

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

1.1. Product identifier

Product form	: Substance
Name	: Ketjenflex 12
Chemical name	: 2-Acetyltributylcitrate
EC-No.	: 201-067-0
CAS-No.	: 77-90-7

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 : Chemical intermediate

1.2.2. Uses advised against

Restrictions on use : No information available

1.3. Details of the supplier of the safety data sheet

Supplier

Axcentive SARL
 Chemin de Champouse
 13320 Bouc Bel Air - France
 T +33 442 694 090 - F +33 442 694 099
info@axcentive.com

Supplier

Axcentive Asia Pte Ltd
 13 Lorong 8 Toa Payoh
 #07-01 Braddell Tech Park
 319261 Singapore
 T +65 6258 6338 - F +65 6258 6901
info@axcentive.com

1.4. Emergency telephone number

Emergency number : GLOBAL INCIDENT RESPONSE HOTLINE (ACCESS CODE: 333881): Europe: +44-2035147487, North-America: 1.866.519.4752, South-America: 1.760.476.3961, Asia Pacific: +86-4001203572, Middle East/Africa: 1-760-476-3959, Australia: +61-280363166, New Zealand: +64 800 451719

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Not classified

Adverse physicochemical, human health and environmental effects

To our knowledge, this product does not present any particular risk, provided it is handled in accordance with good occupational hygiene and safety practice.

2.2. Label elements

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

No labelling applicable

2.3. Other hazards

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 substance is not 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

Other information : UFI: Not required, Nano material: Not required.

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Component	
2-Acetyltributylcitrate(77-90-7)	The substance is not 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

Name	Product identifier	Conc. (% w/w)	Classification according to Regulation (EC) No. 1272/2008 [CLP]
2-Acetyltributylcitrate	(CAS-No.) 77-90-7 (EC-No.) 201-067-0 (REACH-no) 01-2119457265-36	100	Not classified

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: No hazards which require special first aid measures.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Get medical attention if symptoms occur.
First-aid measures after skin contact	: Wash skin with plenty of water and soap. Remove contaminated clothing and shoes. Get medical attention immediately if symptoms occur.
First-aid measures after eye contact	: Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Get medical attention immediately if symptoms occur.
First-aid measures after ingestion	: Rinse mouth with water. Drink plenty of water. Get medical attention immediately if symptoms occur.

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

Symptoms/effects	: No acute and delayed symptoms and effects are observed.
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4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Foam. Dry powder. Water spray. Carbon dioxide.
Unsuitable extinguishing media	: None known.

5.2. Special hazards arising from the substance or mixture

Explosion hazard	: Vapours may form explosive mixture with air.
Hazardous decomposition products in case of fire	: Toxic fumes may be released. Carbon monoxide. Carbon dioxide.

5.3. Advice for firefighters

Protection during firefighting	: Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Refer to section 8.2. Remove contaminated clothing and shoes.
Emergency procedures : Evacuate unnecessary personnel. Do not breathe vapours. Avoid contact with skin, eyes and clothing. Wear personal protective equipment.

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.
Methods for cleaning up : Soak up with inert absorbent material (for example sand, sawdust, a universal binder, silica gel). Sweep or shovel spills into appropriate container for disposal.
Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

See sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Handle in accordance with good industrial hygiene and safety practice. Ensure good ventilation of the work station. Do not breathe vapours. Do not get in eyes, on skin, or on clothing. Wear personal protective equipment.
Hygiene measures : 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.
Incompatible materials : Strong bases. Strong oxidizing agents.

7.3. Specific end use(s)

No additional information.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 National occupational exposure and biological limit values

No additional information.

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8.1.2. Recommended monitoring procedures

Monitoring methods	
Monitoring methods	If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
Biological monitoring methods	Not established

8.1.3. Air contaminants formed

No additional information available

8.1.4. DNEL and PNEC

2-Acetyltributylcitrate (77-90-7)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	2 mg/kg bw/day
Long-term - systemic effects, inhalation	7.04 mg/m ³
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	1 mg/kg bw/day
Long-term - systemic effects, inhalation	1.74 mg/m ³
Long-term - systemic effects, dermal	1 mg/kg bw/day
PNEC (Water)	
PNEC aqua (freshwater)	0.022 mg/l
PNEC aqua (marine water)	0.002 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	41.5 mg/kg dwt
PNEC sediment (marine water)	4.15 mg/kg dwt
PNEC (Soil)	
PNEC soil	8.29 mg/kg dwt
PNEC (Oral)	
PNEC oral (secondary poisoning)	1050 mg/kg food
PNEC (STP)	
PNEC sewage treatment plant	100 mg/l

8.1.5. Control banding

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Appropriate engineering controls:

Ensure adequate ventilation, especially in confined areas.

8.2.2. Personal protection equipment

Personal protective equipment symbol(s):

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8.2.2.1. Eye and face protection

Eye protection:			
Type	Use	Characteristics	Standard
Safety glasses with side shields		clear	EN 166

8.2.2.2. Skin protection

Skin and body protection:					
Wear suitable protective clothing					
Type					Standard
Long sleeved protective clothing					EN ISO 13982
Hand protection:					
Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Protective gloves	Viton®, Neoprene rubber (HNBR)	5 (> 240 minutes)	0.4		EN 374
Protective gloves	Nitrile rubber (NBR)	5 (> 240 minutes)	0.35		EN 374
Protective gloves	Butyl rubber, Polyvinylchloride (PVC)	5 (> 240 minutes)	0.5		EN 374

8.2.2.3. Respiratory protection

Respiratory protection:			
In case of insufficient ventilation, wear suitable respiratory equipment			
Device	Filter type	Condition	Standard
Half-face mask	Type A - High-boiling (>65 °C) organic compounds	Vapours, Aerosols	EN 140, EN 14387
Full face mask	Type A - High-boiling (>65 °C) organic compounds	Vapours, Aerosols	EN 136, EN 14387

8.2.2.4. Thermal hazards

No additional information available

8.2.3. Other exposure controls

Environmental exposure controls:

Avoid release to the environment.

