Isopentane 95%

Version 1.2 Revision Date 2014-03-10

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information

Trade name : Isopentane 95%
Material : 1108283, 1025135, 1024849, 1016656, 1016655, 1020537, 1016654, 1024848

EC-No.Registration number

Chemical Name	CAS-No. EC-No. Index No.	Legal Entity Registration number
Isopentane	78-78-4 201-142-8 601-006-00-1	Chevron Phillips Chemicals International NV 01-2119475602-38-XXXX

Relevant Identified Uses Supported : Use in polymer processing –industrial

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Local : Chevron Phillips Chemicals International N.V.
Brusselsesteenweg 355
B-3090 Overijse
Belgium

MSDS Requests: (800) 852-5530
Technical Information: (832) 813-4862
Responsible Party: Product Safety Group
Email:msds@cpchem.com

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255)
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group

E-mail address	:	MSDS@CPChem.com
Website	:	www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Flammable liquids, Category 1	H224: Extremely flammable liquid and vapor.
Specific target organ systemic toxicity - single exposure, Category 3 , Central nervous system	H336: May cause drowsiness or dizziness.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

Classification (67/548/EEC, 1999/45/EC)

Extremely flammable	R12: Extremely flammable.
Harmful	R65: Harmful: may cause lung damage if swallowed.
Dangerous for the environment	R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. R66: Repeated exposure may cause skin dryness or cracking. R67: Vapors may cause drowsiness and dizziness.

Label elements

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word	:	Danger	
Hazard Statements	:	H224	Extremely flammable liquid and vapor.
		H304	May be fatal if swallowed and enters airways.
		H336	May cause drowsiness or dizziness.
		H411	Toxic to aquatic life with long lasting effects.
Precautionary Statements	:	**Prevention:**	
		P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
		P233	Keep container tightly closed.
		Response:	
		P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
		P331	Do NOT induce vomiting.
		P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.

Hazardous ingredients which must be listed on the label:
- 78-78-4 Isopentane

SECTION 3: Composition/information on ingredients

Synonyms : Dimethylethylmethane
2-Methylbutane
Isopentane (Borger Polymerization Grade)
Isopentane (Borger commercial Grade)

Molecular formula : C5H12

Mixtures

Hazardous ingredients

Chemical Name	CAS-No. EC-No. Index No.	Classification (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
Isopentane	78-78-4 201-142-8 601-006-00-1	F+; R12 Xn; R65 R66 R67 N; R51-R53	Flam. Liq. 1; H224 Flam. Liq. 1; H224 Aquatic Acute 2; H401 Aquatic Chronic 2; H411 STOT SE 3; H336 Asp. Tox. 1; H304 Aquatic Chronic 2; H411	95

For the full text of the R-phrases mentioned in this Section, see Section 16.
For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

If inhaled : Consult a physician after significant exposure. If unconscious place in recovery position and seek medical advice.

In case of skin contact : If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Never give anything by mouth to

an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point	:	< -40 °C (< -40 °F) estimated
Autoignition temperature	:	420 °C (788 °F) estimated
Suitable extinguishing media	:	Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.
Unsuitable extinguishing media	:	High volume water jet.
Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.
Special protective equipment for fire-fighters	:	Wear self contained breathing apparatus for fire fighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection	:	Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.
Hazardous decomposition products	:	Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
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 for cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7: Handling and storage

Handling

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Ingredients with workplace control parameters

TR

Bileşenleri	Esaslar	Değer	Kontrol parametreleri	Not
ISOPENTANE	TR OEL	TWA (8 Saat)	1.000 ppm, 3.000 mg/m3	

SK

Súčast	Podstata	Hodnota	Kontrolné parametre	Poznámka
ISOPENTANE	SK OEL	NPEL priemerný	1.000 ppm, 3.000 mg/m3	

SI

Komponente	Osnova	Vrednost	Parametri nadzora	Pripomba
ISOPENTANE	SI OEL	MV	1.000 ppm, 3.000 mg/m3	EU,

