



## Eastman(TM) n-Butyric Anhydride, Kosher

Version	Revision Date:	SDS Number:	Date of last issue: -
2.1	04/11/2018	150000014310	Date of first issue: 09/06/2016
PRD		SDSUS / Z8 / 0001	

P264 Wash skin thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.  
 P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
 P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.  
 P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.  
 P363 Wash contaminated clothing before reuse.  
 P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Storage:**

P403 + P235 Store in a well-ventilated place. Keep cool.  
 P405 Store locked up.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance name : butanoic acid, anhydride

**Ingredients**

Chemical name	CAS-No.	Concentration (% w/w)
butyric anhydride	106-31-0	100

**SECTION 4. FIRST AID MEASURES**

If inhaled : Move to fresh air.  
 If breathing is irregular or stopped, administer artificial respiration.

In case of skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.  
 Wash contaminated clothing before re-use.  
 Call a physician or poison control center immediately.

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Thoroughly clean shoes before reuse.

In case of eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.  
If easy to do, remove contact lens, if worn.  
Call a physician or poison control center immediately.

If swallowed : Seek medical advice.  
Do not induce vomiting without medical advice.  
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed : Irritation  
Pain  
Redness

Notes to physician : Treat symptomatically.

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**SECTION 5. FIRE-FIGHTING MEASURES**

Suitable extinguishing media : Carbon dioxide (CO2)  
Dry chemical  
Water spray

Unsuitable extinguishing media : Water spray jet

Specific hazards during fire fighting : Water may be ineffective.  
The product will float on water and can be reignited on surface water.

Further information : Use water spray to cool unopened containers.

Special protective equipment for fire-fighters : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures : Wear appropriate personal protective equipment.  
Local authorities should be advised if significant spillages cannot be contained.

Environmental precautions : Avoid release to the environment.

Methods and materials for containment and cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).  
After cleaning, flush away traces with water.  
Eliminate all ignition sources if safe to do so.

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**SECTION 7. HANDLING AND STORAGE**

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Advice on protection against fire and explosion : None known.

Advice on safe handling : Do not breathe vapors or spray mist.  
Do not get on skin or clothing.  
Do not get in eyes.  
Do not swallow.  
Ensure adequate ventilation.  
Wash thoroughly after handling.  
Keep away from fire (No Smoking).  
Keep away from fire, sparks and heated surfaces.  
Do not use sparking tools.

Conditions for safe storage : Keep container closed when not in use.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ingredients with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Hazardous components without workplace control parameters**

Ingredients	CAS-No.
butyric anhydride	106-31-0

**Engineering measures** : Good general ventilation (typically 10 air changes per hour) should be sufficient to control airborne levels.  
Ensure adequate ventilation.

**Personal protective equipment**

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Hand protection

Remarks : Wear suitable gloves.

Eye protection : Safety glasses with side-shields  
Goggles

Skin and body protection : Wear suitable protective clothing.

Protective measures : Remove respiratory and skin/eye protection only after vapors have been cleared from the area.  
Ensure that eye flushing systems and safety showers are located close to the working place.  
Use personal protective equipment as required.

Hygiene measures : Handle in accordance with good industrial hygiene and safety practice.

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**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance	:	liquid
Color	:	colorless
Odor	:	pungent
Odor Threshold	:	not determined
pH	:	not determined
Melting point/freezing point	:	-75 °C
Boiling point/boiling range	:	199.4 °C
Flash point	:	83 °C Method: Seta closed cup
Evaporation rate	:	not determined
Flammability (solid, gas)	:	Not applicable
Self-ignition	:	309 °C Method: ASTM E659
Vapor pressure	:	40 Pa (20 °C)
Relative vapor density	:	5.5
Relative density	:	0.9666 (20 °C)
Solubility(ies)		
Water solubility	:	May react violently with water.
Partition coefficient: n-octanol/water	:	log Pow: 1.64 (25 °C)
Autoignition temperature	:	not determined
Decomposition temperature	:	Method: DTA No exotherm to 500°C
Viscosity		
Viscosity, dynamic	:	1.44 mPa.s (25 °C)
Viscosity, kinematic	:	1.49 mm <sup>2</sup> /s (25 °C)
Explosive properties	:	Not classified
Oxidizing properties	:	Not classified
Surface tension	:	29.1 mN/m, 22 °C

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29.1 mN/m, 22 °C

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**SECTION 10. STABILITY AND REACTIVITY**

Reactivity	:	Stable
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Stable Hazardous decomposition products formed under fire conditions.
Conditions to avoid	:	Heat, flames and sparks.
Incompatible materials	:	Oxidizing agents
Hazardous decomposition products	:	Carbon dioxide (CO <sub>2</sub> ) Carbon monoxide

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**SECTION 11. TOXICOLOGICAL INFORMATION****Acute toxicity**

Harmful if swallowed.

**Product:**

Acute oral toxicity	:	Remarks: No data available  Remarks: Harmful if swallowed. Causes digestive tract burns.
Acute inhalation toxicity	:	Remarks: No data available  Remarks: Irritating to respiratory system.
Acute dermal toxicity	:	Remarks: No data available  Remarks: No significant adverse effects were reported

**Ingredients:****butyric anhydride:**

Acute oral toxicity	:	LD <sub>50</sub> Oral (Rat): 1,632 mg/kg Remarks: Read-across from a similar material
Acute inhalation toxicity	:	LC <sub>50</sub> (Rat): > 5 mg/l Exposure time: 4 h Remarks: (highest concentration obtainable) Read-across from a similar material
Acute dermal toxicity	:	LD <sub>50</sub> Dermal (Rat): > 2,000 mg/kg

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Remarks: Read-across from a similar material

**butyric anhydride:**

Acute oral toxicity : LD50 Oral (Rat): 1,632 mg/kg  
Remarks: Read-across from a similar material

Acute inhalation toxicity : LC50 (Rat): > 5 mg/l  
Exposure time: 4 h  
Remarks: (highest concentration obtainable)  
Read-across from a similar material

Acute dermal toxicity : LD50 Dermal (Rat): > 2,000 mg/kg  
Remarks: Read-across from a similar material

**Skin corrosion/irritation**

Causes severe burns.

**Product:**

Remarks: No data available

Remarks: Causes severe skin burns.

**Ingredients:****butyric anhydride:**

Species: Rabbit  
Exposure time: 4 h  
Result: Corrosive  
Remarks: Read-across from a similar material

**butyric anhydride:**

Species: Rabbit  
Exposure time: 4 h  
Result: Corrosive  
Remarks: Read-across from a similar material

**Serious eye damage/eye irritation**

Causes serious eye damage.

**Product:**

Remarks: No data available

Remarks: Causes serious eye damage.

**Ingredients:****butyric anhydride:**

Species: Rabbit  
Result: Corrosive  
Remarks: Read-across from a similar material



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**Reproductive toxicity**

Not classified based on available information.

**Product:**

Effects on fertility                    :    Remarks: No data available

**STOT-single exposure**

Not classified based on available information.

**Product:**

Remarks: No data available

**STOT-repeated exposure**

Not classified based on available information.

**Product:**

Remarks: No data available

**Aspiration toxicity**

Not classified based on available information.

**Product:**

No data available

No aspiration toxicity classification

**Information on likely routes of exposure****Product:**

Inhalation                            :    Remarks: Irritating to respiratory system.

Skin contact                         :    Remarks: Causes severe skin burns.

Eye contact                         :    Remarks: Causes severe eye burns.

Ingestion                            :    Remarks: Harmful if swallowed.

**Further information****Product:**

Remarks: None known.

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**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Ingredients:****butyric anhydride:**

Toxicity to fish                      :    LC50 (Fish): 66.4 mg/l

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Exposure time: 96 h  
Remarks: Read-across from a similar material

Toxicity to daphnia and other aquatic invertebrates : EC50 (daphnid): 51.25 mg/l  
Exposure time: 48 h  
Remarks: Read-across from a similar material

Toxicity to algae : EC50 (Chlorella pyrenoidosa): 45.1 mg/l  
Exposure time: 72 h  
Remarks: Read-across from a similar material

NOEC: (Chlorella pyrenoidosa): 29.4 mg/l  
Exposure time: 72 h  
Remarks: Read-across from a similar material

