,

Issued By S P Malcomson

SDS No. 2.4E

Safety Data Sheet Status Approved.

Date 20/12/13

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Risk Phrases In Full

R34	Causes burns.
R61	May cause harm to the unborn child.
R43	May cause sensitisation by skin contact.
R60	May impair fertility.
R68	Possible risk of irreversible effects.
R48/25	Toxic: danger of serious damage to health by prolonged exposure if swallowed.
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Hazard Statements In Full

H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H341	Suspected of causing genetic defects.
H360FD	May damage fertility or the unborn child.
H370	Causes damage to organs <<Organs>>.
H372	Causes damage to organs <<Organs>> through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Disclaimer

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

Exposure Scenario Annex to the SDS of Tinstab BL277

Date 31/12/2013

Issue Number 01

Index of registered uses and annex content

ES1 Manufacture of Substance

Proc's 1,4,8b,9 ERC1 SU8,9 (Exposure Scenarios not included in this annex)

ES2 Formulation of Preparations

PROC 1,2,3,4,5,8b,9 ERC2 SU3,10

ES3 Industrial use of products containing BL277 as a catalyst/process regulator

PROC1,2,3,4,5,8a,8b,9,10,13 ERC3,4,5,6b,6d SU3

ES4 Use of BL277 as an additive to prevent reaction of polymer with reactive diluent

PROC4 ERC6d SU3

ES5 Manufacture of enamel

PROC1,3,5,8a,9 ERC2 SU9 (Exposure Scenarios not included in this annex)

ES6 Electrical wire enamelling and coating

PROC1,2,3,5,7,8a,10,13 ERC4,5 (Exposure Scenarios not included in this annex)

ES7 Professional use of products containing BL277 as a catalyst/process regulator

PROC4,5,8a,8b,10,11,19 ERC8a,8c,8d,8f PC1,9a,9b,0 SU19

ES8 Consumer use of BL277 as a catalyst/process regulator

PC1 SU21 AC5,6 ERC8a,8c,8d,8f,10a,11a

Exposure scenario

ES2 Formulation of preparations

Identification

Product name	Tinstab BL277
CAS number	77-58-7
EC number	201-039-8
Version number	01
Supplier	Akcros Chemicals Ltd

1. Title of exposure scenario

Main title	ES2 Formulation of preparations
Process scope	SU10 Formulation [mixing] of preparations and/or re-packaging Market Sector -Chemical Products PC1 Adhesives, sealants. PC9a Coatings and paints, thinners, paint removers. PC26 Paper and board dye, finishing and impregnation products, including bleaches and other processing aids. PC32 Polymer preparations and compounds. PC34 Textile dyes, finishing and impregnating products, including bleaches and other processing aids.
Main sector	SU3 Industrial uses
Sector of use	SU10 Formulation [mixing] of preparations and/or re-packaging
<u>Environment</u>	
Environmental release category	ERC2 Formulation of preparations.
<u>Worker</u>	
Process category	PROC1 Use in closed process, no likelihood of exposure. PROC2 Use in closed, continuous process with occasional controlled exposure. PROC3 Use in closed batch process (synthesis or formulation). PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Environmental release category	ERC2 Formulation of preparations.
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Product characteristics

Physical state	Liquid
Vapour pressure	0.0000077 Pa @ 25°C
Concentration details	Concentration of substance in product: 1-5% Substance is a unique structure. Not biodegradable.

Amounts used

Annual amount per site: 3.65 tonnes
Limit release rate to waste water to <0.00365 kg/day.

Frequency and duration of use

Continuous use/release.
Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.001% (Estimated) Ensure all waste water is collected and treated via a WWTP. Contain and dispose of waste according to local regulations.
Emission factor - soil	Not applicable - no direct release to soil.

ES2 Formulation of preparations

Marine water All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10 (Default)
Local marine water dilution factor: 100 (Default)

Risk management measures

Good practice See Chapter 8 of the Safety Data Sheet (Environmental exposure controls). Prevent environmental discharge consistent with regulatory requirements. Prevent leaks and prevent soil/water pollution caused by leaks.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Air emission controls are not applicable as there is no direct release to air. Vapour pressure < 0.01 Pa at STP.

Water If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 0.001%. Limit release rate to waste water to <0.00365 kg/day.

Soil Do not apply industrial sludge to natural soils. Prevent leaks and prevent soil/water pollution caused by leaks.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Waste treatment Incineration

Disposal method Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Control of workers exposure

Process category PROC1 Use in closed process, no likelihood of exposure.
PROC2 Use in closed, continuous process with occasional controlled exposure.
PROC3 Use in closed batch process (synthesis or formulation).
PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).
PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.01 Pa at STP.

