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	Print Date: 5/9/2018
	SDS Number: R0716157
Optiphen™ BSB-N preservative ™ Trademark, Ashland or its subsidiaries, registered in various countries 830379	Version: 1.5

29 CFR 1910.1200 (OSHA HazCom 2012)

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Optiphen™ BSB-N preservative
™ Trademark, Ashland or its subsidiaries, registered in various countries

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

Recommended use : Personal care

<p>Details of the supplier of the safety data sheet Ashland P.O. Box 2219 Columbus, OH 43216 United States of America (USA) +1-614-790-3333</p> <p>EHSProductSafety@ashland.com</p>	<p>Emergency telephone number 1-800-ASHLAND (1-800-274-5263)</p> <p>Regulatory Information Number 1-800-325-3751</p> <p>Product Information +1-614-790-3333</p>
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SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Skin irritation : Category 2

Serious eye damage : Category 1

Specific target organ systemic toxicity - repeated exposure (Inhalation) : Category 1 (Lungs)

GHS label elements

Hazard pictograms :




Signal Word : Danger



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Hazard Statements : Causes skin irritation.
 Causes serious eye damage.
 Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.

Precautionary Statements : **Prevention:**
 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
 Wash skin thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Wear protective gloves/ eye protection/ face protection.
Response:
 IF ON SKIN: Wash with plenty of soap and water.
 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.
 Get medical advice/ attention if you feel unwell.
 If skin irritation occurs: Get medical advice/ attention.
 Take off contaminated clothing and wash before reuse.
Disposal:
 Dispose of contents/ container to an approved waste disposal plant.

Other hazards
 None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Classification	Concentration (%)
ALCOHOL	254504001-5838	This material is not considered hazardous under the OSHA Hazard Communication Standard (HazCom 2012).	>= 40.00 - < 50.00

The identity and concentration of one or more component(s) is being withheld under business confidentiality.

BENZYL ALCOHOL	100-51-6	Acute Tox. 4; H302	40.00
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		Eye Irrit. 2A; H319	
BENZOIC ACID	65-85-0	Comb Dust Skin Irrit. 2; H315 Eye Dam. 1; H318 STOT RE 1; H372	15.00
SORBIC ACID	110-44-1	Comb Dust Skin Irrit. 2; H315 Eye Irrit. 2A; H319 STOT SE 3; H335	5.00

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : If breathed in, move person into fresh air.
If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- In case of skin contact : Remove contaminated clothing. If irritation develops, get medical attention.
If on skin, rinse well with water.
Wash contaminated clothing before re-use.
- In case of eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.
- If swallowed : Obtain medical attention.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.



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Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed : Causes skin irritation.
Causes serious eye damage.
Causes damage to organs through prolonged or repeated exposure if inhaled.
No symptoms known or expected.

Notes to physician : No hazards which require special first aid measures.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water spray
Foam
Carbon dioxide (CO₂)
Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : If product is heated above its flash point it will produce vapors sufficient to support combustion. Vapors are heavier than air and may travel along the ground and be ignited by heat, pilot lights, other flames and ignition sources at locations near the point of release.
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : carbon dioxide and carbon monoxide
Hydrocarbons
toxic fumes
Aldehydes
nitrogen oxides (NO_x)

Specific extinguishing methods :

Product is compatible with standard fire-fighting agents.

Further information : Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.



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Special protective equipment : In the event of fire, wear self-contained breathing apparatus for firefighters

SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.
- Other information : Comply with all applicable federal, state, and local regulations.

SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Do not breathe vapours/dust.
Do not smoke.
Container hazardous when empty.
Avoid contact with skin and eyes.
Smoking, eating and drinking should be prohibited in the application area.
For personal protection see section 8.
Dispose of rinse water in accordance with local and national regulations.
- Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

ALCOHOL	254504001-5838	TWA	5 mg/m3 mist, respirable	OSHA Z-1
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			fraction	
		TWA	15 mg/m3 mist, total dust	OSHA Z-1
		PEL	10 mg/m3 Mist - total fraction	CAL PEL
		PEL	5 mg/m3 Mist - respirable fraction	CAL PEL
		TWA	10 mg/m3 Mist - total dust	OSHA P0
		TWA	5 mg/m3 Mist - respirable fraction	OSHA P0

The identity and concentration of one or more component(s) is being withheld under business confidentiality.

