

# SAFETY DATA SHEET

complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Heraeus

## GG 1539-10% H

Version 5.0                      Revision Date: 10/12/2017                      Date of last issue: 05/17/2017  
Date of first issue: 11/20/2015

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### SECTION 1. IDENTIFICATION

Product name : GG 1539-10% H

Product code : 88004397

#### Manufacturer or supplier's details

Company name of supplier : Heraeus Precious Metals North America  
Conshohocken LLC

Address : Union Hill Road 24  
West Conshohocken 19428

Emergency telephone : +49 6132-84463  
International Emergency Number  
This telephone number is available 24 hours per day, 7 days per week.

E-mail address of person responsible for the SDS : [sds@heraeus.com](mailto:sds@heraeus.com)  
(Heraeus Holding: EHS Chemical Safety)

#### Recommended use of the chemical and restrictions on use

Recommended use : Industrial use  
Coloring agent

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### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with 29 CFR 1910.1200

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 4

Skin irritation : Category 2

Eye irritation : Category 2A

Respiratory sensitization : Category 1

Skin sensitization : Category 1

Germ cell mutagenicity : Category 2

Carcinogenicity (Inhalation) : Category 1A

Carcinogenicity : Category 2

Reproductive toxicity : Category 1B

Specific target organ : Category 2 (Central nervous system, Respiratory system)

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systemic toxicity - repeated exposure

Aspiration hazard : Category 1

### GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H226 Flammable liquid and vapor.  
H302 Harmful if swallowed.  
H304 May be fatal if swallowed and enters airways.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H341 Suspected of causing genetic defects.  
H350i May cause cancer by inhalation.  
H351 Suspected of causing cancer.  
H360Df May damage the unborn child. Suspected of damaging fertility.  
H373 May cause damage to organs (Central nervous system, Respiratory system) through prolonged or repeated exposure.

Precautionary Statements : **Prevention:**  
P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.  
P233 Keep container tightly closed.  
P240 Ground/bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
P242 Use only non-sparking tools.  
P243 Take precautionary measures against static discharge.  
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P285 In case of inadequate ventilation wear respiratory protection.

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### Response:

P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304 + P341 IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313 IF exposed or concerned: Get medical advice/attention.  
P331 Do NOT induce vomiting.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.  
P337 + P313 If eye irritation persists: Get medical advice/attention.  
P362 Take off contaminated clothing and wash 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 / Mixture : Mixture  
Chemical nature : Paint

### Hazardous ingredients

Chemical name	CAS-No.	Concentration (% w/w)
Oils, spike	8016-78-2	>= 10 - < 20
Terpineol	8000-41-7	>= 5 - < 10
Turpentine	8006-64-2	>= 5 - < 10
Oil, lavender	8000-28-0	>= 1 - < 5
Fennel oil	8006-84-6	>= 1 - < 5
Toluene	108-88-3	>= 1 - < 5
Cassia oil	8007-80-5	>= 1 - < 5
Bornan-2-one	76-22-2	>= 1 - < 5
Abietic acid	514-10-3	>= 1 - < 5
Rosemary oil	8000-25-7	>= 1 - < 5

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Solvent naphtha (petroleum), light arom.	64742-95-6	>= 1 - < 5
Eucalyptus oil	84625-32-1	>= 1 - < 5
Oils, spruce	8008-80-8	>= 1 - < 5
Lemon oils	8008-56-8	>= 1 - < 5
Bismuth tris(2-ethylhexanoate)	67874-71-9	>= 1 - < 5
Decahydronaphthalene	91-17-8	>= 0.1 - < 1
Chromium-2-ethylhexanoate	3444-17-5	>= 0.1 - < 1
2-Ethylhexanoic acid	149-57-5	>= 0.1 - < 1
2-Ethylhexanoic acid, nickel salt	7580-31-6	>= 0.1 - < 1
Butylphenol, 4-tert-	98-54-4	>= 0.1 - < 1

### SECTION 4. FIRST AID MEASURES

- General advice : First aider needs to protect himself.  
Move out of dangerous area.  
Show this material safety data sheet to the doctor in attendance.
- If inhaled : Move to fresh air.  
If breathing is irregular or stopped, administer artificial respiration.  
Get medical attention.
- In case of skin contact : Take off all contaminated clothing immediately.  
Wash off with:  
Polyethylene glycol 400.  
Obtain medical attention.
- In case of eye contact : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Keep eye wide open while rinsing.  
Protect unharmed eye.  
Call a physician immediately.
- If swallowed : Immediately give large quantities of water to drink.  
Do NOT induce vomiting.  
Keep respiratory tract clear.  
Get medical attention.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed.  
May be fatal if swallowed and enters airways.  
Causes skin irritation.  
May cause an allergic skin reaction.  
Causes serious eye irritation.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
Suspected of causing genetic defects.

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May cause cancer by inhalation.  
Suspected of causing cancer.  
May damage the unborn child. Suspected of damaging fertility.  
May cause damage to organs through prolonged or repeated exposure.

Notes to physician : Treat symptomatically.

### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Specific hazards during fire fighting : Exposure to decomposition products may be a hazard to health.
- Hazardous combustion products : Carbon oxides  
Metal oxides  
Sulfur oxides  
Nitrogen oxides (NO<sub>x</sub>)
- Further information : Use a water spray to cool fully closed containers.  
Prevent fire extinguishing water from contaminating surface water or the ground water system.
- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus.  
Use personal protective equipment.

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Follow safe handling advice and personal protective equipment recommendations.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.  
Refer to protective measures listed in sections 7 and 8.
- Environmental precautions : Do not allow contact with soil, surface or ground water.  
Do not let product enter drains.  
If the product contaminates rivers and lakes or drains inform respective authorities.
- 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).  
Sweep up or vacuum up spillage and collect in suitable container for disposal.