Concentration details Concentration of substance in product: 1-5%

Dynamic viscosity ca 50 m Pa·s @ 20°C

Frequency and duration of use

Covers daily exposure up to 1hour

Other given operational conditions affecting workers exposure

Setting Indoor use.

Temperature Assumes activities are at room temperature.

Room size Covers use in room size of >1000 m³.

Ventilation rate Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

ES2 Formulation of preparations

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures

Avoid carrying out activities involving exposure for more than 1 hour. Ensure operatives are trained to minimise exposures. Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Use eye protection to EN 166, designed to protect against liquid splashes.

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

Wear suitable gloves (tested to EN374), coverall and eye protection.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Efficiency of at least 90%.

Gloves should have a breakthrough time of >480 minutes.

Additional advice

Covers use in room size of >1000 m³. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

3. Exposure estimation (Environment 1)

Environmental release category

ERC2 Formulation of preparations.

Sector of use

SU10 Formulation [mixing] of preparations and/or re-packaging
SU3 Industrial uses

Assessment method

EUSES v2.1 Further information can be found at: <http://tcsweb3.jrc.it/euses/>

Environmental exposure

ERC2 Formulation of preparations.

Fresh water: Exposure 0.00014 mg/l, PNEC 0.000463 mg/l, RCR 0.25

Marine water: Exposure 0.00014 mg/l, PNEC 0.000463 mg/l, RCR 0.25

Freshwater sediment: Exposure 0.0124 mg/kg, PNEC 0.05 mg/kg, RCR 0.25

Marine sediment: Exposure 0.00124 mg/kg, PNEC 0.005 mg/kg, RCR 0.25

STP: Exposure 0.00115 mg/l, PNEC 100 mg/l, RCR <0.01

4. Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. ECHA guidance for downstream users

3. Exposure estimation (Health 1)

Sector of use

SU3 Industrial uses
SU10 Formulation [mixing] of preparations and/or re-packaging

Assessment method

Used ECETOC TRA model. <http://www.ecetoc.org/tra> <http://www.advancedreachtool.com> Used Stoffenmanager model. <https://www.stoffenmanager.nl/default.aspx> Worker - inhalation
Calculated as Maximum Risk Characterisation Ratios for air emissions Without local exhaust ventilation
Worker - inhalation, long-term - systemic:
Exposure Calculated <0.002 mg/m³, DNEL 0.01 mg/m³, RCR <0.2 Spraying Not applicable.

Assessment descriptor

ECETOC TRA v2.0 Worker Concentration of substance in product: Not applicable. Worker - dermal, long-term - systemic Concentration of substance in product: 100% (Default)

Specific conditions

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Exposure

ES2 Formulation of preparations

PROC1 Use in closed process, no likelihood of exposure.

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.017

PROC2 Use in closed, continuous process with occasional controlled exposure.

Worker - dermal, long-term - systemic: Exposure 0.0137 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.0685

PROC3 Use in closed batch process (synthesis or formulation).

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.017

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.

PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.343

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).

Worker - dermal, long-term - systemic: Exposure 0.0069 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.0345

4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. ECHA guidance for downstream users

Exposure scenario

ES3 Industrial use of products containing BL277 as a catalyst/process regulator

Identification

Product name	Tinstab BL277
CAS number	77-58-7
EC number	201-039-8
Version number	01
Supplier	Akcros Chemicals Ltd

1. Title of exposure scenario

Main title	ES3 Industrial use of products containing BL277 as a catalyst/process regulator
Process scope	SU10 Formulation [mixing] of preparations and/or re-packaging Market Sector -Chemical Products PC1 Adhesives, sealants. PC9a Coatings and paints, thinners, paint removers. PC14 Metal surface treatment products, including galvanic and electroplating products. PC15 Non-metal-surface treatment products. PC19 Intermediate. PC26 Paper and board dye, finishing and impregnation products, including bleaches and other processing aids. PC31 Polishes and wax blends. PC32 Polymer preparations and compounds. PC34 Textile dyes, finishing and impregnating products, including bleaches and other processing aids. PC35 Washing and cleaning products (including solvent-based products). PC0 Other products.
Main sector	SU3 Industrial uses
Sector of use	SU5 Manufacture of textiles, leather, fur SU6a Manufacture of wood and wood products SU6b Manufacture of pulp, paper and paper products SU9 Manufacture of fine chemicals SU10 Formulation [mixing] of preparations and/or re-packaging SU11 Manufacture of rubber products SU12 Manufacture of plastics products, including compounding and conversion SU15 Manufacture of fabricated metal products, except machinery and equipment SU16 Manufacture of computer, electronic and optical products, electrical equipment SU17 General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU18 Manufacture of furniture SU19 Building and construction work
<u>Environment</u>	
Environmental release category	ERC3 Formulation in materials. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC5 Industrial use resulting in inclusion into or onto a matrix. ERC6b Industrial use of reactive processing aids. ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers.
<u>Worker</u>	
Process category	PROC1 Use in closed process, no likelihood of exposure. PROC2 Use in closed, continuous process with occasional controlled exposure. PROC3 Use in closed batch process (synthesis or formulation). PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC10 Roller application or brushing of adhesive and other coating. PROC13 Treatment of articles by dipping and pouring. PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