BENZYL ALCOHOL	100-51-6	TWA	10 ppm	US WEEL
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Hazardous components without workplace control parameters

Components	CAS-No.
BENZOIC ACID	65-85-0
SORBIC ACID	110-44-1

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Hand protection

Remarks

: The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection

: Wear chemical splash goggles and face shield when there is potential for exposure of the eyes or face to liquid, vapor or mist.
Maintain eye wash station in immediate work area.

Skin and body protection

: Wear as appropriate:
Impervious clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Discard gloves that show tears, pinholes, or signs of wear.
Wear resistant gloves (consult your safety equipment supplier).

Hygiene measures

: Wash hands before breaks and at the end of workday.

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When using do not eat or drink.
 When using do not smoke.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: liquid
Colour	: colourless, yellow
Odour	: noticeable
Odour Threshold	: No data available
pH	: 4 Concentration: 10 %
Melting point/freezing point	: No data available
Boiling point/boiling range	: ca. 302 °F / 150 °C
Flash point	: 100 °C(Estimated)
Evaporation rate	: No data available
Flammability (solid, gas)	: No data available
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available
Density	: No data available
Bulk density	: 1,120 - 1,160 kg/m ³
Solubility(ies)	
Water solubility	: 1 g/l
Solubility in other solvents	: No data available



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Partition coefficient: n-octanol/water : No data available

Thermal decomposition : No data available

Viscosity
Viscosity, dynamic : 165 mPa.s

Viscosity, kinematic : No data available

Oxidizing properties : No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : No decomposition if stored and applied as directed.

Chemical stability : Stable under recommended storage conditions.

Possibility of hazardous reactions : Product will not undergo hazardous polymerization.

Conditions to avoid : Avoid heat, open flame, and prolonged storage at elevated temperatures.
excessive heat
Exposure to air.
Exposure to light.

Incompatible materials : Acids
aluminum
Iron
Reducing agents
Strong bases
Strong oxidizing agents
Zinc

Hazardous decomposition products : acrolein
Aldehydes
carbon dioxide and carbon monoxide
Hydrocarbons

SECTION 11. TOXICOLOGICAL INFORMATION



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Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity

Not classified based on available information.

Components:

ALCOHOL:

Acute oral toxicity : LD50 (Rat): 12,600 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 570 mg/m3
Exposure time: 1 h
Test atmosphere: vapour
Assessment: Not classified as acutely toxic by inhalation under GHS.

Acute dermal toxicity : LD50 (Rabbit): > 10 g/kg

Components:

BENZYL ALCOHOL:

Acute oral toxicity : LD50 (Rat, male): 1,620 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 4.178 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Assessment: Not classified as acutely toxic by inhalation under GHS.

Acute dermal toxicity : LD50 (Rabbit): 2,000 mg/kg
Assessment: Not classified as acutely toxic by dermal absorption under GHS.

BENZOIC ACID:

Acute oral toxicity : LD50 (Rat): ca. 2,565 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 12.2 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg
Assessment: No adverse effect has been observed in acute dermal toxicity tests.



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SORBIC ACID:

Acute oral toxicity : LD50 (Rat): 7.36 g/kg

Acute inhalation toxicity : LC50 (Rat): > 38.1 mg/m³
Exposure time: 6 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 7,940 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Product:

Remarks: May cause skin irritation and/or dermatitis.

Components:

ALCOHOL:

Result: No skin irritation

Components:

BENZYL ALCOHOL:

Species: Rabbit

Method: OECD Test Guideline 404

Result: Slight, transient irritation

BENZOIC ACID:

Result: Irritating to skin.

SORBIC ACID:

Result: Irritating to skin.

Serious eye damage/eye irritation

Causes serious eye damage.

Product:

Remarks: May cause irreversible eye damage.

Components:

ALCOHOL:

Result: Slight, transient irritation

Components:

BENZYL ALCOHOL:

Result: Irritating to eyes.

BENZOIC ACID:

Species: Rabbit

Result: Corrosive

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SORBIC ACID:
 Species: Rabbit
 Result: Irritating to eyes.
 Method: OECD Test Guideline 405

Respiratory or skin sensitisation
 Skin sensitisation: Not classified based on available information.
 Respiratory sensitisation: Not classified based on available information.