### SECTION 7. HANDLING AND STORAGE

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Advice on safe handling : Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Wear personal protective equipment. Keep away from heat and sources of ignition. Avoid inhalation, ingestion and contact with skin and eyes. Smoking, eating and drinking should be prohibited in the application area.

Conditions for safe storage : Keep tightly closed in a dry, cool and well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Turpentine	8006-64-2	TWA	100 ppm 560 mg/m <sup>3</sup>	NIOSH REL
		TWA	100 ppm 560 mg/m <sup>3</sup>	OSHA Z-1
		TWA	20 ppm	ACGIH
Oil, lavender	8000-28-0	TWA (mist - total)	10 mg/m <sup>3</sup>	NIOSH REL
		TWA (mist - respirable)	5 mg/m <sup>3</sup>	NIOSH REL
Fennel oil	8006-84-6	TWA (mist - total)	10 mg/m <sup>3</sup>	NIOSH REL
		TWA (mist - respirable)	5 mg/m <sup>3</sup>	NIOSH REL
Toluene	108-88-3	TWA	20 ppm	ACGIH
		TWA	100 ppm 375 mg/m <sup>3</sup>	NIOSH REL
		ST	150 ppm 560 mg/m <sup>3</sup>	NIOSH REL
		TWA	200 ppm	OSHA Z-2
		CEIL	300 ppm	OSHA Z-2
		Peak	500 ppm (10 minutes)	OSHA Z-2
Cassia oil	8007-80-5	TWA (mist - total)	10 mg/m <sup>3</sup>	NIOSH REL
		TWA (mist - respirable)	5 mg/m <sup>3</sup>	NIOSH REL
Bornan-2-one	76-22-2	TWA	2 mg/m <sup>3</sup>	OSHA Z-1
		TWA	2 ppm	ACGIH
		STEL	3 ppm	ACGIH
		TWA	2 mg/m <sup>3</sup>	NIOSH REL
Rosemary oil	8000-25-7	TWA (mist -	10 mg/m <sup>3</sup>	NIOSH REL

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		total)		
		TWA (mist - respirable)	5 mg/m3	NIOSH REL
Solvent naphtha (petroleum), light arom.	64742-95-6	TWA	500 ppm 2,000 mg/m3	OSHA Z-1
Lemon oils	8008-56-8	TWA (mist - total)	10 mg/m3	NIOSH REL
		TWA (mist - respirable)	5 mg/m3	NIOSH REL
Chromium-2-ethylhexanoate	3444-17-5	TWA	0.5 mg/m3 (chromium)	OSHA Z-1
		TWA	0.5 mg/m3 (chromium)	NIOSH REL
2-Ethylhexanoic acid	149-57-5	TWA (Inhalable fraction and vapor)	5 mg/m3	ACGIH
2-Ethylhexanoic acid, nickel salt	7580-31-6	TWA	0.015 mg/m3 (Nickel)	NIOSH REL

### Hazardous components without workplace control parameters

Ingredients	CAS-No.
Oils, spike	8016-78-2
Terpineol	8000-41-7
Abietic acid	514-10-3
Eucalyptus oil	84625-32-1
Oils, spruce	8008-80-8
Bismuth tris(2-ethylhexanoate)	67874-71-9
Decahydronaphthalene	91-17-8
Butylphenol, 4-tert-	98-54-4

### Biological occupational exposure limits

Ingredients	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
Toluene	108-88-3	Toluene	In blood	Prior to last shift of work-week	0.02 mg/l	ACGIH BEI
		Toluene	Urine	End of shift (As soon as possible after exposure ceases)	0.03 mg/l	ACGIH BEI
		o-Cresol	Urine	End of shift (As soon as possible after exposure	0.3 mg/g Creatinine	ACGIH BEI

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				ceases)		
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**Engineering measures** : Provide sufficient air exchange and/or exhaust in work rooms.

### 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.

Filter type : Recommended Filter type:  
Filter type ABEK-P

Hand protection

Remarks : Before removing gloves clean them with soap and water. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. As the product is a mixture of several substances, the durability of the glove materials cannot be calculated in advance and has to be tested before use.

Eye protection : Safety glasses with side-shields

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : Keep away from food and drink.  
Wash hands before breaks and at the end of workday.  
Keep working clothes separately.  
Remove and wash contaminated clothing and gloves, including the inside, before re-use.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid  
Color : brown  
Odor : aromatic  
Odor Threshold : No data available  
pH : Not applicable



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Melting point/range	:	No data available
Boiling point/boiling range	:	> 35 °C (1,013 hPa)
Flash point	:	44 °C (1,013 hPa)
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Self-ignition	:	Not applicable
Upper explosion limit	:	No data available
Lower explosion limit	:	No data available
Vapor pressure	:	<= 1,100 hPa (50 °C)
Relative vapor density	:	No data available
Relative density	:	No data available
Density	:	No data available
Solubility(ies)		
Water solubility	:	practically insoluble (20 °C, 1,013 hPa)
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available
Autoignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	60 mPa.s (23 °C)
Viscosity, kinematic	:	10 mm <sup>2</sup> /s (23 °C) 1 mm <sup>2</sup> /s (40 °C)
Explosive properties	:	Not applicable
Oxidizing properties	:	No data available

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### SECTION 10. STABILITY AND REACTIVITY

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Reactivity	:	No dangerous reaction known under conditions of normal use.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	No data available
Incompatible materials	:	No data available
Hazardous decomposition products	:	No data available

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

Harmful if swallowed.