EU European Union - mejna vednost določena na ravni Evropske unije

SE

Beståndsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
ISOPENTANE	SE AFS	NGV	600 ppm, 1.800 mg/m3	
	SE AFS	KTV	750 ppm, 2.000 mg/m3	

RU

Компоненты	Основа	Величина	Параметры контроля	Заметка
ISOPENTANE	RU OEL	ПДК	300 mg/m3	4,
	RU OEL	ПДК разовая	900 mg/m3	4,

4 4 класс - умеренно опасные

RO

Componente	Bază	Valoare	Parametri de control	Notă
ISOPENTANE	RO OEL	TWA	1.000 ppm, 3.000 mg/m3	

PT

Componentes	Bases	Valor	Parâmetros de controlo	Nota
ISOPENTANE	PT OEL	VLE-MP	600 ppm,	(1),

	PT DL 305/2007	oito horas	1.000 ppm, 3.000 mg/m3	

(1) Abrangido por legislação nacional específica ou por legislação comunitária não transposta

PL

Składniki	Podstawa	Wartość	Parametry dotyczące kontroli	Uwaga
ISOPENTANE	PL NDS	NDS	3.000 mg/m3	

NO

Komponenter	Grunnlag	Verdi	Kontrollparametere	Nota
ISOPENTANE	AN 361	TWA	250 ppm, 750 mg/m3	

NL

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
ISOPENTANE	NL MAC	TGG-8 uur	1.800 mg/m3	

MT

Ingredients	Basis	Value	Control parameters	Note
Isopentane	MT OEL	TWA	1.000 ppm, 3.000 mg/m3	

LV

Sastāvdaļas	Bāze	Vērtība	Pārvaldības parametri	Piezīme
ISOPENTANE	LV OEL	AER 8 st	1.000 ppm, 3.000 mg/m3	

LU

Composants	Base	Valeur	Paramètres de contrôle	Note
ISOPENTANE	LU OEL	TWA	1.000 ppm, 3.000 mg/m3	

LT

Komponentai	Pagrindas, bazė	Vertė	Kontrolės parametrai	Pastaba
ISOPENTANE	LT OEL	IPRD	1.000 ppm, 3.000 mg/m3	

IT

Componenti	Base	Valore	Parametri di controllo	Nota
ISOPENTANE	IT OEL	TWA	667 ppm, 2.000 mg/m3	

IE

Ingredients	Basis	Value	Control parameters	Note
Isopentane	IE OEL	OELV - 8 hrs (TWA)	1.000 ppm, 3.000 mg/m3	IOELV,
	IE OEL	OELV - 15 min (STEL)	750 ppm, 2.250 mg/m3	IOELV,

IOELV Indicative Occupational Exposure Limit Value

HU

Komponensek	Bázis	Érték	Ellenőrzési paraméterek	Megjegyzés
ISOPENTANE	HU OEL	AK-érték	3.000 mg/m3	EU2,
	HU OEL	CK-érték	24.000 mg/m3	EU2,

EU2 96/94/EK irányelvben közölt érték

GR

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
ISOPENTANE	GR OEL	TWA	1.000 ppm, 2.950 mg/m3	

GB

Ingredients	Basis	Value	Control parameters	Note
Isopentane	GB EH40	TWA	600 ppm, 1.800 mg/m3	2,

2 Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used

FR

Composants	Base	Valeur	Paramètres de contrôle	Note
ISOPENTANE	FR VLE	VME	1.000 ppm, 3.000 mg/m3	bleu,

bleu Valeurs limites réglementaires indicatives

FI

Aineosat	Peruste	Arvo	Valvontaa koskevat muuttujat	Huomautus
ISOPENTANE	FI OEL	HTP-arvot 8h	500 ppm, 1.500 mg/m3	
	FI OEL	HTP-arvot 15 min	630 ppm, 1.900 mg/m3	

ES

Componentes	Base	Valor	Parámetros de control	Nota
ISOPENTANE	ES VLA	VLA-ED	1.000 ppm, 3.000 mg/m3	VLI,

VLI Agente químico que tiene establecido un valor límite indicativo por la UE.