Components:
BENZYL ALCOHOL:
 Assessment: Did not cause sensitisation on laboratory animals.

BENZOIC ACID:
 Test Type: Local lymph node assay
 Species: Mouse
 Assessment: Does not cause skin sensitisation.

Germ cell mutagenicity
 Not classified based on available information.

Components:
BENZYL ALCOHOL:
 Genotoxicity in vitro : Remarks: In vitro tests did not show mutagenic effects
 Genotoxicity in vivo : Test Type: Micronucleus test
 Test species: Mouse
 Method: OECD Test Guideline 474
 Result: negative

BENZOIC ACID:
 Genotoxicity in vitro : Test Type: Ames test
 Test species: Salmonella typhimurium
 Metabolic activation: with and without metabolic activation
 Result: negative

Carcinogenicity
 Not classified based on available information.

Reproductive toxicity
 Not classified based on available information.

STOT - single exposure
 Not classified based on available information.

Components:
SORBIC ACID:
 Exposure routes: Inhalation
 Target Organs: Respiratory Tract
 Assessment: May cause respiratory irritation.



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STOT - repeated exposure

Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.

Components:

BENZOIC ACID:

Exposure routes: Inhalation

Target Organs: Lungs

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 1.

Aspiration toxicity

Not classified based on available information.

Further information

Product:

Remarks: No data available

Carcinogenicity:

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Ecotoxicology Assessment

Acute aquatic toxicity : Not classified based on available information.

Chronic aquatic toxicity : Not classified based on available information.

Components:

ALCOHOL:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 54,000 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 1,995 mg/l
Exposure time: 48 h



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BENZYL ALCOHOL:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 460 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 230 mg/l
aquatic invertebrates : Exposure time: 48 h
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae : (Pseudokirchneriella subcapitata (green algae)): 770 mg/l
End point: EC50
Exposure time: 72 h
Method: OECD Test Guideline 201
GLP: yes

Toxicity to daphnia and other : NOEC (Daphnia magna (Water flea)): 51 mg/l
aquatic invertebrates : Exposure time: 21 d
(Chronic toxicity) : End point: Reproduction Test
Method: OECD Test Guideline 211

BENZOIC ACID:

Toxicity to fish : LC50 (Gambusia affinis (Mosquito fish)): 240 mg/l
Exposure time: 24 h
Method: Static
Remarks: Mortality

LC50 (Lepomis macrochirus (Bluegill sunfish)): 44.6 mg/l
Exposure time: 96 h

Toxicity to daphnia and other : LC50 (Daphnia magna (Water flea)): > 100 mg/l
aquatic invertebrates : Exposure time: 48 h

Toxicity to algae : NOEC (Pseudokirchneriella subcapitata (green algae)): 10
mg/l
End point: Growth inhibition
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201

Toxicity to fish (Chronic : NOEC (Oncorhynchus mykiss (rainbow trout)): > 120 mg/l
toxicity) : Exposure time: 28 d
Test Type: semi-static test
Method: OECD Test Guideline 204

Toxicity to daphnia and other : NOEC (Daphnia magna (Water flea)): >= 25 mg/l
aquatic invertebrates : Exposure time: 21 d



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(Chronic toxicity)

Test Type: semi-static test
Method: OECD Test Guideline 211

SORBIC ACID:

Toxicity to fish

: LC50 (*Oryzias latipes* (Orange-red killifish)): 75 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other
aquatic invertebrates

: EC50 (*Daphnia magna* (Water flea)): 70 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae

: EbC50 (*Desmodesmus subspicatus* (green algae)): 24.1 mg/l
End point: Biomass
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

ErC50 (*Desmodesmus subspicatus* (green algae)): 41.9 mg/l
End point: Growth inhibition
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

Toxicity to daphnia and other
aquatic invertebrates
(Chronic toxicity)

: NOEC (*Daphnia magna* (Water flea)): 50 mg/l
Exposure time: 21 d
Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes

Persistence and degradability**Components:****ALCOHOL:**

Biodegradability

: Result: Readily biodegradable.

BENZYL ALCOHOL:

Biodegradability

: Inoculum: activated sludge
Result: Readily biodegradable.
Biodegradation: 92 %
Exposure time: 14 d



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BENZOIC ACID:
Biodegradability : Result: Readily biodegradable.