ES3 Industrial use of products containing BL277 as a catalyst/process regulator

Environmental release category	ERC3 Formulation in materials. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC5 Industrial use resulting in inclusion into or onto a matrix. ERC6b Industrial use of reactive processing aids. ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers.
<u>Product characteristics</u>	
Physical state	Liquid
Vapour pressure	0.0000077 Pa @ 25°C
Concentration details	Covers percentage substance in the product up to 1%. Concentration of substance in product: (Proc8a) 1-5% Substance is a unique structure. Not biodegradable.
<u>Amounts used</u>	
	Annual amount per site: 600-850 tonnes Annual amount per site: ERC6b <1 kg/day Limit release rate to waste water to <0.00365 kg/day.
<u>Frequency and duration of use</u>	
	Continuous use/release. Emission days: 365 days/year
<u>Other given operational conditions affecting environmental exposure</u>	
Emission factor - air	Emission factor to air: 0
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.001% (Estimated) Ensure all waste water is collected and treated via a WWTP. Contain and dispose of waste according to local regulations.
Emission factor - soil	Not applicable - no direct release to soil. Marine water All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.
<u>Environmental factors not influenced by risk management measures</u>	
Dilution	Local freshwater dilution factor: 10 (Default) Local marine water dilution factor: 100 (Default)
<u>Risk management measures</u>	
Good practice	See Chapter 8 of the Safety Data Sheet (Environmental exposure controls). Prevent environmental discharge consistent with regulatory requirements. Prevent leaks and prevent soil/water pollution caused by leaks.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m ³ /day
<u>Technical onsite conditions and measures to reduce or limit discharges to air, water and soil</u>	
Air	Air emission controls are not applicable as there is no direct release to air. Vapour pressure < 0.01 Pa at STP.
Water	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 0.001%. Limit release rate to waste water to <0.00365 kg/day.
Soil	Do not apply industrial sludge to natural soils. Prevent leaks and prevent soil/water pollution caused by leaks.
<u>Conditions and measures related to external treatment of waste for disposal</u>	
Sludge treatment	Municipal waste assumed to be used as fertiliser. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Waste treatment	Incineration
Disposal method	Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Control of workers exposure

ES3 Industrial use of products containing BL277 as a catalyst/process regulator

Process category	PROC1 Use in closed process, no likelihood of exposure. PROC2 Use in closed, continuous process with occasional controlled exposure. PROC3 Use in closed batch process (synthesis or formulation). PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing). PROC10 Roller application or brushing of adhesive and other coating. PROC13 Treatment of articles by dipping and pouring. PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation.
<u>Product characteristics</u>	
Physical state	Liquid
Vapour pressure	Vapour pressure < 0.01 Pa at STP.
Concentration details	Covers concentrations up to 1%. Concentration of substance in product: Proc8a 1-5%
Dynamic viscosity	ca 50 m Pa·s @ 20°C
<u>Frequency and duration of use</u>	Covers daily exposures up to 8 hours (unless stated differently).
<u>Other given operational conditions affecting workers exposure</u>	
Setting	Indoor use.
Temperature	Assumes activities are at room temperature.
Room size	Covers use in room size of >1000 m³.
Ventilation rate	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
<u>Technical conditions and measures at process level (source) to prevent release</u>	
Technical protective measures	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
<u>Organisational measures to prevent/limit releases, dispersion and exposure</u>	
Organisational measures	Avoid carrying out activities involving exposure for more than 8 hours. Ensure operatives are trained to minimise exposures. Assumes a good basic standard of occupational hygiene is implemented.
<u>Risk management measures</u>	Use eye protection to EN 166, designed to protect against liquid splashes. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. Wear suitable gloves (tested to EN374), coverall and eye protection. Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training. Efficiency of at least 90%. Gloves should have a breakthrough time of >480 minutes.
Additional advice	Covers use in room size of >1000 m³. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Provide extract ventilation to points where emissions occur. Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