EE

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
ISOPENTANE	EE OEL	Piirnorm	1.000 ppm, 3.000 mg/m3	

DK

Komponenter	Basis	Værdi	Kontrolparametre	Note
ISOPENTANE	DK OEL	GV	500 ppm, 1.500 mg/m3	E,

E At stoffet har en EF-grænseværdi

DE

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
ISOPENTANE	DE TRGS 900	AGW	1.000 ppm, 3.000 mg/m3	DFG, EU,

DFG Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)
EU Europäische Union (Von der EU wurde ein Luftgrenzwert festgelegt: Abweichungen bei Wert und Spitzenbegrenzung sind möglich.)

CZ

Složky	Základ	Hodnota	Kontrolní parametry	Poznámka
ISOPENTANE	CZ OEL	PEL	3.000 mg/m3	
	CZ OEL	NPK-P	4.500 mg/m3	*,

* u NPK-P brán zřetel na fyzikálně-chemické vlastnosti (například výbušnost).

CY

Συστατικά	Βάση	Τιμή	Παράμετροι ελέγχου	Σημείωση
ISOPENTANE	CY OEL	TWA	1.000 ppm, 3.000 mg/m3	

CH

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
ISOPENTANE	CH SUVA	MAK-wert	600 ppm, 1.800 mg/m3	SSc,
	CH SUVA	STEL	1.200 ppm, 3.600 mg/m3	SSc,
	CH SUVA	MAK-wert	600 ppm, 1.800 mg/m3	SSc,
	CH SUVA	STEL	1.200 ppm, 3.600 mg/m3	SSc,

SSc Eine Schädigung der Leibesfrucht braucht bei Einhaltung des MAK-Wertes nicht befürchtet zu werden.

BG

Компоненти	Основа	Стойност	Параметри на контрол	Бележка
ISOPENTANE	BG OEL	TWA	1.000 ppm, 3.000 mg/m3	-,

\- Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност. Граничните стойности на тези химични агенти във въздуха на работната среда, определени с наредбата, са съобразени със съответните стойности, приети за Европейската общност, като могат да бъдат равни или по-ниски от тях.

BE

Bestanddelen	Basis	Waarde	Controleparameters	Opmerking
ISOPENTANE	BE OEL	TGG 8 hr	600 ppm, 1.800 mg/m3	
	BE OEL	TGG 15 min	750 ppm, 2.250 mg/m3	

AT

Inhaltsstoffe	Grundlage	Wert	Zu überwachende Parameter	Bemerkung
ISOPENTANE	AT OEL	TMW	600 ppm, 1.800 mg/m3	
	AT OEL	KZW	1.200 ppm, 3.600 mg/m3	

DNEL : End Use: Workers
Routes of exposure: Skin contact
Potential health effects: Long-term systemic effects
Value: 432 mg/kg

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Long-term systemic effects
Value: 3000 mg/m3

DNEL : End Use: Consumers
Routes of exposure: Skin contact
Potential health effects: Long-term systemic effects
Value: 214 mg/kg

DNEL : End Use: Consumers

Routes of exposure: Inhalation
Potential health effects: Long-term systemic effects
Value: 643 mg/m3

DNEL : End Use: Consumers
Routes of exposure: Ingestion
Potential health effects: Long-term systemic effects
Value: 214 mg/kg

PNEC : Fresh water
Value: 0,25 mg/l

PNEC : Marine water
Value: 0,25 mg/l

PNEC : Fresh water sediment
Value: 1,1 mg/kg

PNEC : Marine sediment
Value: 1,1 mg/kg

PNEC : Soil
Value: 0,55 mg/kg

Engineering measures

Adequate ventilation to control airborned concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. 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. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place. Wear as appropriate:. Flame retardant antistatic protective clothing. Footwear protecting against chemicals.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