#### Product:

Acute oral toxicity	:	Acute toxicity estimate: 1,619 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate: 53.14 mg/l Exposure time: 4 h Test atmosphere: vapor Method: Calculation method
Acute dermal toxicity	:	Acute toxicity estimate: > 5,000 mg/kg Method: Calculation method

#### Ingredients:

##### Oils, spike:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

##### Terpineol:

Acute oral toxicity	:	LD50 (Rat): > 2,000 mg/kg Method: OECD Test Guideline 401
Acute inhalation toxicity	:	LC50 (Rat): > 4.76 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity	:	LD50 (Rabbit): > 2,000 mg/kg Method: OECD Test Guideline 402 Assessment: The substance or mixture has no acute dermal toxicity

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### **Turpentine:**

- Acute oral toxicity : Acute toxicity estimate: 500 mg/kg  
Method: Expert judgment  
Remarks: Based on harmonised classification in EU regulation  
1272/2008, Annex VI
- Acute inhalation toxicity : LC50 (Rat): 13.7 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor
- Acute dermal toxicity : Acute toxicity estimate: 1,100 mg/kg  
Method: Expert judgment  
Remarks: Based on harmonised classification in EU regulation  
1272/2008, Annex VI

### **Fennel oil:**

- Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg
- Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

### **Toluene:**

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
- Acute inhalation toxicity : LC50 (Rat): 28.1 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Method: OECD Test Guideline 403
- Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

### **Cassia oil:**

- Acute oral toxicity : LD50 (Rat): 2,319 mg/kg
- Acute dermal toxicity : LD50 (Rat): 1,226 mg/kg

### **Bornan-2-one:**

- Acute oral toxicity : LD50 (Mouse): 1,310 mg/kg  
  
Acute toxicity estimate (Humans): > 50 - 500 mg/kg  
Method: Expert judgment
- Acute inhalation toxicity : LC50 (Rat): > 0.5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

### **Abietic acid:**

- Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

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Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: Based on data from similar materials

### **Rosemary oil:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 10,000 mg/kg

### **Solvent naphtha (petroleum), light arom.:**

Acute oral toxicity : LD50 (Rat, female): 3,492 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 6.193 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit): > 3,160 mg/kg  
Assessment: The substance or mixture has no acute dermal toxicity

### **Eucalyptus oil:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg

### **Oils, spruce:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: Based on data from similar materials

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg  
Remarks: Based on data from similar materials

### **Lemon oils:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

### **Bismuth tris(2-ethylhexanoate):**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: Based on data from similar materials

### **Decahydronaphthalene:**

Acute oral toxicity : LD50 (Rat): 4,170 mg/kg

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Acute inhalation toxicity : LC50 (Rat): 4.08 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Assessment: Corrosive to the respiratory tract.

Acute dermal toxicity : LD50 (Rabbit): 5,200 mg/kg

### Chromium-2-ethylhexanoate:

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: Based on data from similar materials

### 2-Ethylhexanoic acid:

Acute oral toxicity : LD50 (Rat): 2,043 mg/kg

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

### 2-Ethylhexanoic acid, nickel salt:

Acute oral toxicity : LD50 (Rat, female): 361.9 mg/kg  
Method: OECD Test Guideline 425  
Remarks: Based on data from similar materials

### Butylphenol, 4-tert-:

Acute oral toxicity : LD50 (Rat): 4,000 mg/kg  
Method: OECD Test Guideline 401

### Skin corrosion/irritation

Causes skin irritation.

### Ingredients:

#### Oils, spike:

Result: Skin irritation  
Remarks: Based on data from similar materials

#### Terpineol:

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Skin irritation

#### Turpentine:

Species: reconstructed human epidermis (RhE)  
Result: Skin irritation

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### **Fennel oil:**

Result: Mild skin irritation

### **Toluene:**

Species: Rabbit  
Method: Directive 67/548/EEC, Annex V, B.4.  
Result: Skin irritation

### **Cassia oil:**

Result: Skin irritation

### **Abietic acid:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation  
Remarks: Based on data from similar materials

### **Rosemary oil:**

Species: Rabbit  
Result: Skin irritation

### **Solvent naphtha (petroleum), light arom.:**

Assessment: Repeated exposure may cause skin dryness or cracking.

### **Eucalyptus oil:**

Result: Skin irritation  
Remarks: Based on data from similar materials

### **Oils, spruce:**

Result: Skin irritation  
Remarks: Based on data from similar materials

### **Lemon oils:**

Species: Rabbit  
Result: Skin irritation

### **Bismuth tris(2-ethylhexanoate):**

Result: Skin irritation

### **Decahydronaphthalene:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Corrosive after 1 to 4 hours of exposure

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### **Chromium-2-ethylhexanoate:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation  
Remarks: Based on data from similar materials

### **2-Ethylhexanoic acid:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation

### **2-Ethylhexanoic acid, nickel salt:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: No skin irritation  
Remarks: Based on data from similar materials

### **Butylphenol, 4-tert-:**

Species: Rabbit  
Method: OECD Test Guideline 404  
Result: Skin irritation

### **Serious eye damage/eye irritation**

Causes serious eye irritation.

### **Ingredients:**

#### **Oils, spike:**

Result: Irritation to eyes, reversing within 21 days  
Remarks: Based on data from similar materials

#### **Terpineol:**

Species: Rabbit  
Result: Irritation to eyes, reversing within 7 days  
Method: OECD Test Guideline 405

#### **Turpentine:**

Result: Irritation to eyes, reversing within 21 days  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

#### **Fennel oil:**

Species: Rabbit  
Result: No eye irritation  
Remarks: Based on data from similar materials

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### **Toluene:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

### **Cassia oil:**

Result: Irritation to eyes, reversing within 21 days

### **Bornan-2-one:**

Result: Eye irritation

### **Abietic acid:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405  
Remarks: Based on data from similar materials

### **Rosemary oil:**

Result: Irritation to eyes, reversing within 21 days

### **Solvent naphtha (petroleum), light arom.:**

Species: Rabbit  
Result: No eye irritation

### **Eucalyptus oil:**

Result: Irritation to eyes, reversing within 21 days  
Remarks: Based on data from similar materials

### **Lemon oils:**

Species: Rabbit  
Result: No eye irritation

### **Bismuth tris(2-ethylhexanoate):**

Result: Irritation to eyes, reversing within 21 days

### **Decahydronaphthalene:**

Result: Irreversible effects on the eye  
Remarks: Based on skin corrosivity.

