1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product identifier

Trade name	:	METHYLISOBUTYLKETONE
Product name	:	2-methyl-4-pentanone
Index-No.	:	606-004-00-4

Details of the supplier of the safety data sheet

Company	:	Rhodia Poliamida e Especialidades Ltda Fazenda São Francisco, s/n CEP: 13140-000, Paulínia - SP Tel: (+55 19) 3874 8000
Emergency telephone number	:	MULTI LINGUAL EMERGENCY NUMBER (24/7) Europe/America/Africa : +44 1235 239 670 (UK) Middle East & Africa speaking Arabic : +44 1235 239 671 (UK) Asia Pacific : +65 3158 1074 (Singapore) China : +86 10 5100 3039 (Beijing) Mercosul : (+55 19) 3874 9333
E-mail address	:	information.fds@eu.rhodia.com

2. HAZARDS IDENTIFICATION

Classification

Classification (REGULATION (EC) No 1272/2008)

Flammable liquids, Category 2	H225: Highly flammable liquid and vapour.
Acute toxicity, Inhalation, Category 4	H332: Harmful if inhaled.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Specific target organ toxicity - single exposure, Category 3	H335: May cause respiratory irritation.

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

F: Highly flammable	R11: Highly flammable.
Xn: Harmful.	R20: Harmful by inhalation.
Xi: Irritant.	R36/37: Irritating to eyes and respiratory system.
	R66: Repeated exposure may cause skin dryness or cracking.

Label elements

Hazardous products which must be listed on the label:

- 606-004-00-4 4-methylpentan-2-one

REGULATION (EC) No 1272/2008

Pictogram :

Signal word : Danger

Hazard statements : H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.

Precautionary statements : **Prevention:**
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.

Additional Labeling: : EUH066 Repeated exposure may cause skin dryness or cracking.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : 2-methyl-4-pentanone
isopropyl
hexone
methyl isobutyl ketone
MIBK
isopropylacetone

Substance

CAS-No. : 108-10-1

Index-No. : 606-004-00-4

EINECS-No. : 203-550-1

Information on Components and Impurities

Chemical Name	Identification number	Classification 67/548/EEC	Classification REGULATION (EC) No 1272/2008	Concentration [%]
4-methylpentan-2-one	Index-No. : 606-004-00-4 CAS-No. : 108-10-1 EINECS-No. : 203-550-1	F; R11 Xn; R20 Xi; R36/37 R66	H225 : Flammable liquids , Category 2 H332 : Acute toxicity , Category 4 H319 : Eye irritation , Category 2 H335 : Specific target organ toxicity - single exposure , Category 3	>= 99 - <= 100

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.

4. FIRST AID MEASURES

Description of necessary first-aid measures

General advice : Show this safety data sheet to the doctor in attendance.
First aider needs to protect himself.
Place affected clothing in a sealed bag for subsequent decontamination.

Inhalation : Move to fresh air.
If breathing is irregular or stopped, administer artificial respiration.
Consult a physician if necessary.

Skin contact : Take off contaminated clothing and shoes immediately.
Wash off immediately with plenty of water for at least 15 minutes.
Consult a physician if necessary.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
If eye irritation persists, consult a physician

Ingestion : Do NOT induce vomiting.
Rinse mouth with water.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media : Foam
Dry powder
Water spray
Carbon dioxide (CO2)

Unsuitable extinguishing media : High volume water jet
Use extinguishing measures that are appropriate to local circumstances and

the surrounding environment.

Special hazards arising from the substance or mixture

Specific hazards during fire fighting	:	Highly flammable liquids Heating increases the inner pressure of the bottle, risk of explosion.

Advice for firefighters

Special protective equipment for fire-fighters	:	Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing Wear self contained breathing apparatus for fire fighting if necessary.
Specific fire fighting methods	:	Use appropriate means for fighting adjacent fires. Cool containers / tanks with water spray.
Further information	:	In the event of fire and/or explosion do not breathe fumes. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Mark the contaminated area with signs and prevent access to unauthorized personnel. Immediately evacuate personnel to safe areas. Avoid contact with the skin and the eyes. Keep away from flames and sparks. Store away from heat. Use personal protective equipment. Stop the leak. Turn leaking containers leak-side up to prevent the escape of liquid. Remove all incompatible materials as quickly as possible
Environmental precautions	:	Try to prevent the material from entering drains or water courses. Prevent product from entering drains. Dam up. Local authorities should be advised if significant spillages cannot be contained.