Form	:	Liquid
Physical state	:	Liquid
Color	:	Colorless
Odor	:	gasoline-like

Safety data

Flash point	:	< -40 °C (< -40 °F) estimated
Lower explosion limit	:	1,4 %(V)
Upper explosion limit	:	8,3 %(V)
Oxidizing properties	:	no
Autoignition temperature	:	420 °C (788 °F) estimated
Molecular formula	:	C5H12
Molecular weight	:	72,17 g/mol
pH	:	Not applicable
pour point	:	No data available
Freezing point		No data available
Boiling point/boiling range	:	28 °C (82 °F) estimated
Vapor pressure	:	20,10 PSI at 37,8 °C (100,0 °F)
Relative density	:	0,62, 15,6 °C(60,1 °F)
Density	:	623,1 g/l
Water solubility	:	Negligible
Partition coefficient: n-	:	No data available

octanol/water		
Viscosity, dynamic	:	0,224 cP
Relative vapor density	:	2,6 (Air = 1.0)
Evaporation rate	:	> 1
Percent volatile	:	> 99 %

SECTION 10: Stability and reactivity

Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid	:	Heat, flames and sparks.
Materials to avoid	:	May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Other data	:	No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Acute oral toxicity

Isopentane	:	LD50: 5.001 mg/kg Method: Converted acute toxicity point estimate

Acute inhalation toxicity

Isopentane	:	LC50: > 25,3 mg/l Exposure time: 4 h Species: rat Test atmosphere: dust/mist Method: OECD Test Guideline 403 Information given is based on data obtained from similar substances.

Skin irritation

Isopentane	:	No skin irritation Information given is based on data obtained from similar substances.

Eye irritation

Isopentane	:	No eye irritation Information given is based on data obtained from similar substances.

Sensitization

Isopentane : Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Isopentane : Species: rat, male and female
Sex: male and female
Application Route: Inhalation
Dose: 668, 2220, 6646 ppm
Exposure time: 13 wk
Number of exposures: 6 h/d, 5 d/wk
NOEL: > 2220 ppm
Lowest observable effect level: > = 6646 ppm
Method: OECD Guideline 413
Target Organs: Kidney

Reproductive toxicity

Isopentane : Species: rat
Sex: male and female
Application Route: inhalation (vapor)
Dose: 0, 500, 2000, 7000 ppm
Number of exposures: 6 h/d 5 d/wk
Method: OECD Test Guideline 416
NOAEL Parent: 7000 ppm
NOAEL F1: 2000 ppm
NOAEL F2: 2000 ppm
Information given is based on data obtained from similar substances.

Species: rat
Sex: female
Application Route: oral gavage
Dose: 0, 100, 300, 1000 mg/kg/d
Method: OECD Test Guideline 415
NOAEL Parent: >= 1.000 mg/kg
NOAEL F1: >= 1.000 mg/kg

Species: rat
Sex: male
Application Route: oral gavage
Dose: 0, 100, 300, 1000 mg/kg/d
Method: OECD Test Guideline 415
NOAEL Parent: >= 300 mg/kg

Developmental Toxicity

Isopentane : Species: rat
Application Route: oral gavage
Dose: 0, 100, 500, 1000 mg/kg/d
Exposure time: GD 6-15
Number of exposures: daily
Method: OECD Guideline 414
NOAEL Teratogenicity: 1.000 mg/kg
NOAEL Maternal: 1.000 mg/kg
Information given is based on data obtained from similar substances.

Species: rat
Application Route: Inhalation
Dose: 0, 500, 2000, 7000 ppm
Exposure time: GD 6-15
Number of exposures: 5 d/wk
Method: OECD Guideline 414
NOAEL Teratogenicity: 7000 ppm
NOAEL Maternal: 500 ppm
Information given is based on data obtained from similar substances.

Species: rabbit
Application Route: Inhalation
Dose: 0, 500, 2000, 7000 ppm
Exposure time: GD 6-18
Method: OECD Guideline 414
NOAEL Teratogenicity: 7000 ppm
NOAEL Maternal: 7000 ppm
Information given is based on data obtained from similar substances.

