



SAFETY DATA SHEET

INTERNATIONAL FLAVORS & FRAGRANCES

Product TERPINOLENE 20

Print Date 10/05/2017

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SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TERPINOLENE 20
IFF Code : 00202825
Cust. Material : 00202825
SDS Number : R00000494366
Product Use Description : Fragrance Compound

Company : IFF Inc.
600 Highway 36
Hazlet NJ 07730

Telephone : (732) 264-4500
Telefax : (732) 335-2551
Emergency telephone number : +1 800 424 9300

SECTION 2 HAZARDS IDENTIFICATION

GHS-Classification

Flammable liquids, Category 3
Skin irritation, Category 2
Skin sensitisation, Category 1
Aspiration hazard, Category 1

GHS-Labeling

Symbol(s) : 

Signal word : Danger

Hazard statements : H226: Flammable liquid and vapour.

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H304: May be fatal if swallowed and enters airways.

H315: Causes skin irritation.

H317: May cause an allergic skin reaction.

Precautionary statements : P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240: Ground/bond container and receiving equipment.
P280: Wear protective gloves.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P331: Do NOT induce vomiting.
P403 + P235: Store in a well-ventilated place. Keep cool.

Carcinogenicity:

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.

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

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 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Fragrance for consumer product

Hazardous components

Component	CAS-No.
Cyclohexene, 1-methyl-4-(1-methylethenyl)-	138-86-3
Cyclohexene, 1-methyl-4-(1-methylethylidene)-	586-62-9
2-Oxabicyclo[2.2.2]octane, 1,3,3-trimethyl-	470-82-6
7-Oxabicyclo[2.2.1]heptane, 1-methyl-4-(1-methylethyl)-	470-67-7

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1,4-Cyclohexadiene, 1-methyl-4-(1-methylethyl)-	99-85-4
1,3-Cyclohexadiene, 1-methyl-4-(1-methylethyl)-	99-86-5
Benzene, 1-methyl-4-(1-methylethyl)-	99-87-6
Bicyclo[2.2.1]heptane, 2,2-dimethyl-3-methylene-	79-92-5
1,3-Cyclohexadiene, 2-methyl-5-(1-methylethyl)-, Cyclohexane, 1-methyl-4-(1-methylethyl)-, tetrahydro deriv.	1329-99-3

SECTION 4. FIRST AID MEASURES

First aid procedures

- Inhalation : Remove from exposure site to fresh air and keep at rest. If victim is unconscious, remove foreign bodies from the mouth. If victim has stopped breathing, give artificial respiration. Obtain medical advice.
- Skin contact : Remove contaminated clothes. Wash thoroughly with water (and soap). Contact physician if symptoms persist.
- Eye contact : Flush immediately with water for at least 15 minutes. Contact physician if symptoms persist.
- Ingestion : Rinse mouth with water and obtain medical advice.

SECTION 5. FIREFIGHTING MEASURES

Flammable properties

- Flash point : 114.80 °F (46.00 °C)

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Fire fighting

Suitable extinguishing media : Use water spray, dry chemical, carbon dioxide or appropriate foam.

Protective equipment and precautions for firefighters

Special protective equipment for firefighters : Wear NIOSH approved self-contained breathing apparatus and full protective clothing when fighting fires involving chemicals. Use water spray to cool containers exposed to fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Avoid inhalation and contact with skin and eyes. A self-contained breathing apparatus is recommended in case of a major spill.

Environmental precautions : Keep away from drains, surface- and groundwater and soil.

Methods for containment /
Methods for cleaning up : Clean up spillage promptly. Remove ignition sources. Provide adequate ventilation. Avoid excessive inhalation of vapours. Gross spillages should be contained by use of sand or inert powder and disposed of according to the local regulations.

SECTION 7. HANDLING AND STORAGE

Handling : Avoid excessive inhalation of concentrated vapors. Follow good manufacturing practices for housekeeping and personal hygiene. Wash any exposed skin immediately after any chemical contact, before breaks and meals, and at the end of each work period. Contaminated clothing and shoes should be thoroughly cleaned before re-use.

If appropriate, procedures used during the handling of this material

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should also be used when cleaning equipment or removing residual chemicals from tanks or other containers, especially when steam or hot water is used, as this may increase vapor concentrations in the workplace air. Where chemicals are openly handled, access should be restricted to properly trained employees.

Keep all heated processes at the lowest necessary temperature in order to minimize emissions of volatile chemicals into the air.

Advice on protection against fire and explosion : Keep away from ignition sources and naked flame.

Requirements for storage areas and containers : Store in a cool, dry, ventilated area away from heat sources. Keep containers upright and tightly closed when not in use.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	Listed by	Value type	Exposure limit(s)
Cyclohexene, 1-methyl-4-(1-methylethenyl)-, Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (4R)-, Cyclohexene, 1-methyl-4-(1-methylethenyl)-, (4S)-	USA. Workplace Environmental Exposure Levels (WEEL)	8-hr TWA	30 ppm

Engineering measures

Engineering measures : Where feasible, isolate mixing rooms and other areas where this material is used or openly handled. Maintain these areas under negative air pressure relative to the rest of the plant. Where feasible, use closed systems to transfer and process this

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material

Personal protective equipment

- Eye protection : Use tight-fitting goggles, face shield or safety glasses with side shields if eye contact might occur.
- Hand protection : Avoid skin contact. Use chemically resistant gloves.
- Respiratory protection : Use local exhaust ventilation around open tanks and other open sources of potential exposures in order to avoid excessive inhalation, including places where this material is openly weighed or measured. In addition, use general dilution ventilation of the work area to eliminate or reduce possible worker exposures. No respiratory protection is required during normal operations in a workplace where engineering controls such as adequate ventilation, etc. are sufficient.

If engineering controls and safe work practices are not sufficient, an approved, properly fitted respirator with organic vapor cartridges or canisters and particulate filters should be used:

- a)while engineering controls and appropriate safe work practices and/or procedures are being implemented; or
- b)during short term maintenance procedures when engineering controls are not in normal operation or are not sufficient; or
- c)if normal operational workplace vapor concentration in the air is increased due to heat ;
- d)during emergencies; or
- e)if engineering controls and operational practices are not sufficient to reduce airborne concentrations below an established occupational exposure limit.

- Hygiene measures : To the extent deemed appropriate, implement pre-placement and regularly scheduled ascertainment of symptoms and spirometry testing of lung function for workers who are regularly exposed to

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this material.

To the extent deemed appropriate, use an experienced air sampling expert to identify and measure volatile chemicals that could be present in the workplace air to determine potential exposures and to ensure the continuing effectiveness of engineering controls and operational practices to minimize exposure.

Protective measures

: In December 2003, the National Institute for Occupational Safety and Health ("NIOSH") published an Alert on preventing lung disease in workers who use or make flavorings [NIOSH Publication Number 2004-110].

In August 2004, the United States Flavor and Extract Manufacturers Association (FEMA) issued a report entitled "Respiratory Safety in the Flavor Manufacturing Workplace".

Both of these reports provide recommendations for reducing employee exposure and for medical surveillance in the workplace. The recommendations in these reports are generally applicable to the use of any chemical in the workplace and you are strongly urged to review both of these reports.

The report published by FEMA also contains a list of "high priority" chemicals. If any of these chemicals are present in this product at a concentration $\geq 1.0\%$ due to an intentional addition by IFF, the chemical(s) will be identified in this safety data sheet.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state : liquid
Appearance : CLEAR LIQUID
Colour : colorless to pale yellow

Odour : conforms to standard

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Safety data

Flash point : 114.80 °F (46.00 °C)

Vapour pressure : 1.10 hPa (1.1 hPa)
Note: Calculated

Relative density (20 °C) : 0.8540 - 0.8700

SECTION 10. STABILITY AND REACTIVITY

Conditions to avoid : Remarks: Direct sources of heat.

Chemical stability : Remarks: Presents no significant reactivity hazard, by itself or in contact with water. Avoid contact with strong acids, alkali or oxidizing agents.

Hazardous decomposition products : Note: Carbon monoxide and unidentified organic compounds may be formed during combustion.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : Acute toxicity estimate
Dose: 4,629 mg/kg
Method: Calculation method

Acute oral toxicity (Component) : Component: 138-86-3
LD50 Rat
Dose: 5,300 mg/kg

Component: 586-62-9
LD50 Rat
Dose: 3,840 mg/kg
Remarks: RIFM

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Component: 470-82-6
LD50 Rat
Dose: 2,480 mg/kg
Remarks: Supplier

Component: 99-85-4
LD50 Rat
Dose: 3,650 mg/kg
Remarks: Supplier

Component: 99-86-5
LD50 Rat
Dose: 1,680 mg/kg
Remarks: RIFM

Component: 99-87-6
LD50 Oral Rat
Dose: 4,750 mg/kg

Component: 79-92-5
LD50 Rat
Dose: > 5,000 mg/kg
Remarks: RIFM

Component: 1329-99-3
LD50 Rat
Dose: 5,700 mg/kg

Acute dermal toxicity : Acute toxicity estimate
Dose: > 5,000 mg/kg
Method: Calculation method

Acute dermal toxicity (Component) : Component: 138-86-3
LD50 Rabbit
Dose: > 5,000 mg/kg

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Component: 586-62-9
LD50 Rabbit
Dose: > 5,000 mg/kg

Component: 470-82-6
LD50 Rabbit
Dose: > 5,000 mg/kg

Component: 99-85-4
LD50 Rabbit
Dose: > 5,000 mg/kg

Component: 99-87-6
LD50 Rabbit
Dose: > 5,000 mg/kg

Component: 79-92-5
LD50 Rabbit
Dose: > 2,500 mg/kg

Skin irritation (Component) : Component: 138-86-3
Rabbit
Result: Skin irritation
Exposure time: 24 h
Test substance:(undiluted)
human
Result: No skin irritation
Method: closed patch test
Exposure time: 48 h