### **Chromium-2-ethylhexanoate:**

Species: Rabbit  
Result: Irritation to eyes, reversing within 21 days  
Method: OECD Test Guideline 405  
Remarks: Based on data from similar materials



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### **2-Ethylhexanoic acid:**

Species: Rabbit  
Result: No eye irritation  
Method: OECD Test Guideline 405

### **2-Ethylhexanoic acid, nickel salt:**

Result: Irritation to eyes, reversing within 21 days  
Remarks: Based on data from similar materials

### **Butylphenol, 4-tert-:**

Species: Rabbit  
Result: Irreversible effects on the eye

### **Respiratory or skin sensitization**

#### **Skin sensitization**

May cause an allergic skin reaction.

#### **Respiratory sensitization**

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

### **Ingredients:**

#### **Oils, spike:**

Routes of exposure: Skin contact  
Result: positive  
Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

#### **Terpineol:**

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative

#### **Turpentine:**

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Result: positive

Assessment: Probability or evidence of skin sensitization in humans

#### **Fennel oil:**

Test Type: Local lymph node assay (LLNA)

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Routes of exposure: Skin contact  
Species: Mouse  
Method: OECD Test Guideline 442B  
Result: positive  
Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

### **Toluene:**

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative

### **Cassia oil:**

Routes of exposure: Skin contact  
Result: positive

Assessment: Probability or evidence of skin sensitization in humans

### **Abietic acid:**

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Result: Probability or evidence of skin sensitization in humans

### **Rosemary oil:**

Result: Probability or evidence of low to moderate skin sensitization rate in humans  
Remarks: Based on data from similar materials

### **Solvent naphtha (petroleum), light arom.:**

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative

### **Eucalyptus oil:**

Test Type: Local lymph node assay (LLNA)  
Routes of exposure: Skin contact  
Species: Mouse  
Method: OECD Test Guideline 429  
Result: positive  
Remarks: Based on data from similar materials

Assessment: Probability or evidence of skin sensitization in humans

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### Oils, spruce:

Assessment: Probability or evidence of skin sensitization in humans  
Remarks: Based on data from similar materials

### Lemon oils:

Test Type: Human repeat insult patch test (HRIPT)  
Routes of exposure: Skin contact  
Result: positive

Assessment: Probability or evidence of skin sensitization in humans

### Decahydronaphthalene:

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative

### 2-Ethylhexanoic acid:

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Result: negative

### 2-Ethylhexanoic acid, nickel salt:

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Result: positive  
Remarks: Based on data from similar materials

Assessment: Probability or evidence of high skin sensitization rate in humans

Assessment: May cause sensitization by inhalation.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

### Butylphenol, 4-tert-:

Test Type: Maximization Test  
Routes of exposure: Skin contact  
Species: Guinea pig  
Method: OECD Test Guideline 406  
Result: negative

### Germ cell mutagenicity

Suspected of causing genetic defects.

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### Ingredients:

#### **Terpineol:**

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Result: negative  
Remarks: Based on data from similar materials

#### **Turpentine:**

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative

#### **Toluene:**

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Result: negative

: Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow  
cytogenetic test, chromosomal analysis)  
Species: Mouse  
Application Route: Ingestion  
Result: negative

#### **Cassia oil:**

Germ cell mutagenicity - Assessment : Positive results from in vitro mammalian mutagenicity assays,  
chemical structure activity relationship to known germ cell  
mutagens

#### **Bornan-2-one:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo  
cytogenetic assay)  
Species: Mouse  
Result: negative

#### **Abietic acid:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative  
Remarks: Based on data from similar materials

#### **Rosemary oil:**

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

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### Solvent naphtha (petroleum), light arom.:

- Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro  
Result: negative
- Genotoxicity in vivo : Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)  
Species: Rat  
Application Route: inhalation (vapor)  
Result: negative

### Eucalyptus oil:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative
- : Test Type: Chromosome aberration test in vitro  
Method: OECD Test Guideline 473  
Result: negative
- : Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative

### Lemon oils:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative  
Remarks: Based on data from similar materials

### Decahydronaphthalene:

- Genotoxicity in vitro : Test Type: **In vitro mammalian cell gene mutation test**  
Method: **OECD Test Guideline 476**  
Result: **negative**
- : Test Type: **Bacterial reverse mutation assay (AMES)**  
Method: **Directive 67/548/EEC, Annex V, B.13/14.**  
Result: **negative**
- : Test Type: **Chromosome aberration test in vitro**  
Result: **negative**
- Genotoxicity in vivo : Test Type: **Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)**  
Species: **Mouse**  
Application Route: **inhalation (vapor)**  
Result: **negative**

### Chromium-2-ethylhexanoate:

- Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)

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Method: OECD Test Guideline 471  
Result: negative  
Remarks: Based on data from similar materials

### 2-Ethylhexanoic acid:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo  
cytogenetic assay)  
Species: Mouse  
Application Route: Ingestion  
Method: OECD Test Guideline 474  
Result: negative

### 2-Ethylhexanoic acid, nickel salt:

Genotoxicity in vitro : Test Type: Chromosome aberration test in vitro  
Result: positive  
Remarks: Based on data from similar materials

: Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative  
Remarks: Based on data from similar materials

Genotoxicity in vivo : Test Type: In vivo mammalian alkaline comet assay  
Species: Rat  
Application Route: inhalation (dust/mist/fume)  
Result: positive  
Remarks: Based on data from similar materials

Germ cell mutagenicity -  
Assessment : Positive result(s) from in vivo non-mammalian somatic cell  
mutagenicity tests, supported by positive results from in vitro  
mutagenicity assays.