3. Exposure estimation (Environment 2)

ES3 Industrial use of products containing BL277 as a catalyst/process regulator

Environmental release category	ERC3 Formulation in materials. ERC4 Industrial use of processing aids in processes and products, not becoming part of articles. ERC5 Industrial use resulting in inclusion into or onto a matrix. ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers.
Assessment method	EUSES v2.1
Environmental release	Water: 0.001 % Air: 0 Not applicable. Soil: 0 Not applicable - no direct release to soil.
Environmental exposure	Fresh water: Exposure 0.000145 mg/l, PNEC 0.000463 mg/l, RCR 0.31 Freshwater sediment: Exposure 0.0158 mg/kg, PNEC 0.05 mg/kg, RCR 0.31 Marine water: Exposure 0.000145 mg/l, PNEC 0.000463 mg/l, RCR 0.32 Marine sediment: Exposure 0.00158 mg/kg, PNEC 0.005 mg/kg, RCR 0.32 Effluent: Exposure 0.626 mg/l, PNEC 39.06 mg/l, RCR 0.016 Agriculture soil: Exposure 0.0313 mg/kg, PNEC 0.0407 mg/kg, RCR 0.77

3. Exposure estimation (Environment 3)

Environmental release category	ERC6b Industrial use of reactive processing aids.
Sector of use	SU3 Industrial uses
Assessment method	EUSES v2.1
Environmental release	Water: 0.001 % Air: 0 Not applicable. Soil: 0 Not applicable - no direct release to soil.
Environmental exposure	Fresh water: Exposure 0.0000000624 mg/l, PNEC 0.000463 mg/l, RCR <0.01 Freshwater sediment, Marine water, Marine sediment, Effluent, Agriculture soil: Exposure , PNEC , RCR <0.01

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. ECHA guidance for downstream users

3. Exposure estimation (Health 1)

Sector of use	SU3 Industrial uses SU10 Formulation [mixing] of preparations and/or re-packaging
Assessment method	Used ECETOC TRA model. http://www.ecetoc.org/tra http://www.advancedreachtool.com Used Stoffenmanager model. https://www.stoffenmanager.nl/default.aspx Worker - inhalation Calculated as Maximum Risk Characterisation Ratios for air emissions Worker - inhalation, long-term - systemic Worker - inhalation, long-term - systemic: Exposure Calculated <0.002 mg/m³, DNEL 0.01 mg/m³, RCR <0.2 Without local exhaust ventilation Spraying Not applicable.
Assessment descriptor	ECETOC TRA v2.0 Worker Concentration of substance in product: Not applicable. Worker - dermal, long-term - systemic Concentration of substance in product: 100%, (Default)
Specific conditions	Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Exposure	

ES3 Industrial use of products containing BL277 as a catalyst/process regulator

PROC1 Use in closed process, no likelihood of exposure.

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.02 mg/kg/day, RCR 0.017

PROC2 Use in closed, continuous process with occasional controlled exposure.

Worker - dermal, long-term - systemic: Exposure 0.0137 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.0685

PROC3 Use in closed batch process (synthesis or formulation).

Worker - dermal, long-term - systemic: Exposure 0.0034 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.017

PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.

PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.

PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing).

PROC13 Treatment of articles by dipping and pouring.

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.343

PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).

Worker - dermal, long-term - systemic: Exposure 0.0069 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.0345

PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.

Worker - dermal, long-term - systemic: Exposure 0.0137 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.069

PROC10 Roller application or brushing of adhesive and other coating.

Worker - dermal, long-term - systemic: Exposure 0.1371 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.686

PROC13 Treatment of articles by dipping and pouring.

Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.343

PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation.

Worker - dermal, long-term - systemic: Exposure 0.0343 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.172

4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. ECHA guidance for downstream users

Exposure scenario

ES4 Use of BL277 as an additive to prevent reaction of polymer with reactive diluent

Identification

Product name	Tinstab BL277
CAS number	77-58-7
EC number	201-039-8
Version number	01
Supplier	Akcros Chemicals Ltd

1. Title of exposure scenario

Main title	ES4 Use of BL277 as an additive to prevent reaction of polymer with reactive diluent
Process scope	Market Sector -Chemical Products PC32 Polymer preparations and compounds.
Main sector	SU3 Industrial uses
<u>Environment</u>	
Environmental release category	ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers.
<u>Worker</u>	
Process category	PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Environmental release category	ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers.
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Product characteristics

Physical state	Liquid
Vapour pressure	0.0000077 Pa @ 25°C
Concentration details	Concentration of substance in product: 1-5% Substance is a unique structure. Not biodegradable.