**butyric anhydride:**

Toxicity to fish : LC50 (Fish): 66.4 mg/l  
Exposure time: 96 h  
Remarks: Read-across from a similar material

Toxicity to daphnia and other aquatic invertebrates : EC50 (daphnid): 51.25 mg/l  
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Exposure time: 72 h  
Remarks: Read-across from a similar material

NOEC: (Chlorella pyrenoidosa): 29.4 mg/l  
Exposure time: 72 h  
Remarks: Read-across from a similar material

**Persistence and degradability****Ingredients:****butyric anhydride:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 81 %  
Exposure time: 5 d  
Method: Ready biodegradability: Modified OECD Screening Test

Result: Readily biodegradable.  
Biodegradation: 100 %  
Exposure time: 14 d  
Method: Ready biodegradability: Modified OECD Screening Test

Biochemical Oxygen Demand (BOD) : BOD-5:  
340 - 1,160 mg/g

BOD-20:

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1,450 mg/g

Chemical Oxygen Demand (COD) : 1,650 mg/g

**butyric anhydride:**

Biodegradability : Result: Readily biodegradable.  
 Biodegradation: 81 %  
 Exposure time: 5 d  
 Method: Ready biodegradability: Modified OECD Screening Test

Result: Readily biodegradable.  
 Biodegradation: 100 %  
 Exposure time: 14 d  
 Method: Ready biodegradability: Modified OECD Screening Test

Biochemical Oxygen Demand (BOD) : BOD-5:  
340 - 1,160 mg/gBOD-20:  
1,450 mg/g

Chemical Oxygen Demand (COD) : 1,650 mg/g

**Bioaccumulative potential**

No data available

**Mobility in soil****Product:**

Distribution among environmental compartments : log Koc: 1.374

log Koc: 1.374

**Other adverse effects**

No data available

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Dispose of in accordance with local regulations.

**SECTION 14. TRANSPORT INFORMATION****International Regulations**

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**IATA-DGR**

UN/ID No. : UN 2739  
Proper shipping name : Butyric anhydride  
Class : 8  
Packing group : III  
Labels : Corrosive  
Packing instruction (cargo aircraft) : 856  
Packing instruction (passenger aircraft) : 852

**IMDG-Code**

UN number : UN 2739  
Proper shipping name : BUTYRIC ANHYDRIDE  
  
Class : 8  
Packing group : III  
Labels : 8  
EmS Code : F-A, S-B  
Marine pollutant : no

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**Domestic regulation****49 CFR**

UN/ID/NA number : UN 2739  
Proper shipping name : Butyric anhydride  
  
Class : 8  
Packing group : III  
Labels : Class 8 - Corrosive  
ERG Code : 156  
Marine pollutant : no

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**SECTION 15. REGULATORY INFORMATION****EPCRA - Emergency Planning and Community Right-to-Know****CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Flammable (gases, aerosols, liquids, or solids)  
Acute toxicity (any route of exposure)  
Skin corrosion or irritation  
Serious eye damage or eye irritation

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**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**California Prop. 65**

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

**The ingredients of this product are reported in the following inventories:**

DSL : All components of this product are on the Canadian DSL

AICS : On the inventory, or in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

ISHL : On the inventory, or in compliance with the inventory

KECI : Not listed

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : On the inventory, or in compliance with the inventory

**TSCA list**

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

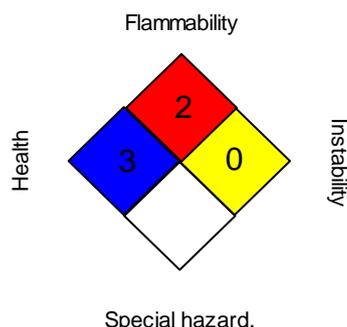
**SECTION 16. OTHER INFORMATION****Full text of other abbreviations**

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemi-

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icals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

**Further information****NFPA:****HMIS® IV:**

<b>HEALTH</b>	/	<b>3</b>
<b>FLAMMABILITY</b>		<b>2</b>
<b>PHYSICAL HAZARD</b>		<b>0</b>

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Revision Date : 04/11/2018

The information provided in this Material 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.

US / Z8