### Butylphenol, 4-tert-:

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test  
Method: OECD Test Guideline 476  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo  
cytogenetic assay)  
Species: Mouse  
Application Route: Ingestion  
Method: OECD Test Guideline 474  
Result: negative  
Remarks: Based on data from similar materials

### Carcinogenicity

May cause cancer by inhalation.

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Suspected of causing cancer.

### Ingredients:

#### **Terpineol:**

Species: Mouse  
Application Route: Intraperitoneal injection  
Exposure time: 8 weeks  
Result: negative  
Remarks: Based on data from similar materials

#### **Toluene:**

Species: Rat  
Application Route: inhalation (vapor)  
Exposure time: 24 Months  
Result: negative

#### **Cassia oil:**

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

#### **2-Ethylhexanoic acid, nickel salt:**

Species: Rat  
Application Route: Ingestion  
Exposure time: 104 weeks  
Method: OECD Test Guideline 451  
Result: negative  
Remarks: Based on data from similar materials

Carcinogenicity - Assessment : Positive evidence from human epidemiological studies (inhalation)

**IARC**      Group 1: Carcinogenic to humans

2-Ethylhexanoic acid, nickel salt      7580-31-6

**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**      Known to be human carcinogen

2-Ethylhexanoic acid, nickel salt      7580-31-6

### **Reproductive toxicity**

May damage the unborn child. Suspected of damaging fertility.

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### Ingredients:

#### **Terpineol:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 422  
Result: negative

Effects on fetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 422  
Result: negative

#### **Turpentine:**

Effects on fertility : Test Type: One-generation reproduction toxicity study  
Species: Rat  
Application Route: Ingestion  
Result: negative

Effects on fetal development : Test Type: Fertility/early embryonic development  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 414  
Result: negative  
Remarks: Based on data from similar materials

#### **Toluene:**

Effects on fertility : Test Type: One-generation reproduction toxicity study  
Species: Rat  
Application Route: inhalation (vapor)  
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: inhalation (vapor)  
Result: positive

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

#### **Bornan-2-one:**

Effects on fetal development : Test Type: Fertility/early embryonic development  
Species: Rat  
Application Route: Ingestion  
Result: negative



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### **Solvent naphtha (petroleum), light arom.:**

Effects on fertility : Test Type: Three-generation reproduction toxicity study  
Species: Rat  
Application Route: inhalation (vapor)  
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Mouse  
Application Route: inhalation (vapor)  
Result: negative

### **Eucalyptus oil:**

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 422  
Result: negative

### **Bismuth tris(2-ethylhexanoate):**

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: Ingestion  
Result: positive  
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

### **Decahydronaphthalene:**

Effects on fetal development : Test Type: **Reproduction/Developmental toxicity screening test**  
Species: **Mouse**  
Application Route: **Ingestion**  
Result: **negative**

### **Chromium-2-ethylhexanoate:**

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: Ingestion  
Result: positive  
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

### **2-Ethylhexanoic acid:**

Effects on fertility : Test Type: Fertility/early embryonic development

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Species: Rat  
Application Route: Ingestion  
Result: negative

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: Ingestion  
Result: positive

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

### **2-Ethylhexanoic acid, nickel salt:**

Effects on fertility : Test Type: Two-generation reproduction toxicity study  
Species: Rat  
Application Route: Ingestion  
Result: negative  
Remarks: Based on data from similar materials

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: Ingestion  
Result: positive  
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Clear evidence of adverse effects on development, based on animal experiments.

### **Butylphenol, 4-tert-:**

Effects on fertility : Test Type: Two-generation study  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 416  
Result: positive

Effects on fetal development : Test Type: Embryo-fetal development  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 414  
Result: negative  
Remarks: Based on data from similar materials

Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, based on animal experiments.

### **STOT-single exposure**

Not classified based on available information.

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### Ingredients:

#### **Toluene:**

Assessment: May cause drowsiness or dizziness.

#### **Bornan-2-one:**

Assessment: May cause respiratory irritation.

#### **Solvent naphtha (petroleum), light arom.:**

Assessment: May cause drowsiness or dizziness.

Assessment: May cause respiratory irritation.

### **STOT-repeated exposure**

May cause damage to organs (Central nervous system, Respiratory system) through prolonged or repeated exposure.

### Ingredients:

#### **Toluene:**

Target Organs: Central nervous system

Assessment: May cause damage to organs through prolonged or repeated exposure.

#### **2-Ethylhexanoic acid, nickel salt:**

Routes of exposure: inhalation (dust/mist/fume)

Target Organs: Respiratory system

Assessment: Shown to produce significant health effects in animals at concentrations of 0.02 mg/l/6h/d or less.

Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

### **Repeated dose toxicity**

### Ingredients:

#### **Terpineol:**

Species: Rat

NOAEL: 250 mg/kg

Application Route: Ingestion

Exposure time: 56 Days

Method: OECD Test Guideline 422

#### **Toluene:**

Species: Rat

LOAEL: 1.875 mg/l

Application Route: inhalation (vapor)

Exposure time: 6 Months

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### **Cassia oil:**

Species: Rat  
NOAEL: 200 mg/kg  
Application Route: Ingestion  
Exposure time: 12 Weeks  
Remarks: Based on data from similar materials

### **Bornan-2-one:**

Species: Rat  
NOAEL: 250 mg/kg  
Application Route: Skin contact  
Exposure time: 13 Weeks

### **Solvent naphtha (petroleum), light arom.:**

Species: Rat, female  
NOAEL: 900 mg/m<sup>3</sup>  
Application Route: inhalation (vapor)  
Exposure time: 12 Months  
Remarks: Based on data from similar materials