Methods for Cleaning or Taking Up

Recovery	:	Flammable product. Take all necessary precautions. Earth the containers and the equipment. Collect spillage. Pick up and transfer to properly labelled containers. Keep in suitable, closed containers for disposal.
Neutralization	:	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).
Decontamination/cleaning	:	Collect spillage. Pick up contaminated soil. Clean contaminated floors and objects thoroughly while observing environmental regulations. Pick up and transfer to properly labelled containers. Keep in suitable, closed containers for disposal. 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).
Disposal	:	Dispose of contents/ container to an approved waste disposal plant. The product should not be allowed to enter drains, water courses or the soil. Dispose of in accordance with local regulations.

7. HANDLING AND STORAGE

Handling

Technical measures	:	Earth the equipment. Ground/bond container and receiving equipment. No smoking. Take measures to prevent the build up of electrostatic charge. Provide adequate ventilation. Provide sufficient air exchange and/or exhaust in work rooms. Electrical installations / working materials must comply with the technological safety standards. No sparking tools should be used.
Advice on safe handling and usage	:	Handle in accordance with good industrial hygiene and safety practice. Provide sufficient air exchange and/or exhaust in work rooms. Wear personal protective equipment. Avoid inhalation, ingestion and contact with skin and eyes.

Storage

Technical Measures for storage	:	The floor of the depot should be impermeable and designed to form a water-tight basin. Keep tightly closed. Electrical installations / working materials must comply with the technological safety standards.

Storage conditions

Recommended	:	Keep away from open flames, hot surfaces and sources of ignition. Store in original container. Keep away from heat. Keep in a dry, cool and well-ventilated place.

Packaging Measures

Packaging conditions	:	Store in original container.
Packaging materials - Recommended	:	Stainless steel, Steel
Packaging materials - To be avoided	:	Plastic materials.
Other data	:	Protect from frost, heat and sunlight.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	Value type	Value	Update	Basis
4-methylpentan-2-one	TWA Indicative	20 ppm 83 mg/m3	2000-06-16	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
4-methylpentan-2-one	STEL Indicative	50 ppm 208 mg/m3	2000-06-16	Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values

Personal protective equipment

Respiratory protection	:	Use a respirator with an approved filter if a risk assessment indicates this is necessary.
Hand protection	:	Where there is a risk of contact with hands, use appropriate gloves The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Gloves must be inspected prior to use.
Skin and body protection	:	Choose body protection according to the amount and concentration of the dangerous substance at the work place. Remove and wash contaminated clothing.
Hygiene measures	:	Ensure that eyewash stations and safety showers are close to the workstation location. Use clean, well-maintained personal protection equipment. Wash hands before breaks and at the end of workday. When using do not eat, drink or smoke.

Protective measures	:	The protective equipment must be selected in accordance with current CEN standards and in cooperation with the supplier of the protective equipment. Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards and/or risks that may occur during use.
General advice	:	Try to prevent the material from entering drains or water courses. Prevent product from entering drains. Dam up. Local authorities should be advised if significant spillages cannot be contained.
Risk Management Measures to control release to soil	:	The product should not be allowed to enter drains, water courses or the soil.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	transparent
Physical state	:	liquid
Colour	:	colourless
Odour	:	pleasant characteristic
Odour Threshold	:	no data available

Safety data

pH	:	8,0 (undiluted)
Crystallization temperature	:	-84 °C
Boiling point/boiling range	:	116,5 °C at 1.013,25 hPa
Flash point	:	15,85 °C closed cup 23 °C open cup
Flammability (solid, gas)	:	no data available
Autoignition temperature	:	458,85 °C
Oxidizing properties	:	Non oxidizing material according to EC criteria
Water solubility	:	17 g/l partly miscible
Solubility in other solvents	:	miscible with most organic solvents
Partition coefficient: n-octanol/water	:	no data available