Amounts used

Annual amount per site: 600-850 tonnes
Limit release rate to waste water to <0.00365 kg/day.

Frequency and duration of use

Continuous use/release.
Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0
Emission factor - water	Release fraction to wastewater from process (initial release prior to RMM): 0.001% (Estimated) Ensure all waste water is collected and treated via a WWTP. Contain and dispose of waste according to local regulations.
Emission factor - soil	Not applicable - no direct release to soil. Marine water All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Environmental factors not influenced by risk management measures

Dilution	Local freshwater dilution factor: 10 (Default) Local marine water dilution factor: 100 (Default)
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Risk management measures

Good practice	See Chapter 8 of the Safety Data Sheet (Environmental exposure controls). Prevent environmental discharge consistent with regulatory requirements. Prevent leaks and prevent soil/water pollution caused by leaks.
STP type	Municipal STP.
STP details	Assumed domestic sewage treatment plant flow: 2000 m³/day

ES4 Use of BL277 as an additive to prevent reaction of polymer with reactive diluent

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air	Air emission controls are not applicable as there is no direct release to air. Vapour pressure < 0.01 Pa at STP.
Water	If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 0.001%. Limit release rate to waste water to <0.00365 kg/day.
Soil	Do not apply industrial sludge to natural soils. Prevent leaks and prevent soil/water pollution caused by leaks.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment	Municipal waste assumed to be used as fertiliser. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.
Waste treatment	Incineration
Disposal method	Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Control of workers exposure

Process category	PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.
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Product characteristics

Physical state	Liquid
Vapour pressure	Vapour pressure < 0.01 Pa at STP.
Concentration details	Concentration of substance in product: 1-5%
Dynamic viscosity	ca 50 m Pa·s @ 20°C

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting	Indoor use.
Temperature	Assumes activities are at room temperature.
Room size	Covers use in room size of >1000 m³.
Ventilation rate	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).

Technical conditions and measures at process level (source) to prevent release

Technical protective measures	Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.
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Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures	Ensure operatives are trained to minimise exposures. Assumes a good basic standard of occupational hygiene is implemented. Avoid carrying out activities involving exposure for more than 8hour/day.
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Risk management measures

Use eye protection to EN 166, designed to protect against liquid splashes.

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

Wear suitable gloves (tested to EN374), coverall and eye protection.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.

Efficiency of at least 90%.

Gloves should have a breakthrough time of >480 minutes.

Additional advice	Covers use in room size of >1000 m³. Provide a good standard of controlled ventilation (10 to 15 air changes per hour). Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.
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ES4 Use of BL277 as an additive to prevent reaction of polymer with reactive diluent

3. Exposure estimation (Environment 1)

Environmental release category	ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers.
Assessment method	EUSES v2.1 Further information can be found at: http://tcsweb3.jrc.it/euses/
Environmental exposure	ERC6d Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers. Fresh water: Exposure 0.000156 mg/l, PNEC 0.000463 mg/l, RCR 0.34 Marine water: Exposure 0.0000156 mg/l, PNEC 0.0000463 mg/l, RCR 0.34 Freshwater sediment: Exposure 0.017 mg/kg, PNEC 0.05 mg/kg, RCR 0.34 Marine sediment: Exposure 0.0017 mg/kg, PNEC 0.005 mg/kg, RCR 0.34 STP: Exposure 0.00157 mg/l, PNEC 100 mg/l, RCR <0.01

4. Guidance to check compliance with the exposure scenario

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. ECHA guidance for downstream users

3. Exposure estimation (Health 1)

Sector of use	SU3 Industrial uses
Assessment method	Used ECETOC TRA model. http://www.ecetoc.org/tra http://www.advancedreachtool.com Used Stoffenmanager model. https://www.stoffenmanager.nl/default.aspx Worker - inhalation Calculated as Maximum Risk Characterisation Ratios for air emissions Worker - inhalation, long-term - systemic: Exposure Calculated <0.002 mg/m ³ , DNEL 0.01 mg/m ³ , RCR <0.2 Without local exhaust ventilation Spraying Not applicable.
Assessment descriptor	ECETOC TRA v2.0 Worker Concentration of substance in product: Not applicable. Worker - dermal, long-term - systemic Concentration of substance in product: 100% (Default)
Specific conditions	Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Exposure	PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Worker - dermal, long-term - systemic: Exposure 0.0686 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.343