### **Eucalyptus oil:**

Species: Rat  
NOAEL: 300 mg/kg  
LOAEL: 1,000 mg/kg  
Application Route: Ingestion  
Exposure time: 5 Weeks  
Method: OECD Test Guideline 422

### **Decahydronaphthalene:**

Species: Rat, female  
NOAEL: > 1,000 mg/kg  
Application Route: Ingestion  
Exposure time: 28 Days

Species: Rat  
NOAEL: 1.42 mg/l  
Application Route: inhalation (vapor)  
Exposure time: 14 Weeks

### **2-Ethylhexanoic acid:**

Species: Rat  
NOAEL: 300 mg/kg  
Application Route: Ingestion  
Exposure time: 91 - 93 Days

### **2-Ethylhexanoic acid, nickel salt:**

Species: Rat  
NOAEL: 0.0001 mg/l

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Application Route: inhalation (dust/mist/fume)  
Exposure time: 2 yr  
Remarks: Based on data from similar materials

### **Butylphenol, 4-tert-:**

Species: Rat  
LOAEL: 150 mg/kg  
Application Route: Ingestion  
Exposure time: 90 Days  
Remarks: Based on data from similar materials

### **Aspiration toxicity**

May be fatal if swallowed and enters airways.

### **Ingredients:**

#### **Oils, spike:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### **Turpentine:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### **Fennel oil:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### **Toluene:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### **Rosemary oil:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### **Solvent naphtha (petroleum), light arom.:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### **Eucalyptus oil:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

#### **Oils, spruce:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be re-

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garded as if it causes a human aspiration toxicity hazard.

### Lemon oils:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be re-garded as if it causes a human aspiration toxicity hazard.

### Decahydronaphthalene:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be re-garded as if it causes a human aspiration toxicity hazard.

### Experience with human exposure

#### Ingredients:

#### Toluene:

Inhalation : Target Organs: Central nervous system  
Symptoms: Neurological disorders, Fatigue, Vertigo

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Ingredients:

#### Oils, spike:

Toxicity to fish : LC50: > 0.1 - 1 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other : EC50: > 0.1 - 1 mg/l  
aquatic invertebrates : Exposure time: 48 h  
Remarks: Based on data from similar materials

M-Factor (Acute aquatic tox- : 1  
icity)

#### Terpineol:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 62 - 80 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 73 mg/l  
aquatic invertebrates : Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae : NOEC (Pseudokirchneriella subcapitata (green algae)): 3.9  
mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

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EC50 (*Pseudokirchneriella subcapitata* (green algae)): 68 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

### **Turpentine:**

Toxicity to fish : LL50 (*Danio rerio* (zebra fish)): 29 mg/l  
Exposure time: 96 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EL50 (*Daphnia magna* (Water flea)): 8.8 mg/l  
Exposure time: 48 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 202

Toxicity to algae : EL50 (*Desmodesmus subspicatus* (green algae)): 16.4 mg/l  
Exposure time: 72 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 201

### **Fennel oil:**

Toxicity to fish : LC50 (*Pimephales promelas* (fathead minnow)): > 1 - 10 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): > 1 - 10 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae : EC50 (*Selenastrum capricornutum* (green algae)): > 1 - 10 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

### **Toluene:**

Toxicity to fish : LC50 (*Oncorhynchus kisutch* (coho salmon)): 5.5 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Ceriodaphnia dubia* (water flea)): 3.78 mg/l  
Exposure time: 48 h

Toxicity to algae : NOEC (*Skeletonema costatum* (marine diatom)): 10 mg/l  
Exposure time: 72 h

Toxicity to fish (Chronic toxicity) : NOEC (*Oncorhynchus kisutch* (coho salmon)): 1.39 mg/l  
Exposure time: 40 d

Toxicity to daphnia and other aquatic invertebrates (Chronic) : NOEC (*Daphnia magna* (Water flea)): 1 mg/l  
Exposure time: 21 d

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ic toxicity)

NOEC (Ceriodaphnia dubia (water flea)): 0.74 mg/l  
Exposure time: 7 d

Toxicity to microorganisms : EC50 (Nitrosomonas sp.): 84 mg/l  
Exposure time: 24 h

### **Bornan-2-one:**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 35 - 50 mg/l  
Exposure time: 96 h

LC50 (Pimephales promelas (fathead minnow)): 110 mg/l  
Exposure time: 96 h

Toxicity to microorganisms : EC50: > 100 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

### **Abietic acid:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2.38 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other : EL50 (Daphnia magna (Water flea)): > 10 - 100 mg/l  
aquatic invertebrates      Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae : EL50 (Pseudokirchneriella subcapitata (green algae)): > 1,000  
mg/l  
Exposure time: 72 h  
Remarks: Based on data from similar materials

### **Rosemary oil:**

Toxicity to fish : LL50 (Pimephales promelas (fathead minnow)): > 0.1 - 1 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

M-Factor (Acute aquatic tox- : 1  
icity)

### **Solvent naphtha (petroleum), light arom.:**

Toxicity to fish : LL50 (Oncorhynchus mykiss (rainbow trout)): 9.2 mg/l  
Exposure time: 96 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 203

Toxicity to daphnia and other : EL50 (Daphnia magna (Water flea)): 3.2 mg/l  
aquatic invertebrates      Exposure time: 48 h  
Test substance: Water Accommodated Fraction



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Method: OECD Test Guideline 202

Toxicity to algae : EL50 (Pseudokirchneriella subcapitata (green algae)): 7.9 mg/l  
Exposure time: 72 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 201

NOELR (Pseudokirchneriella subcapitata (green algae)): 0.22 mg/l  
Exposure time: 72 h  
Test substance: Water Accommodated Fraction  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50: > 99 mg/l  
Exposure time: 10 min