SORBIC ACID:
Biodegradability : Result: Readily biodegradable.
Biodegradation: 74.9 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

No data available

Bioaccumulative potential

Components:

ALCOHOL:

Partition coefficient: n-
octanol/water : log Pow: -1.76

BENZYL ALCOHOL:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-
octanol/water : log Pow: 1.10

BENZOIC ACID:

Bioaccumulation : Species: Gambusia affinis (Mosquito fish)
Bioconcentration factor (BCF): 21
Exposure time: 24 h
Concentration: 0.00178 mg/l
Method: Static

Partition coefficient: n-
octanol/water : log Pow: 1.87

SORBIC ACID:

Partition coefficient: n-
octanol/water : log Pow: 1.33
pH: 2.5

No data available

Mobility in soil

Components:

No data available

Other adverse effects

No data available

Product:

Additional ecological
information : No data available

Components:

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SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

- General advice : Do not dispose of waste into sewer.
 Do not contaminate ponds, waterways or ditches with
 chemical or used container.
 Send to a licensed waste management company.
- Dispose of in accordance with all applicable local, state and
 federal regulations.
- Contaminated packaging : Empty remaining contents.
 Dispose of as unused product.
 Empty containers should be taken to an approved waste
 handling site for recycling or disposal.
 Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION**International transport regulations****REGULATION**

ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
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MX_DG

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

TDG_INWT_C

Not dangerous goods



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TDG_RAIL_C

Not dangerous goods

TDG_ROAD_C

Not dangerous goods

U.S. DOT - INLAND WATERWAYS

Not dangerous goods

CFR_RAIL_C

Not dangerous goods

U.S. DOT - ROAD

Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant	no
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Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

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

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
BENZOIC ACID	65-85-0	5000	33333

SARA 304 Extremely Hazardous Substances Reportable Quantity

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

SARA 311/312 Hazards : Skin corrosion or irritation
 Serious eye damage or eye irritation
 Specific target organ toxicity (single or repeated exposure)



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

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.

**US State Regulations
Pennsylvania Right To Know**

ALCOHOL 254504001-5838

The identity and concentration of one or more component(s) is being withheld under business confidentiality.

BENZYL ALCOHOL 100-51-6

BENZOIC ACID 65-85-0

SORBIC ACID 110-44-1

New Jersey Right To Know

ALCOHOL 254504001-5838

The identity and concentration of one or more component(s) is being withheld under business confidentiality.

BENZYL ALCOHOL 100-51-6

BENZOIC ACID 65-85-0

SORBIC ACID 110-44-1

California Prop 65 This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components 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

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

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

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

TSCA : On TSCA Inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

SECTION 16. OTHER INFORMATION**Further information**

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NFPA:	HMIS III:						
<p style="text-align: center;">Flammability</p> <p style="text-align: center;">Special hazard.</p>	<table border="1" style="width: 100%;"> <tr> <td style="background-color: blue; color: white;">HEALTH</td> <td style="text-align: center;">3*</td> </tr> <tr> <td style="background-color: red; color: white;">FLAMMABILITY</td> <td style="text-align: center;">1</td> </tr> <tr> <td style="background-color: yellow;">PHYSICAL HAZARD</td> <td style="text-align: center;">0</td> </tr> </table> <p>0 = not significant, 1 = Slight, 2 = Moderate, 3 = High 4 = Extreme, * = Chronic</p>	HEALTH	3*	FLAMMABILITY	1	PHYSICAL HAZARD	0
HEALTH	3*						
FLAMMABILITY	1						
PHYSICAL HAZARD	0						

NFPA Flammable and Combustible Liquids Classification

Combustible Liquid Class III B

Full text of H-Statements

H302	Harmful if swallowed.
H315	Causes skin irritation.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H372	Causes damage to organs through prolonged or repeated exposure if inhaled.

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Sources of key data used to compile the Safety Data Sheet
 Ashland internal data including own and sponsored test reports
 The UNECE administers regional agreements implementing harmonised classification for
 labelling (GHS) and transport.

The information accumulated herein is believed to be accurate but is not warranted to be whether
 originating with the company or not. Recipients are advised to confirm in advance of need that the
 information is current, applicable, and suitable to their circumstances. This SDS has been
 prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

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 Chemicals 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

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Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative