

Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • #239 Starter Flavor

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

Relevant identified use(s) • Flavor

1.3 Details of the supplier of the safety data sheet

Manufacturer • DairyChem
9120 Technology Drive
Fishers, IN 46038
United States
www.dairychem.com

Telephone (General) • 317-849-8400

1.4 Emergency telephone number

Manufacturer • 800-424-9300 - CHEMTREC

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP • Not classified

DSD/DPD • Not classified

2.2 Label Elements

CLP
Hazard statements • No label element(s) required

DSD/DPD
Risk phrases • No label element(s) required

2.3 Other Hazards

CLP • According to Regulation (EC) No. 1272/2008 (CLP) this material is not considered hazardous.

DSD/DPD • According to European Directive 1999/45/EC this preparation is considered not hazardous.

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012

- Flammable Liquids 4

2.2 Label elements

OSHA HCS 2012

WARNING

Hazard statements • Combustible liquid

Precautionary statements

Prevention • Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Response • In case of fire: Use appropriate media for extinction.

Storage/Disposal • Store in a well-ventilated place. Keep cool.
Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

2.3 Other hazards

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance.

3.2 Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Propionic acid	CAS:79-09-4 EC Number:201-176-3 EU Index:607-089-00-0	< 1%	Ingestion/Oral-Rat LD50 • 2600 mg/kg Skin-Rabbit LD50 • 500 µL/kg Inhalation-Rat LC50 • >4900 mg/m³ 4 Hour(s)	EU DSD/DPD: Annex VI, Table 3.2: C, R34 EU CLP: Annex VI, Table 3.1: Skin Corr. 1B, H314 OSHA HCS 2012: Flam. Liq. 3; Skin Corr. 1B; Eye Dam. 1; Acute Tox. 3 (skn)	NDA
Lactic acid, L-	CAS:79-33-4 EINECS:201-196-2	< 1%	NDA	EU DSD/DPD: Xi; R36/38 EU CLP: Eye Irrit. 2, H319; Skin Irrit. 2, H315 OSHA HCS 2012: Skin Irrit. 2; Eye Irrit. 2	NDA
Acetic acid	CAS:64-19-7 EC Number:200-580-7 EU Index:607-002-00-6	< 1%	Ingestion/Oral-Rat LD50 • 3310 mg/kg Skin-Rabbit LD50 • 1060 mg/kg Inhalation-Rat LC50 • 11000 mg/m³ 4 Hour(s)	EU DSD/DPD: Annex VI, Table 3.2: R10; C, R35 EU CLP: Annex VI, Table 3.1: Flam. Liq. 3, H226; Skin Corr. 1A, H314 OSHA HCS 2012: Flam. Liq. 3; Acute Tox. 4 (Skn); Acute Tox. 4 (Inhl); Skin Corr. 1B; Eye Dam. 1	NDA
2,3-Butanedione	CAS:431-03-8 EINECS:207-069-8	< 1%	Ingestion/Oral-Rat LD50 • 1580 mg/kg Skin-Rabbit LD50 • >5 g/kg	EU DSD/DPD: F; R11; Xn; R20/22-T; R48/23; Xi; R36/37/38 EU CLP: Flam. Liq. 2, H225; Acute Tox. 4 (orl), H302; Acute Tox. 4 (inhl), H332; Eye Irrit. 2, H319; Skin Irrit. 2, H315; STOT RE 1 (Lungs), H372 OSHA HCS 2012: Flam. Liq. 2; Acute Tox. 4 (orl); Acute Tox. 4 (inhl); Eye Irrit. 2; Skin Irrit. 2; STOT RE 1 (Lungs)	NDA

Natural flavor	Proprietary	< 0.37%	Inhalation-Rat LC50 • 3124 ppm 1 Hour(s)	EU DSD/DPD: Annex VI, Table 3.2: T, R23; C, R35 EU CLP: Annex VI, Table 3.1: Skin Corr. 1B, H315; STOT SE 3: Resp. Irrit., H335 OSHA HCS 2012: Skin Corr. 1B; Eye Dam. 1	NDA
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See Section 16 for full text of H-statements and R-phrases.