Component: 586-62-9
human
Result: No skin irritation
Method: closed patch test
Exposure time: 48 h
Rabbit
Result: No skin irritation

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Exposure time: 24 h

Component: 470-82-6
Rabbit
Result: No skin irritation
Exposure time: 24 h

Component: 99-85-4
human
Result: No skin irritation
Method: closed patch test
Exposure time: 48 h
Rabbit
Result: Skin irritation
Exposure time: 24 h

Component: 99-86-5
human
Result: No skin irritation
Method: closed patch test
Exposure time: 48 h

Component: 99-87-6
human
Result: No skin irritation
Method: closed patch test
Exposure time: 48 h
Test substance: 4.0% in petrolatum
Rabbit
Result: Skin irritation
Exposure time: 24 h

Component: 79-92-5
human
Result: No skin irritation
Method: closed patch test
Exposure time: 48 h

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Rabbit
Result: Skin irritation
Exposure time: 24 h

Sensitisation (Component) : Component: 138-86-3
LLNA Mouse
Result: Causes sensitisation.
Test substance: 22% in ethanol/DEP (75:25)
maximisation study human
Result: causes no sensitization
Test substance: 20% in petrolatum

Component: 586-62-9
maximisation study human
Result: Did not cause sensitisation on laboratory animals.
Test substance: 20% in petrolatum

Component: 99-85-4
maximisation study human
Result: Did not cause sensitisation on laboratory animals.
Test substance: 4.0% in petrolatum

Component: 99-86-5
maximisation study human
Result: Did not cause sensitisation on laboratory animals.
Test substance: 5% in petrolatum

Component: 99-87-6
maximisation study human
Result: Did not cause sensitisation on laboratory animals.
Test substance: 4.0% in petrolatum

Component: 79-92-5
maximisation study human
Result: Did not cause sensitisation on laboratory animals.
Test substance: 4.0% in petrolatum

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Repeated dose toxicity(Component) : Component: 138-86-3
Component: 586-62-9
Component: 99-85-4
Component: 99-86-5
Component: 99-87-6
Component: 79-92-5

SECTION 12. ECOLOGICAL INFORMATION

Component:

138-86-3 Dipentene Toxicity to fish:
LC50
Species:
Dose: 0.702 mg/l
Exposure time: 96 h

586-62-9 Terpinolene Toxicity to fish:
LC50
Species:
Dose: 1.21 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates:
EC50
Species:
Dose: 1.38 mg/l
Exposure time: 48 h

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Toxicity to daphnia and other aquatic invertebrates:

EC50

Species:

Dose: 2.55 mg/l

Exposure time: 48 h

99-87-6

CYMENE/PAR
A

Toxicity to daphnia and other aquatic invertebrates:

EC50

Species:

Dose: 6.5 mg/l

Exposure time: 48 h

79-92-5

CAMPHENE

Toxicity to fish:

LC50

Species:

Dose: 0.72 mg/l

Exposure time: 96 h

Toxicity to algae:

ErC50

Species:

Dose: > 1,000.0 mg/l

Exposure time: 72 h

SECTION 13. DISPOSAL CONSIDERATIONS

Contaminated packaging : Place material into sealed containers and dispose of in accordance with local, state and federal regulations.

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SECTION 14. TRANSPORT INFORMATION

DOT Proper shipping name : Combustible liquid, n.o.s.
(DIPENTENE)
UN number : 1993
Class : CBL
Packing group : III
Emergency Response : 128
Guidebook Number

DOT NON-BULK Not dangerous goods

IATA UN number : 1169
Description of the goods : EXTRACTS, AROMATIC, LIQUID
Class : 3
Packing group : III
ICAO-Labels : 3

IMDG UN number : 1169
Description of the goods : EXTRACTS, AROMATIC, LIQUID
Class : 3
Packing group : III
IMDG-Labels : 3
EmSNumber 1 : F-E
EmSNumber 2 : S-D
Marine pollutant : yes
(DIPENTENE)

SECTION 15. REGULATORY INFORMATION

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

Reportable Quantity :

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HMIS Classification : Health hazard: 3
Chronic Health Hazard: /
Flammability: 2
Physical and chemical hazards: 0

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

TSCA 12 (b) material	CAS-No.
Cyclohexene, 1-methyl-4-(1-methylethenyl)-	138-86-3

SECTION 16. OTHER INFORMATION

Further information

The information in this MSDS was obtained from current and reliable sources. However the data is provided without any warrant, expressed or implied, regarding its correctness or accuracy. Since the use, handling, storage and disposal of this product are beyond IFF control, it is the responsibility of the user both to determine safe conditions for the use of this product and to assume liability of loss, damage, or expense arising out of the product's improper use. No warranty expressed or implied regarding the product described herein shall be created by or inferred from any statement or omission in this MSDS. Various Federal, State or Provincial agencies may have specific regulations concerning the transportation, handling, storage, use, or disposal of this product which may not be reflected in this MSDS. The user should review these regulations to ensure full compliance.

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