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Aspiration toxicity : May be fatal if swallowed and enters airways.
Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

Isopentane : Carcinogenicity: Not available
Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects., In vivo tests did not show mutagenic effects
Teratogenicity: Animal testing did not show any effects on fetal development.
Reproductive toxicity: Animal testing did not show any effects on fertility.

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Further information : Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish

Isopentane : LC50: 4,26 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
semi-static test Method: OECD Test Guideline 203
Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates

Isopentane	:	EC50: 2,3 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) static test Method: OECD Test Guideline 202

Toxicity to algae

Isopentane	:	EC50: 7,51 mg/l Exposure time: 72 h Species: Scenedesmus capricornutum (fresh water algae) Growth inhibition Method: OECD Test Guideline 201 Information given is based on data obtained from similar substances.

Bioaccumulation

Isopentane	:	Accumulation in aquatic organisms is unlikely.

Biodegradability

Isopentane	:	aerobic Result: Readily biodegradable. 71,43 % Testing period: 28 d Method: OECD Test Guideline 301F

Acute aquatic toxicity

Isopentane	:	Toxic to aquatic life.

Chronic aquatic toxicity

Isopentane	:	Toxic to aquatic life with long lasting effects.

Toxicity Data on Soil

Isopentane	:	No data available

Other organisms relevant to the environment

Isopentane	:	No data available

Impact on Sewage Treatment

Isopentane	:	No data available

Results of PBT assessment

Isopentane	:	Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information	:	Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product	:	The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

For additional details, see the Exposure Scenario in the Annex portion

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN1265, PENTANES, 3, I

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN1265, PENTANES, 3, I, (< -40 °C), MARINE POLLUTANT, (ISOPENTANE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN1265, PENTANES, 3, I

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN1265, PENTANES, 3, I, (D/E), ENVIRONMENTALLY HAZARDOUS, (ISOPENTANE)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN1265, PENTANES, 3, I, ENVIRONMENTALLY HAZARDOUS, (ISOPENTANE)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN1265, PENTANES, 3, I, ENVIRONMENTALLY HAZARDOUS, (ISOPENTANE)

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

SECTION 15: Regulatory information

National legislation

Chemical Safety Assessment

Ingredients : 2-methylbutane 201-142-8

Major Accident Hazard Legislation : 96/82/EC Update: 2003
Extremely flammable
8
Quantity 1: 10 t
Quantity 2: 50 t

: 96/82/EC Update: 2003
Dangerous for the environment
9b
Quantity 1: 200 t
Quantity 2: 500 t

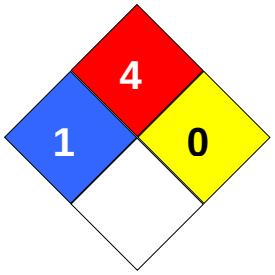
Water contaminating class (Germany) : WGK 2 water endangering

Notification status

Europe REACH	:	On the inventory, or in compliance with the inventory
United States of America TSCA	:	On TSCA Inventory
Canada DSL	:	All components of this product are on the Canadian DSL.
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 1
Fire Hazard: 4
Reactivity Hazard: 0



Further information

Legacy MSDS Number : 26680

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

Full text of R-phrases referred to under sections 2 and 3

R12	Extremely flammable.
R51	Toxic to aquatic organisms.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.
R66	Repeated exposure may cause skin dryness or cracking.
R67	Vapors may cause drowsiness and dizziness.

Full text of H-Statements referred to under sections 2 and 3.

H224	Extremely flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H336	May cause drowsiness or dizziness.
H401	Toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Annex

1. Short title of Exposure Scenario: **Use in polymer processing –industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU3, SU 10:** Industrial Manufacturing (all), Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC3:** Use in closed batch process (synthesis or formulation) **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC5:** Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting; **PROC6:** Calendering operations **PROC8a:** Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities **PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities **PROC9:** Transfer of substance or preparation into small containers (dedicated filling line, including weighing) **PROC13:** Treatment of articles by dipping and pouring **PROC14:** Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting; **PROC21:** Low energy manipulation of substances bound in materials and/ or articles
Environmental release category	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.