### **Eucalyptus oil:**

Toxicity to fish : LC50: > 1 - 10 mg/l  
Exposure time: 96 h

### **Oils, spruce:**

Toxicity to fish : LL50: > 0.1 - 1 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): > 0.1 - 1 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae : EL50: > 0.1 - 1 mg/l  
Exposure time: 72 h  
Remarks: Based on data from similar materials

M-Factor (Acute aquatic toxicity) : 1

### **Lemon oils:**

Toxicity to fish : LC50: > 0.1 - 1 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.1 - 1 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 1 - 10 mg/l  
Exposure time: 72 h  
Remarks: Based on data from similar materials

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M-Factor (Acute aquatic toxicity) : 1

### **Bismuth tris(2-ethylhexanoate):**

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 100 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l  
Exposure time: 72 h  
Remarks: Based on data from similar materials

### **Decahydronaphthalene:**

Toxicity to fish : LC50 (Oryzias latipes (Japanese medaka)): 1.84 mg/l  
Exposure time: 48 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Mysidopsis bahia (opossum shrimp)): 0.05 mg/l  
Exposure time: 48 h

Toxicity to algae : EbC50 (Desmodesmus subspicatus (green algae)): > 2.2 mg/l  
Exposure time: 72 h  
Method: Directive 67/548/EEC, Annex V, C.3.  
Remarks: No toxicity at the limit of solubility.

EC10 (Desmodesmus subspicatus (green algae)): > 2.2 mg/l  
Exposure time: 72 h  
Method: Directive 67/548/EEC, Annex V, C.3.  
Remarks: No toxicity at the limit of solubility.

M-Factor (Acute aquatic toxicity) : 10

### **Chromium-2-ethylhexanoate:**

Toxicity to fish : Remarks: No toxicity at the limit of solubility.  
Based on data from similar materials

### **2-Ethylhexanoic acid:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 180 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 106 mg/l  
Exposure time: 48 h

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Toxicity to algae : EC50 (Desmodesmus subspicatus (green algae)): 49.3 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 25 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50 (Pseudomonas putida): 112.1 mg/l  
Exposure time: 17 h

### 2-Ethylhexanoic acid, nickel salt:

Toxicity to fish : LL50 (Pimephales promelas (fathead minnow)): > 1 - 10 mg/l  
Exposure time: 96 h  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EL50 (Ceriodaphnia dubia (water flea)): > 0.1 - 1 mg/l  
Exposure time: 48 h  
Remarks: Based on data from similar materials

Toxicity to algae : EL10 (Pseudokirchneriella subcapitata (green algae)): > 0.01 - 0.1 mg/l  
Exposure time: 72 h  
Remarks: Based on data from similar materials

EL10 (Lemna minor (duckweed)): > 0.01 - 0.1 mg/l  
Exposure time: 7 d  
Remarks: Based on data from similar materials

M-Factor (Acute aquatic toxicity) : 1

Toxicity to fish (Chronic toxicity) : NOELR (Danio rerio (zebra fish)): > 0.1 - 1 mg/l  
Exposure time: 8 d  
Remarks: Based on data from similar materials

NOELR (Pimephales promelas (fathead minnow)): > 0.1 - 1 mg/l  
Exposure time: 32 d  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : **EL10 (Ceriodaphnia dubia (water flea)): > 0.01 - 0.1 mg/l**  
Exposure time: **10 d**  
Remarks: **Based on data from similar materials**

NOELR (Daphnia magna (Water flea)): > 0.1 - 1 mg/l  
Exposure time: 21 d  
Remarks: Based on data from similar materials

M-Factor (Chronic aquatic toxicity) : 1

Toxicity to microorganisms : EC50: > 10 mg/l

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Exposure time: 30 min  
Remarks: Based on data from similar materials

### Butylphenol, 4-tert-:

- Toxicity to fish : LC50 (Oryzias latipes (Japanese medaka)): 5.1 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 4.8 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202
- Toxicity to algae : ErC50 (Raphidocelis subcapitata (freshwater green alga)): 14 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- EC10 (Raphidocelis subcapitata (freshwater green alga)): 2.9 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201
- Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 10 µg/l  
Exposure time: 128 d
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.73 mg/l  
Exposure time: 21 d
- M-Factor (Chronic aquatic toxicity) : 1
- Toxicity to microorganisms : EC50: > 10 mg/l  
Exposure time: 3 h

### Persistence and degradability

#### Ingredients:

##### **Terpineol:**

- Biodegradability : Result: Readily biodegradable.  
Biodegradation: 80 %  
Exposure time: 28 d  
Method: OECD Test Guideline 310

##### **Turpentine:**

- Biodegradability : Result: Readily biodegradable.  
Biodegradation: 71.7 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

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### **Fennel oil:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: >= 90.7 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B  
Remarks: Based on data from similar materials

### **Toluene:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 86 %  
Exposure time: 20 d

### **Cassia oil:**

Biodegradability : Result: Readily biodegradable.  
Remarks: Based on data from similar materials

### **Bornan-2-one:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 77 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

### **Abietic acid:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 71 %  
Exposure time: 28 d  
Remarks: Based on data from similar materials

### **Rosemary oil:**

Biodegradability : Result: Readily biodegradable.  
Remarks: Based on data from similar materials

### **Solvent naphtha (petroleum), light arom.:**

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 78 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

### **Eucalyptus oil:**

Biodegradability : Result: Readily biodegradable.  
Remarks: Based on data from similar materials

### **Oils, spruce:**

Biodegradability : Result: Readily biodegradable.  
Remarks: Based on data from similar materials

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### Lemon oils:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: > 60 %  
Exposure time: 28 d  
Remarks: Based on data from similar materials

### Decahydronaphthalene:

Biodegradability : Result: **Not readily biodegradable.**  
Biodegradation: **0 %**  
Exposure time: **28 d**  
Method: **OECD Test Guideline 301F**

### 2-Ethylhexanoic acid:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 99 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301E

### Butylphenol, 4-tert-:

Biodegradability : Result: Readily biodegradable.  
Biodegradation: 98 %  
Exposure time: 28 d  
Method: Directive 67/548/EEC Annex V, C.4.A.