4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. ECHA guidance for downstream users

Exposure scenario

ES7 Professional use of products containing BL277 as a catalyst/process regulator

Identification

Product name	Tinstab BL277
CAS number	77-58-7
EC number	201-039-8
Version number	01
Supplier	Akcros Chemicals Ltd

1. Title of exposure scenario

Main title	ES7 Professional use of products containing BL277 as a catalyst/process regulator
Process scope	PC1 Adhesives, sealants. PC9a Coatings and paints, thinners, paint removers. PC9b Fillers, putties, plasters, modelling clay. PC0 Other products.
Article category	AC5 Fabrics, textiles and apparel
Main sector	SU22 Professional uses
Sector of use	SU19 Building and construction work
<u>Environment</u>	
Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8d Wide dispersive outdoor use of processing aids in open systems. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix.
<u>Worker</u>	
Process category	PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. PROC10 Roller application or brushing of adhesive and other coating. PROC11 Spraying outside industrial settings and/or applications. PROC19 Hand-mixing with intimate contact and only PPE available.

2. Conditions of use affecting exposure (Industrial - Environment 1)

Control of environmental exposure

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8d Wide dispersive outdoor use of processing aids in open systems. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix.
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Product characteristics

Physical state	Liquid
Vapour pressure	0.0000077 Pa @ 25°C
Concentration details	Concentration of substance in product: <0.5% Substance is a unique structure. Not biodegradable.

Amounts used

Annual amount per site: ERC8c/8f <1 kg/day
Annual amount per site: ERC8a/8d 600-850 tonnes
Limit release rate to waste water to <0.00365 kg/day.

Frequency and duration of use

Continuous use/release.
Emission days: 365 days/year

Other given operational conditions affecting environmental exposure

Emission factor - air	Emission factor to air: 0
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ES7 Professional use of products containing BL277 as a catalyst/process regulator

Emission factor - water Release fraction to wastewater from process (initial release prior to RMM): 0.2% (Estimated)
Ensure all waste water is collected and treated via a WWTP.
Contain and dispose of waste according to local regulations.

Emission factor - soil Not applicable - no direct release to soil.

Marine water All contaminated waste water must be processed in an industrial or municipal wastewater treatment plant that incorporates both primary and secondary treatments.

Environmental factors not influenced by risk management measures

Dilution Local freshwater dilution factor: 10 (Default)
Local marine water dilution factor: 100 (Default)

Risk management measures

Good practice See Chapter 8 of the Safety Data Sheet (Environmental exposure controls). Prevent environmental discharge consistent with regulatory requirements. Prevent leaks and prevent soil/water pollution caused by leaks.

STP type Municipal STP.

STP details Assumed domestic sewage treatment plant flow: 2000 m³/day

Technical onsite conditions and measures to reduce or limit discharges to air, water and soil

Air Air emission controls are not applicable as there is no direct release to air. Vapour pressure < 0.01 Pa at STP.

Water If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of 0.001%. Limit release rate to waste water to <0.00365 kg/day.

Soil Do not apply industrial sludge to natural soils. Prevent leaks and prevent soil/water pollution caused by leaks.

Conditions and measures related to external treatment of waste for disposal

Sludge treatment Municipal waste assumed to be used as fertiliser. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Waste treatment Incineration

Disposal method Contain and dispose of waste according to local regulations.

2. Conditions of use affecting exposure (Workers - Health 1)

Control of workers exposure

Process category PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises.
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact).
PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities.
PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities.
PROC10 Roller application or brushing of adhesive and other coating.
PROC11 Spraying outside industrial settings and/or applications.
PROC19 Hand-mixing with intimate contact and only PPE available.

Product characteristics

Physical state Liquid

Vapour pressure Vapour pressure < 0.01 Pa at STP.

Concentration details Covers concentrations up to 0.5%.

Dynamic viscosity ca 50 m Pa·s @ 20°C

Frequency and duration of use

Covers daily exposures up to 8 hours (unless stated differently).

Other given operational conditions affecting workers exposure

Setting Indoor use.

Temperature Assumes activities are at room temperature.

Room size Covers use in room size of >300 m³.

Ventilation rate Provide enhanced general ventilation by mechanical means.