2.1 Contributing scenario controlling environmental exposure for:ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics

Concentration of the Substance in Mixture/Article	:	100 %
Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (tonnes/day): (Msafe)	:	28.000

Environment factors not influenced by risk management

Flow rate	:	18.000 m3/d
Dilution Factor (River)	:	10
Dilution Factor (Coastal Areas)	:	100

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Soil	:	0,001 %

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: 80 %)
Remarks	:	Common practices vary across sites thus conservative process release estimates used.
Water	:	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of ≥ (%): (Effectiveness: 0 %)
Remarks	:	Prevent discharge of undissolved substance to or recover from wastewater.
Remarks	:	Do not apply industrial sludge to natural soils.
Remarks	:	Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	:	2.000 m3/d
Procedures to limit air emissions from Sewage Treatment Plant	:	No data available

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery Methods	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Product characteristics

Concentration of the Substance in Mixture/Article	:	100 %
Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Remarks	:	Liquid, vapour pressure > 10 kPa at STP

Amount used

Remarks	:	No limit

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Store substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure
No other specific measures identified.

2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

Product characteristics

Concentration of the Substance in Mixture/Article	:	100 %
Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Remarks	:	Liquid, vapour pressure > 10 kPa at STP

Amount used

Remarks	:	No limit

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Handle substance within a closed system., Store substance within a closed system.

Organizational measures to prevent /limit releases, dispersion and exposure
No other specific measures identified.

2.2 Contributing scenario controlling worker exposure for: PROC3, PROC4, PROC5, PROC8a: Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics

Concentration of the Substance in Mixture/Article	:	100 %
Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Remarks	:	Liquid, vapour pressure > 10 kPa at STP

Amount used

Remarks	:	No limit

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated

differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Organizational measures to prevent /limit releases, dispersion and exposure
No other specific measures identified.

2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

Product characteristics
Concentration of the Substance in Mixture/Article : 100 %

Remarks Substance is complex UVCB., Predominantly hydrophobic.

Remarks : Liquid, vapour pressure > 10 kPa at STP

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour)

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Concentration of the Substance in Mixture/Article : 100 %

Remarks Substance is complex UVCB., Predominantly hydrophobic.

Remarks : Liquid, vapour pressure > 10 kPa at STP

Amount used
Remarks : No limit

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Transfer via enclosed lines.

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Product characteristics

Concentration of the Substance in Mixture/Article	:	100 %
Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Remarks	:	Liquid, vapour pressure > 10 kPa at STP

Amount used

Remarks	:	No limit

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks	:	Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Transfer via enclosed lines.

Organizational measures to prevent /limit releases, dispersion and exposure
No other specific measures identified.

2.2 Contributing scenario controlling worker exposure for: PROC13, PROC14, PROC21: Treatment of articles by dipping and pouring, Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;, Low energy manipulation of substances bound in materials and/ or articles

Product characteristics

Concentration of the Substance in Mixture/Article	:	100 %
Remarks		Substance is complex UVCB., Predominantly hydrophobic.
Remarks	:	Liquid, vapour pressure > 10 kPa at STP

Amount used

Remarks	:	No limit

Frequency and duration of use

Remarks	:	Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Organizational measures to prevent /limit releases, dispersion and exposure

No other specific measures identified.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC4	Hydrocarbon Block Method with Petrorisk		Air		0,0023 mg/m3	
			Fresh water		0,000029 mg/L	0,000036
			Marine water		0,000094 µg/L	< 0,000012
			Fresh water sediment		0,000098 mg/kg	0,000023
			Marine sediment		0,00032 µg/kg	< 0,000073
			Agricultural soil		0,000012 mg/kg	0,000013