### Bioaccumulative potential

#### Ingredients:

##### Terpineol:

Partition coefficient: n-  
octanol/water : log Pow: 2.6

##### Turpentine:

Partition coefficient: n-  
octanol/water : log Pow: > 4  
Method: OECD Test Guideline 117  
Remarks: Based on data from similar materials

##### Fennel oil:

Partition coefficient: n-  
octanol/water : log Pow: > 4  
Remarks: Based on data from similar materials

##### Toluene:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)  
Bioconcentration factor (BCF): 90

Partition coefficient: n-  
octanol/water : log Pow: 2.73

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### **Bornan-2-one:**

Partition coefficient: n-octanol/water : log Pow: 2.414

### **Rosemary oil:**

Partition coefficient: n-octanol/water : log Pow: > 4

### **Solvent naphtha (petroleum), light arom.:**

Partition coefficient: n-octanol/water : log Pow: 3.7 - 4.5

### **Eucalyptus oil:**

Partition coefficient: n-octanol/water : log Pow: > 4

### **Oils, spruce:**

Partition coefficient: n-octanol/water : log Pow: > 4  
Remarks: Based on data from similar materials

### **Lemon oils:**

Partition coefficient: n-octanol/water : log Pow: > 4

### **Decahydronaphthalene:**

Bioaccumulation : Species: **Cyprinus carpio (Carp)**  
Bioconcentration factor (BCF): **839 - 3,050**  
Method: **OECD Test Guideline 305C**

Partition coefficient: n-octanol/water : log Pow: **4**

### **2-Ethylhexanoic acid:**

Partition coefficient: n-octanol/water : log Pow: 2.7

### **2-Ethylhexanoic acid, nickel salt:**

Partition coefficient: n-octanol/water : log Pow: -0.33

### **Butylphenol, 4-tert-:**

Bioaccumulation : Species: **Cyprinus carpio (Carp)**  
Bioconcentration factor (BCF): **20 - 48**  
Method: **OECD Test Guideline 305C**

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Partition coefficient: n-octanol/water : log Pow: 3

### Mobility in soil

No data available

### Other adverse effects

#### Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : If recycling is not practicable, dispose of in compliance with local regulations.  
Contaminated packaging : Dispose of as unused product.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### **IATA-DGR**

UN/ID No. : UN 1263  
Proper shipping name : Paint  
Class : 3  
Packing group : III  
Labels : Flammable Liquids  
Packing instruction (cargo aircraft) : 366  
Packing instruction (passenger aircraft) : 355

#### **IMDG-Code**

UN number : UN 1263  
Proper shipping name : PAINT (Oils, spike, Decahydronaphthalene)  
Class : 3  
Packing group : III  
Labels : 3  
EmS Code : F-E, S-E  
Marine pollutant : yes



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

Not applicable for product as supplied.

### Domestic regulation

#### DOT

UN/ID/NA number : UN 1263  
Proper shipping name : Paint  
  
Class : 3  
Packing group : III  
Labels : FLAMMABLE LIQUID  
ERG Code : 128  
Marine pollutant : yes(Oils, spike, Decahydronaphthalene)

## SECTION 15. REGULATORY INFORMATION

### EPCRA - Emergency Planning and Community Right-to-Know

#### CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Toluene	108-88-3	1000	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

#### SARA 304 Extremely Hazardous Substances Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Formaldehyde	50-00-0	100	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

#### 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** : Fire Hazard  
Acute Health Hazard  
Chronic Health Hazard

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

Toluene	108-88-3
2-Ethylhexanoic acid, nickel salt	7580-31-6

### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Toluene	108-88-3
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This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

Toluene 108-88-3

### Clean Water Act

This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

Toluene 108-88-3

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Toluene 108-88-3  
Chromium Acetate 1066-30-4  
Formaldehyde 50-00-0

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Toluene 108-88-3  
Chromium Acetate 1066-30-4  
Formaldehyde 50-00-0

### US State Regulations

#### Massachusetts Right To Know

Turpentine 8006-64-2  
Toluene 108-88-3  
Bornan-2-one 76-22-2  
Formaldehyde 50-00-0

#### Pennsylvania Right To Know

Oils, spike 8016-78-2  
Balsams, copaiba, sulfurized, mixed with turpentine, gold salts 68990-27-2  
Dammar 9000-16-2  
Terpineol 8000-41-7  
Turpentine 8006-64-2  
Oil, lavender 8000-28-0  
Fennel oil 8006-84-6  
Toluene 108-88-3  
Cassia oil 8007-80-5  
Bornan-2-one 76-22-2  
Rosemary oil 8000-25-7  
Solvent naphtha (petroleum), light arom. 64742-95-6  
Lemon oils 8008-56-8  
Chromium-2-ethylhexanoate 3444-17-5  
2-Ethylhexanoic acid, nickel salt 7580-31-6  
Chromium Acetate 1066-30-4  
Formaldehyde 50-00-0

#### California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

2-Ethylhexanoic acid, nickel salt 7580-31-6  
Formaldehyde 50-00-0

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WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Toluene 108-88-3

### California List of Hazardous Substances

Turpentine	8006-64-2
Toluene	108-88-3
Bornan-2-one	76-22-2

### California Permissible Exposure Limits for Chemical Contaminants

Turpentine	8006-64-2
Toluene	108-88-3
Bornan-2-one	76-22-2
Lemon oils	8008-56-8

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

TSCA : On TSCA Inventory

### TSCA list

No substances are subject to a Significant New Use Rule.

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

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## 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; KECl - 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

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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

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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 re-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.

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