Section 4 - First Aid Measures

4.1 Description of first aid measures

- Inhalation**
- Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Move victim to fresh air.
- Skin**
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing. Wash skin with soap and water.
- Eye**
- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.
- Ingestion**
- Get medical attention if symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

- Notes to Physician**
- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

- Suitable Extinguishing Media**
- LARGE FIRES: Water spray, fog or alcohol-resistant foam.
 - SMALL FIRES: Dry chemical, CO₂, water spray or alcohol-resistant foam.
- Unsuitable Extinguishing Media**
- No data available

5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards**
- Containers may explode when heated.
 - Vapor explosion hazard indoors, outdoors or in sewers.
 - HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
 - Many liquids are lighter than water.
 - Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
 - Runoff to sewer may create fire or explosion hazard.
 - Vapors may form explosive mixtures with air.
 - Vapors may travel to source of ignition and flash back.
- Hazardous Combustion Products**
- No data available

5.3 Advice for firefighters

- Structural firefighters' protective clothing will only provide limited protection.
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Move containers from fire area if you can do it without risk.
- LARGE FIRES: Cool containers with flooding quantities of water until well after fire is out.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

- Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact.

Emergency Procedures

- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet) ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Use clean non-sparking tools to collect absorbed material.
A vapor suppressing foam may be used to reduce vapors.
All equipment used when handling the product must be grounded.
LARGE SPILLS: Dike far ahead of liquid spill for later disposal.
LARGE SPILLS: Water spray may reduce vapor; but may not prevent ignition in closed spaces.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Use only in well ventilated areas. Use good safety and industrial hygiene practices. Keep away from fire, sparks and heated surfaces. Take precautionary measures against static charges. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Keep away from sources of ignition – No Smoking. Keep container/package tightly closed in a cool, well-ventilated place.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	ACGIH	Canada Ontario	Canada Quebec	China	Denmark
Natural flavor (Proprietary)	Ceilings	2 ppm Ceiling	2 ppm Ceiling	5 ppm Ceiling; 7.5 mg/m ³ Ceiling	7.5 mg/m ³ Ceiling [MAC]	5 ppm Ceiling; 8 mg/m ³ Ceiling
Acetic acid (64-19-7)	STELs	15 ppm STEL	15 ppm STEL	15 ppm STEV; 37 mg/m ³ STEV	20 mg/m ³ STEL	Not established
	TWAs	10 ppm TWA	10 ppm TWA	10 ppm TWAEV; 25 mg/m ³ TWAEV	10 mg/m ³ TWA	10 ppm TWA; 25 mg/m ³ TWA

Propionic acid (79-09-4)	STELs	Not established	Not established	Not established	60 mg/m3 STEL	Not established
	TWAs	10 ppm TWA	10 ppm TWA	10 ppm TWAEV; 30 mg/m3 TWAEV	30 mg/m3 TWA	10 ppm TWA; 31 mg/m3 TWA
2,3-Butanedione (431-03-8)	STELs	0.02 ppm STEL	Not established	Not established	Not established	Not established
	TWAs	0.01 ppm TWA	Not established	Not established	Not established	Not established
Exposure Limits/Guidelines (Con't.)						
	Result	Germany DFG	Germany TRGS	NIOSH	OSHA	
Natural flavor (Proprietary)	Ceilings	4 ppm Peak; 6 mg/m3 Peak	Not established	5 ppm Ceiling; 7 mg/m3 Ceiling	5 ppm Ceiling; 7 mg/m3 Ceiling	
	TWAs	Not established	2 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 3 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	Not established	Not established	
	MAKs	2 ppm TWA MAK; 3.0 mg/m3 TWA MAK	Not established	Not established	Not established	
Acetic acid (64-19-7)	TWAs	Not established	10 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2); 25 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	10 ppm TWA; 25 mg/m3 TWA	10 ppm TWA; 25 mg/m3 TWA	
	STELs	Not established	Not established	15 ppm STEL; 37 mg/m3 STEL	Not established	
	Ceilings	20 ppm Peak; 50 mg/m3 Peak	Not established	Not established	Not established	
	MAKs	10 ppm TWA MAK; 25 mg/m3 TWA MAK	Not established	Not established	Not established	
	STELs	Not established	Not established	15 ppm STEL; 45 mg/m3 STEL	Not established	
			10 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed,			

Propionic acid (79-09-4)	TWAs	Not established	exposure factor 2); 31 mg/m ³ TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 2)	10 ppm TWA; 30 mg/m ³ TWA	Not established
	Ceilings	20 ppm Peak; 62 mg/m ³ Peak	Not established	Not established	Not established
	MAKs	10 ppm TWA MAK; 31 mg/m ³ TWA MAK	Not established	Not established	Not established
2,3-Butanedione (431-03-8)	Ceilings	0.02 ppm Peak; 0.071 mg/m ³ Peak	Not established	Not established	Not established
	MAKs	0.02 ppm TWA MAK; 0.071 mg/m ³ TWA MAK	Not established	Not established	Not established

Exposure Control Notations

ACGIH

- 2,3-Butanedione (431-03-8): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Natural flavor (Proprietary): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

Germany DFG

- Propionic acid (79-09-4): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- Acetic acid (64-19-7): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- 2,3-Butanedione (431-03-8): **Carcinogens:** (Category 3B (could be carcinogenic for man)) | **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to) | **Sensitizers:** (skin sensitizer) | **Skin:** (skin notation)
- Natural flavor (Proprietary): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

Exposure Limits Supplemental

ACGIH

- Propionic acid (79-09-4): **TLV Basis - Critical Effects:** (eye, skin and upper respiratory tract irritation)
- Acetic acid (64-19-7): **TLV Basis - Critical Effects:** (eye and upper respiratory tract irritation; pulmonary function)
- 2,3-Butanedione (431-03-8): **TLV Basis - Critical Effects:** (lung damage (bronchiolitis obliterans-like illness))
- Natural flavor (Proprietary): **TLV Basis - Critical Effects:** (upper respiratory tract irritation)

8.2 Exposure controls

Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use only appropriately classified electrical equipment.

Personal Protective Equipment

Respiratory

- In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced. Prolonged exposure to vapors may cause lung disease.

Eye/Face

- Wear safety glasses.

Skin/Body

- Wear appropriate gloves.

Environmental Exposure Controls

- Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways. Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

STEL = Short Term Exposure Limits are based on 15-minute exposures

STEV = Short Term Exposure Value

TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Clear to light yellow liquid.
Color	Clear to light yellow.	Odor	Data lacking
Odor Threshold	Data lacking		
General Properties			
Boiling Point	85 C(185 F)	Melting Point/Freezing Point	Data lacking
Decomposition Temperature	Data lacking	pH	3.5 to 3.8
Specific Gravity/Relative Density	0.99 to 1.1 Water=1	Water Solubility	Appreciable 10 to 99 %
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	> 70 C(> 158 F)	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Data lacking		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- No data available.

10.5 Incompatible materials

- No data available.

10.6 Hazardous decomposition products

- No data available.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Propionic acid ($< 1\%$)	79-09-4	Acute Toxicity: Ingestion/Oral-Rat LD50 • 2600 mg/kg; Inhalation-Rat LC50 • $>4900 \text{ mg/m}^3$ 4 Hour(s); Skin-Rabbit LD50 • 500 $\mu\text{L/kg}$; Irritation: Eye-Rabbit • 990 μg • Severe irritation; Skin-Rabbit • 495 mg-Open • Severe irritation; Multi-dose Toxicity: Inhalation-Rat TCLO • 23 mg/m^3 24 Hour(s) 30 Day(s)-Continuous; <i>Brain and Coverings:Recordings from specific areas of CNS; Blood:Changes in erythrocyte (RBC) count; Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels:True cholinesterase</i>
Acetic acid ($< 1\%$)	64-19-7	Acute Toxicity: Ingestion/Oral-Rat LD50 • 3310 mg/kg; Ingestion/Oral-Human TDLo • 1470 $\mu\text{g/kg}$; <i>Gastrointestinal:Change in structure or function of esophagus; Gastrointestinal:Ulceration or bleeding from small intestine; Gastrointestinal:Ulceration or bleeding from large intestine;</i> Inhalation-Rat LC50 • 11000 mg/m^3 4 Hour(s); Inhalation-Mouse TCLO • 12 ppm 6 Minute(s); <i>Lungs, Thorax, or Respiration:Respiratory depression;</i> Skin-Rabbit LD50 • 1060 mg/kg; Skin-Rat TDLo • 0.25 mg/kg; <i>Gastrointestinal:Ulceration or bleeding from dlodenum;</i> Irritation: Eye-Rabbit • 5 mg 30 Second(s)-Rinse • Mild irritation; Skin-Human • 50 mg 24 Hour(s) • Mild irritation; Skin-Rabbit • 525 mg-Open • Severe irritation; Multi-dose Toxicity: Inhalation-Rat TCLO • $5070 \text{ }\mu\text{g/m}^3$ 24 Hour(s) 95 Day(s)-Continuous; <i>Kidney, Ureter, and Bladder:Other changes in urine composition; Blood:Changes in leucocyte (WBC) count; Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels:True cholinesterase;</i> Mutagen: Unscheduled DNA synthesis • Skin-Mouse • 79279 $\mu\text{g/kg}$; Other mutation test systems • Skin-Mouse • 1201 mg/kg; Tumorigen / Carcinogen: Ingestion/Oral-Rat TDLo • 5760 mg/kg 32 Week(s)-Intermittent; <i>Tumorigenic:Equivocal tumorigenic agent by RTECS criteria; Gastrointestinal:Tumors; Tumorigenic:Facilitates action of known carcinogen</i>
2,3-Butanedione ($< 1\%$)	431-03-8	Acute Toxicity: Ingestion/Oral-Rat LD50 • 1580 mg/kg; <i>Behavioral:Somnolence (general depressed activity); Behavioral:Convulsions or effect on seizure threshold;</i> Inhalation-Rat TCLO • 224 ppm 1 Hour(s); <i>Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi;</i> Skin-Rabbit LD50 • $>5 \text{ g/kg}$; Irritation: Skin-Rabbit • 500 mg 24 Hour(s) • Moderate irritation; Multi-dose Toxicity: Inhalation-Mouse TCLO • 200 ppm 5 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi; Biochemical:Metabolism (intermediary):Effect on inflammation or mediation of inflammation; Related to Chronic Data:Death in the Other Multiple Dose data type field;</i> Mutagen: Unscheduled DNA synthesis • Ingestion/Oral-Rat • 1500 mg/kg
Natural flavor ($< 0.37\%$)	Proprietary	Acute Toxicity: Inhalation-Rat LC50 • 7004 mg/m^3 30 Minute(s); <i>Lungs, Thorax, or Respiration:Acute pulmonary edema;</i> Mutagen: Cytogenetic analysis • Unreported Route-Hamster • Ovary (Somatic cell) • 8 mmol/L; Reproductive: Inhalation-Rat TCLO • 450 mg/m^3 1 Hour(s)(1D pre); <i>Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus); Reproductive Effects:Specific Developmental Abnormalities:Homeostasis</i>

GHS Properties	Classification
Respiratory sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Serious eye damage/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Acute toxicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking

Aspiration Hazard	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Carcinogenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Skin corrosion/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Skin sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
STOT-RE	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
STOT-SE	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Toxicity for Reproduction	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Germ Cell Mutagenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking

Potential Health Effects

Inhalation

Acute (Immediate)

- Product is irritating and possibly detrimental to the respiratory system. Inhalation symptoms may include sore throat, coughing, dullness, and unconsciousness.

Chronic (Delayed)

- Prolonged exposure to high concentrations may cause lung disease (bronchiolitis obliterans).

Skin

Acute (Immediate)

- Product is irritating to the skin.

Chronic (Delayed)

- No data available.

Eye

Acute (Immediate)

- Product is irritating to eyes.

Chronic (Delayed)

- No data available.

Ingestion

Acute (Immediate)

- Product is harmful if swallowed. Symptoms of ingestion may include sore throat and abdominal pain.

Chronic (Delayed)

- No data available.

Other

Chronic (Delayed)

- NIOSH has reported that employees exposed to butter flavorings containing diacetyl are at risk of developing occupational lung diseases and that in one instance, similar illnesses have been found among employees handling flavorings that contain diacetyl.

Key to abbreviations

LC = Lethal Concentration

LD = Lethal Dose

TC = Toxic Concentration

TD = Toxic Dose

Section 12 - Ecological Information

12.1 Toxicity

- Material data lacking.

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

- Product waste** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
- Packaging waste** • Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

- 14.6 Special precautions for user** • None specified.

- 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** • Data lacking.

Section 15 - Regulatory Information

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

SARA Hazard Classifications • Fire

State Right To Know				
Component	CAS	MA	NJ	PA
2,3-Butanedione	431-03-8	Yes	Yes	Yes
Acetic acid	64-19-7	Yes	Yes	Yes
Natural flavor	Proprietary	Yes	Yes	Yes
Lactic acid, L-	79-33-4	No	No	No
Propionic acid	79-09-4	Yes	Yes	Yes

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
2,3-Butanedione	431-03-8	Yes	No	Yes	Yes	No
Acetic acid	64-19-7	Yes	No	Yes	Yes	No
Natural flavor	<i>Proprietary</i>	Yes	No	Yes	Yes	No
Lactic acid, L-	79-33-4	Yes	No	Yes	Yes	No
Propionic acid	79-09-4	Yes	No	Yes	Yes	No

Inventory (Con't.)				
Component	CAS	Japan ENCS	Korea KECL	TSCA
2,3-Butanedione	431-03-8	Yes	Yes	Yes
Acetic acid	64-19-7	Yes	Yes	Yes
Natural flavor	<i>Proprietary</i>	Yes	Yes	Yes
Lactic acid, L-	79-33-4	Yes	Yes	Yes
Propionic acid	79-09-4	Yes	Yes	Yes

Australia

Labor

Australia - Work Health and Safety Regulations - Hazardous Substances Requiring Health Monitoring

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Australia - High Volume Industrial Chemicals List

• Acetic acid	64-19-7	
• Natural flavor	<i>Proprietary</i>	
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Australia - List of Designated Hazardous Substances - Classification

• Acetic acid	64-19-7	C R10, R35
• Natural flavor	<i>Proprietary</i>	C, T R35, R23
• Propionic acid	79-09-4	C R34
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Environment

Australia - National Pollutant Inventory (NPI) Substance List

• Acetic acid	64-19-7	10 tonne/yr Threshold category 1
• Natural flavor	<i>Proprietary</i>	10 tonne/yr Threshold category 1; 400 tonne/yr Threshold category 2a; 1 tonne/h Threshold category 2a; 2000 tonne/yr Threshold category 2b; 60000 MWH Threshold category 2b; 20 MW

		Threshold category 2b
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Australia - Ozone Protection Act - Scheduled Substances

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Australia - Priority Existing Chemical Program

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Canada**Labor****Canada - WHMIS - Classifications of Substances**

• Acetic acid	64-19-7	B3, E (including 10-80% [Available data does not allow a precise evaluation of the threshold concentration from which solutions meet the B3 criterion], >80%); D2B (3-10%)
• Natural flavor	<i>Proprietary</i>	A, D1A, E (listed under Hydrogen chloride); D1A, E; E (0.036% in aqueous solution, 0.36% in aqueous solution, 3.6% in aqueous solution); D1B, E (28% in aqueous solution); D1A, E (31.45% in aqueous solution, 35.2% in aqueous solution)
• Propionic acid	79-09-4	B3, D1B, E
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Canada - WHMIS - Ingredient Disclosure List

• Acetic acid	64-19-7	1 %
• Natural flavor	<i>Proprietary</i>	1 %
• Propionic acid	79-09-4	1 %
• 2,3-Butanedione	431-03-8	1 %
• Lactic acid, L-	79-33-4	Not Listed

Environment**Canada - CEPA - Priority Substances List**

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed

- Lactic acid, L-

79-33-4

Not Listed

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

• Acetic acid	64-19-7	R10 C; R35
• Natural flavor	<i>Proprietary</i>	T; R23 C; R35
• Propionic acid	79-09-4	C; R34
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

• Acetic acid	64-19-7	10%≤C<25%: Xi; R:36/38 90%≤C: C; R:35 25% ≤C<90%: C; R:34
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	10%≤C<25%: Xi; R:36/37/38 25%≤C: C; R:34
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

• Acetic acid	64-19-7	C R:10-35 S:(1/2)-23-26-45
• Natural flavor	<i>Proprietary</i>	T C R:23-35 S:(1/2)-9-26-36/37/39-45
• Propionic acid	79-09-4	C R:34 S:(1/2)-23-36-45
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

• Acetic acid	64-19-7	B
• Natural flavor	<i>Proprietary</i>	5
• Propionic acid	79-09-4	B
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

• Acetic acid	64-19-7	S:(1/2)-23-26-45
• Natural flavor	<i>Proprietary</i>	S:(1/2)-9-26-36/37/39-45
• Propionic acid	79-09-4	S:(1/2)-23-36-45
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	5000 lb TQ; 5000 lb TQ (anhydrous)
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Acetic acid	64-19-7	5000 lb final RQ; 2270 kg final RQ
• Natural flavor	<i>Proprietary</i>	5000 lb final RQ; 2270 kg final RQ
• Propionic acid	79-09-4	5000 lb final RQ; 2270 kg final RQ
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	5000 lb EPCRA RQ (gas only)
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	500 lb TPQ (gas only)
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

United States - California**Environment****U.S. - California - Proposition 65 - Carcinogens List**

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Female

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - California - Proposition 65 - Reproductive Toxicity - Male

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

United States - Pennsylvania

Labor**U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List**

• Acetic acid	64-19-7	
• Natural flavor	<i>Proprietary</i>	
• Propionic acid	79-09-4	
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Acetic acid	64-19-7	Not Listed
• Natural flavor	<i>Proprietary</i>	Not Listed
• Propionic acid	79-09-4	Not Listed
• 2,3-Butanedione	431-03-8	Not Listed
• Lactic acid, L-	79-33-4	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information**Relevant Phrases (code & full text)**

- H225 - Highly flammable liquid and vapour
- H226 - Flammable liquid and vapour
- H302 - Harmful if swallowed
- H314 - Causes severe skin burns and eye damage.
- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H332 - Harmful if inhaled
- H335 - May cause respiratory irritation
- H372 - Causes damage to organs through prolonged or repeated exposure.
- R10 - Flammable.
- R11 - Highly flammable.
- R20/22 - Harmful by inhalation and if swallowed.
- R23 - Toxic by inhalation.
- R34 - Causes burns.
- R35 - Causes severe burns.
- R36/37/38 - Irritating to eyes, respiratory system and skin.
- R48/23 - Toxic: danger of serious damage to health by prolonged exposure through inhalation.

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- 26/August/2015

Preparation Date

- 26/August/2015

Disclaimer/Statement of Liability

- The information contained herein is based on the data available to us and is believed to be accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. We assume no responsibility for the injuries from the use of the product described herein.

Key to abbreviations

NDA = No Data Available