Technical conditions and measures at process level (source) to prevent release

ES7 Professional use of products containing BL277 as a catalyst/process regulator

Technical protective measures Control any potential exposure using measures such as contained or enclosed systems, properly designed and maintained facilities and a good standard of general ventilation. Drain down systems and clear transfer lines prior to breaking containment. Drain down and flush equipment where possible prior to maintenance. Where there is potential for exposure: Ensure relevant staff are informed of the nature of exposure and aware of basic actions to minimise exposures; Ensure suitable personal protective equipment is available; Clear up spills and dispose of waste in accordance with regulatory requirements; monitor effectiveness of control measures; consider the need for health surveillance; identify and implement corrective actions.

Organisational measures to prevent/limit releases, dispersion and exposure

Organisational measures Avoid carrying out activities involving exposure for more than 8 hours. Ensure operatives are trained to minimise exposures. Assumes a good basic standard of occupational hygiene is implemented.

Risk management measures

Use eye protection to EN 166, designed to protect against liquid splashes.

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop.

Wear suitable gloves (tested to EN374), coverall and eye protection.

Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training. Efficiency of at least 90%.

Gloves should have a breakthrough time of >480 minutes.

Additional advice Covers use in room size of >300 m³. Provide enhanced general ventilation by mechanical means.

PROC11 Spraying outside industrial settings and/or applications. Ensure that spray direction is only horizontal or downward. Surface spraying with no or low compressed air use. Very low application rate (< 0.03 l/minute) Avoid using in room size less than 300 m³. Provide enhanced general ventilation by mechanical means.

3. Exposure estimation (Environment 2)

Environmental release category ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix.
ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix.

Sector of use SU22 Professional uses

Assessment method EUSES v2.1

Environmental release

Air: 0 Not applicable.

Soil: 0 Not applicable - no direct release to soil.

Environmental exposure

Fresh water: Exposure 0.000000288 mg/l, PNEC 0.000463 mg/l, RCR <0.01

Freshwater sediment: Exposure 0.0000313 mg/kg, PNEC 0.05 mg/kg, RCR <0.01

Marine water: Exposure 0.000000435 mg/l, PNEC 0.0000463 mg/l, RCR <0.01

Marine sediment: Exposure 0.00000474 mg/kg, PNEC 0.005 mg/kg, RCR <0.01

Effluent: Exposure 0.00000251 mg/l, PNEC 100 mg/l, RCR 0<0.01

3. Exposure estimation (Environment 3)

Environmental release category ERC8a Wide dispersive indoor use of processing aids in open systems.
ERC8d Wide dispersive outdoor use of processing aids in open systems.

Sector of use SU22 Professional uses

Assessment method EUSES v2.1

Environmental release

Air: 0 Not applicable.

Soil: 0 Not applicable - no direct release to soil.

Environmental exposure

ES7 Professional use of products containing BL277 as a catalyst/process regulator

Fresh water: Exposure 0.00012 mg/l, PNEC 0.000463 mg/l, RCR 0.26

Freshwater sediment: Exposure 0.0131 mg/kg, PNEC 0.05 mg/kg, RCR 0.26

Marine water: Exposure 0.000012 mg/l, PNEC 0.0000463 mg/l, RCR 0.26

Marine sediment: Exposure 0.00131 mg/kg, PNEC 0.005 mg/kg, RCR 0.26

STP: Exposure 0.00116 mg/l, PNEC 100 mg/l, RCR <0.01

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. ECHA guidance for downstream users

3. Exposure estimation (Health 1)

Sector of use	SU22 Professional uses
Assessment method	Used ECETOC TRA model. http://www.ecetoc.org/tra http://www.advancedreachtool.com Used Stoffenmanager model. https://www.stoffenmanager.nl/default.aspx Worker - inhalation Calculated as Maximum Risk Characterisation Ratios for air emissions Worker - inhalation, long-term - systemic Worker - inhalation, long-term - systemic: Exposure Calculated <0.002 mg/m ³ , DNEL 0.01 mg/m ³ , RCR <0.2 Without local exhaust ventilation Spraying Not applicable.
Assessment descriptor	ECETOC TRA v2.0 Worker Concentration of substance in product: Not applicable. Worker - dermal, long-term - systemic Concentration of substance in product: 100%, (Default)
Specific conditions	Wear chemically-resistant gloves (tested to EN374) in combination with specific activity training.
Exposure	PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises. Worker - dermal, long-term - systemic: Exposure 0.00345 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.17 PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact). Worker - dermal, long-term - systemic: Exposure 0.0069 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.0345 PROC8a Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities. PROC8b Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Worker - dermal, long-term - systemic: Exposure 0.00688 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.0344 PROC10 Roller application or brushing of adhesive and other coating. Worker - dermal, long-term - systemic: Exposure 0.0137 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.686 PROC11 Spraying outside industrial settings and/or applications. Worker - dermal, long-term - systemic: Exposure 0.0536 mg/kg/day, DNEL 0.2 mg/kg/day, RCR 0.268 Worker - inhalation, long-term - systemic: Exposure 0.0033 mg/m³, DNEL 0.01 mg/m³, RCR 0.33