Other information:

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Colour	: Colourless

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Appearance	: Clear
Odour	: Almost odourless
Odour threshold	: Not available
Melting point	: -57 °C (@ 1013 hPa)
Boiling point	: 172 – 174 °C
Flammability	: Non flammable.
Explosive limits	: Not available
Flash point	: 204 °C
Auto-ignition temperature	: Not available
Decomposition temperature	: Not available
pH	: Not available
Viscosity, kinematic	: 40.4 mm ² /s (@ 20°C)
Viscosity, dynamic	: 42.7 mPa·s (@ 25°C)
Solubility	: Water: 4.49 mg/l Slightly soluble (@ 20°C)
Partition coefficient n-octanol/water (Log Pow)	: 4.29 (calculated) (@ 25°C)
Vapour pressure	: 0.07 hPa (@ 20°C)
Density	: 1053 kg/m ³ (@ 20°C)
Relative density	: 1.05
Relative vapour density at 20°C	: Not available
Particle size	: Not applicable
Particle size distribution	: Not applicable
Particle characteristics	: Not applicable

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Oxidising properties : Non oxidizing

9.2.2. Other safety characteristics

Vapour density : 14.1 (air = 1)

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

Vapours may form explosive mixture with air.

10.4. Conditions to avoid

Keep away from heat, sparks and flames.

10.5. Incompatible materials

Strong bases. Strong oxidizing agents.

10.6. Hazardous decomposition products

Toxic fumes may be released. Carbon monoxide. Carbon dioxide.

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

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2-Acetyltributylcitrate (77-90-7)	
LD50 oral rat	> 30 ml/kg
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Additional information	: Skin corrosion/irritation, In vivo, Rabbit : Not irritating Serious eye damage/irritation, In vivo, Rabbit : Slightly irritating
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not known to cause heritable genetic damage
Additional information	: Bacterial Reverse Mutation Assays, AMES test: Not mutagenic (OECD 471 method) Mammalian bone marrow chromosomal aberration test: Negative (OECD 475 method)
Carcinogenicity	: Contains no ingredient listed as a carcinogen
Reproductive toxicity	: Not known to cause birth defects or have a deleterious effect on a developing fetus. Not known to adversely affect reproductive functions and organs
Additional information	: NOAEL, oral, F1 : 100 mg/kg bw/d
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Additional information	: NOAEL: 100 mg/kg body weight/day
Aspiration hazard	: Not classified

Ketjenflex 12 (77-90-7)	
Viscosity, kinematic	40.4 mm ² /s (@ 20°C)

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Adverse health effects caused by endocrine disrupting properties : Contains no substances identified as having endocrine disrupting properties

11.2.2 Other information

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

2-Acetyltributylcitrate (77-90-7)	
LC50 fish 1	38 mg/l <i>Lepomis machrochirus</i> (freshwater)
LC50 fish 2	59 mg/l <i>Lepomis machrochirus</i> (marine water)
EC50 Daphnia 1	> 1.11 mg/l <i>Daphnia magna</i> (Water flea)
EC50 72h - Algae [1]	11.5 mg/l (freshwater)
LOEC (chronic)	> 1.11 mg/l Test organisms (species): <i>Daphnia magna</i> Duration: '21 d'
NOEC chronic fish	10 mg/l <i>Lepomis machrochirus</i>
NOEC chronic crustacea	> 1.11 mg/l (21d) <i>Daphnia magna</i>
NOEC chronic algae	4.65 mg/l (freshwater)

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12.2. Persistence and degradability

2-Acetyltributylcitrate (77-90-7)

Persistence and degradability	Not readily biodegradable.
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12.3. Bioaccumulative potential

Ketjenflex 12 (77-90-7)

BCF fish 1	31.57 l/kg (calculated)
Partition coefficient n-octanol/water (Log Pow)	4.29 (calculated) (@ 25°C)

2-Acetyltributylcitrate (77-90-7)

Bioaccumulative potential	Bioaccumulation unlikely.
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12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Ketjenflex 12 (77-90-7)

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 : Contains no substances identified as having endocrine disrupting properties

12.7. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
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				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated

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14.5. Environmental hazards

Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available				

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

Inland waterway transport

Not regulated

Rail transport

Not regulated

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

Not listed on REACH Annex XVII

Not listed on the REACH Candidate List

Not listed on REACH Annex XIV (Authorisation List)

Not listed on the PIC list (Regulation EU 649/2012)

Not listed on the POP list (Regulation EU 2019/1021)

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

SDS EU format according to COMMISSION REGULATION (EU) 2020/878. Full Layout. Exposure controls/personal protection. Occupational Exposure Limits. Endocrine disrupting properties. Toxicological information. Respiratory protection.

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
BCF	Bioconcentration factor
DNEL	Derived-No Effect Level
EC50	Median effective concentration
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration

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LD50	Median lethal dose
NOEC	No-Observed Effect Concentration
PBT	Persistent Bioaccumulative Toxic
vPvB	Very Persistent and Very Bioaccumulative
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail

Safety Data Sheet applicable for regions : IE - Ireland;GB - United Kingdom

SDS EU (REACH Annex II) - RHDHV

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The 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, unless specified in the text.