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1, CS14, CS107, CS91	ECETOC TRA Modified		Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – inhalation, long-term – systemic	0,03 mg/m3	0,000
			Worker – long-term – systemic Combined routes		0,001
PROC2, CS14, CS91, CS107, CS67	ECETOC TRA Modified		Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,003
			Worker – inhalation, long-term – systemic	147,54 mg/m3	0,049
			Worker – long-term – systemic Combined routes		0,052
PROC3, CS92	ECETOC TRA Modified		Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,001
			Worker – inhalation, long-term – systemic	295,09 mg/m3	0,098
			Worker – long-term – systemic Combined routes		0,099
PROC4, CS92	ECETOC TRA Modified		Worker – dermal, long-term – systemic	6,68 mg/kg/d	0,016
			Worker – inhalation, long-term – systemic	295,09 mg/m3	0,098
			Worker – long-term – systemic Combined routes		0,114
PROC5, CS92	ECETOC TRA Modified		Worker – dermal, long-term – systemic	13,71 mg/kg/d	0,032

			Worker – inhalation, long-term – systemic	737,72 mg/m3	0,246
			Worker – long-term – systemic Combined routes		0,278
PROC8a, CS5	ECETOC TRA Modified		Worker – dermal, long-term – systemic	13,71 mg/kg/d	0,032
			Worker – inhalation, long-term – systemic	737,72 mg/m3	0,246
			Worker – long-term – systemic Combined routes		0,278
PROC6, CS64	ECETOC TRA Modified		Worker – dermal, long-term – systemic	27,43 mg/kg/d	0,063
			Worker – inhalation, long-term – systemic	1770,52 mg/m3	0,590
			Worker – long-term – systemic Combined routes		0,654
PROC8b, CS14	ECETOC TRA Modified		Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,016
			Worker – inhalation, long-term – systemic	442,63 mg/m3	0,148
			Worker – long-term – systemic Combined routes		0,163
PROC9, CS14, CS90	ECETOC TRA Modified		Worker – dermal, long-term – systemic	6,86 mg/kg/d	0,016
			Worker – inhalation, long-term – systemic	590,17 mg/m3	0,197
			Worker – long-term – systemic Combined routes		0,213
PROC13, CS113	ECETOC TRA Modified		Worker – dermal, long-term – systemic	13,71 mg/kg/d	0,032
			Worker – inhalation, long-term – systemic	737,72 mg/m3	0,246
			Worker – long-term – systemic Combined routes		0,278
PROC14, CS88, CS89	ECETOC TRA Modified		Worker – dermal, long-term – systemic	3,43 mg/kg/d	0,008
			Worker – inhalation, long-term – systemic	737,72 mg/m3	0,246
			Worker – long-term – systemic Combined routes		0,254
PROC21, CS102	ECETOC TRA Modified		Worker – dermal, long-term – systemic	2,83 mg/kg/d	0,007
			Worker – inhalation, long-term – systemic	0,00 mg/m3	0,000
			Worker – long-term – systemic Combined routes		0,007

PROC1: Use in closed process, no likelihood of exposure
CS14: Bulk transfers
CS107: (closed systems)
CS91: Bulk weighing

PROC2: Use in closed, continuous process with occasional controlled exposure
CS14: Bulk transfers
CS91: Bulk weighing
CS107: (closed systems)
CS67: Storage

PROC3: Use in closed batch process (synthesis or formulation)
CS92: Additive premixing

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

CS92: Additive premixing

PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;
CS92: Additive premixing

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
CS5: Equipment maintenance

PROC6: Calendering operations
CS64: Calendering (including Banburys)

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS14: Bulk transfers

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
CS14: Bulk transfers
CS90: Small scale weighing

PROC13: Treatment of articles by dipping and pouring
CS113: Production of articles by dipping and pouring

PROC14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;
CS88: Extrusion and master batching
CS89: Injection moulding of articles

PROC21: Low energy manipulation of substances bound in materials and/ or articles
CS102: Finishing operations

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).