4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. ECHA guidance for downstream users

Exposure scenario

ES8 Consumer use of BL277 as a catalyst/process regulator

Identification

Product name	Tinstab BL277
CAS number	77-58-7
EC number	201-039-8
Version number	01
Supplier	Akcros Chemicals Ltd

1. Title of exposure scenario

Main title	ES8 Consumer use of BL277 as a catalyst/process regulator
Process scope	PC1 Adhesives, sealants.
Article category	AC5 Fabrics, textiles and apparel AC6 Leather articles
Main sector	SU21 Consumer uses
<u>Environment</u>	
Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8d Wide dispersive outdoor use of processing aids in open systems. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. ERC11a Wide dispersive indoor use of long-life articles and materials with low release.

2. Conditions of use affecting exposure (Non-industrial - Health 1)

Control of Non-industrial exposure

Article category	AC5 Fabrics, textiles and apparel AC6 Leather articles
<u>Product characteristics</u>	
Physical state	Liquid
Vapour pressure	Vapour pressure < 0.01 Pa at STP.
Concentration details	Concentration of substance in product: 0.01-0.1%

Amounts used

Annual amount per site: 600-850 tonnes

Other given operational conditions affecting Non-industrial exposure

Temperature	Assumes activities are at room temperature.
Ventilation rate	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure that enough fresh air is supplied to dilute and remove dusts, fumes or vapours. Between 5 and 15 air changes per hour are recommended, with a through draught.

3. Exposure estimation (Environment 1)

Environmental release category	ERC8a Wide dispersive indoor use of processing aids in open systems. ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix. ERC8d Wide dispersive outdoor use of processing aids in open systems. ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix. ERC10a Wide dispersive outdoor use of long-life articles and materials with low release. ERC11a Wide dispersive indoor use of long-life articles and materials with low release.
Sector of use	SU21 Consumer uses
Assessment method	EUSES v2.1
Environmental release	Air: 0 % Water: 0.2 % Soil: 0 %
Environmental exposure	

ES8 Consumer use of BL277 as a catalyst/process regulator

ERC8a Wide dispersive indoor use of processing aids in open systems.

ERC8c Wide dispersive indoor use resulting in inclusion into or onto a matrix.

ERC8d Wide dispersive outdoor use of processing aids in open systems.

ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix.

ERC10a Wide dispersive outdoor use of long-life articles and materials with low release.

Fresh water: Exposure 0.00012 mg/l, PNEC 0.000463 mg/l, RCR 0.26

Marine water: Exposure 0.000012 mg/kg, PNEC 0.0000463 mg/l, RCR 0.26

ERC11a Wide dispersive indoor use of long-life articles and materials with low release.

Fresh water: Exposure 0.0000294 mg/l, PNEC 0.000463 mg/l, RCR 0.06

Marine water: Exposure 0.0000046 mg/l, PNEC 0.0000463 mg/l, RCR 0.10

STP: Exposure ERC's 8a,8c,8d,8f,10a,& 11a , PNEC , RCR <0.01

Handling of product in negligible amounts Low environmental release Handling of product in small amounts or in situations where only low quantities of products are likely to be released Municipal STP.

4. Guidance to check compliance with the exposure scenario (Environment 3)

Predicted exposures are not expected to exceed the applicable exposure limits (given in Section 8 of the SDS) when the operational conditions/risk management measures given in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Guidance is based on assumed operating conditions which may not be applicable to all sites, thus, scaling may be necessary to define appropriate site-specific risk management measures. ECHA guidance for downstream users

3. Exposure estimation (Health 1)

Article category	PC1 Adhesives, sealants.
Sector of use	SU21 Consumer uses
Assessment method	Used ECETOC TRA model. ConsExpo v4.1
Exposure	PC1 Adhesives, sealants. Consumer - dermal, short-term - local and systemic: Exposure 0.025 mg/kg/day, DNEL 0.5 mg/kg/day, RCR 0.05 Consumer - inhalation, short-term - systemic: Exposure 0.000000268 mg/m³, DNEL 0.02 mg/m³, RCR 0.0000134

4. Guidance to check compliance with the exposure scenario (Health 1)

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. ECHA guidance for downstream users