Vapour pressure	:	19,81 hPa at 20 °C
Evaporation rate	:	155
Relative vapour density	:	3,5
Density	:	0,7983 g/cm3 at 20 °C
Oxidation/Reduction Potential	:	no data available
Viscosity, dynamic	:	no data available
Viscosity, kinematic	:	no data available
Explosive properties	:	no data available
Thermal decomposition	:	no data available
Lower explosion limit	:	1,40 %(V)
Upper explosion limit	:	7,50 %(V)
Molecular Weight	:	100,18 g/mol

10. STABILITY AND REACTIVITY

Chemical stability	:	Stable at room temperature. Stable under normal conditions.
Hazardous reactions		
Conditions to avoid	:	Exposure to moisture. Heat, flames and sparks. Prevent the build-up of electrostatic charge. Direct sources of heat.
Materials to avoid	:	Strong oxidizing agents Reducing agents Strong bases Reacts violently with: Strong oxidizing agents
Decomposition products	:	(Carbon oxides (CO + CO2)). Peroxides
Other information	:	With oxidizing agents possible.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Acute oral toxicity	:	LD50 : 2.080 mg/kg - mouse Symptoms: Vomiting, Stomach/intestinal disorders, Diarrhoea., Flank pain

Acute inhalation toxicity	:	LC50 - 0,25 h : 4000 ppm - mouse Symptoms: Flank pain Irritating to respiratory system. Acute toxicity estimate : 11,11 mg/l Method: Calculation method
Acute dermal toxicity	:	LD50 : > 20.000 mg/kg - rabbit Dermal absorption possible.
Acute toxicity (other routes of administration)	:	no data available
Aspiration toxicity	:	no data available

Skin corrosion/irritation

Skin irritation	:	May cause skin irritation and/or dermatitis.

Serious eye damage/eye irritation

Eye irritation	:	Irritating to eyes. Irritating to mucous membranes

Respiratory or skin sensitization

Sensitisation	:	no data available

Repeated dose toxicity

Repeated dose toxicity	:	no data available

STOT

STOT - single exposure	:	Toxicology Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
STOT - repeated exposure	:	no data available

Carcinogenicity

Carcinogenicity	:	Not classifiable as a human carcinogen.

Mutagenicity

Genotoxicity in vitro	:	no data available
Genotoxicity in vivo	:	no data available

Reproductive toxicity

Reproductive toxicity	:	no data available

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic Compartment (including sediment)

Toxicity to fish	:	LC50 - 24 h : 460 mg/l - Carassius auratus (goldfish) LC50 - 96 h : 496 - 514 mg/l - Pimephales promelas (fathead minnow)
Toxicity to daphnia and other aquatic invertebrates.	:	EC50 - 48 h : 170 mg/l - Daphnia magna (Water flea)

Persistence and degradability

Biodegradability

Biodegradability	:	Ultimate aerobic biodegradability Biodegradable anaerobic Biodegradable
Ratio BOD/COD	:	BOD type: BOD5 BOD/COD value: 95 %

Bioaccumulation

Partition coefficient: n-octanol/water	:	Not potentially bioaccumulable
Bioconcentration factor (BCF)	:	Bioconcentration factor (BCF): 6

Mobility

Distribution among environmental compartments	:	Product readily filters into the soil
Known distribution to environmental compartments	:	Ultimate destination of the product : Water Ultimate destination of the product : Air

13. DISPOSAL CONSIDERATIONS

Product Disposal

Advice on Disposal	:	Do not dispose of with domestic refuse. The product should not be allowed to enter drains, water courses or the soil. Dispose of in accordance with local regulations. Dispose of contents/ container to an approved waste disposal plant. Send to a licensed waste management company.

Advice on cleaning and disposal of packaging

Advice	:	Do not re-use empty containers. Clean container with water. Recover the cleaning water and dispose of at a specialist site. Dispose of contents/ container to an approved incineration plant.
Other data	:	Dispose of in accordance with local regulations.

14. TRANSPORT INFORMATION

ADR

UN number	:	1245
Dangerous Good Description	:	UN 1245 METHYL ISOBUTYL KETONE, 3, II, (D/E)
Labels	:	3
Packing group	:	II
Tunnel restriction code	:	(D/E)
Class	:	3
Classification Code	:	F1
Environmentally hazardous mark	:	NO
Hazard identification No	:	33

RID

UN number	:	1245
Dangerous Good Description	:	UN 1245 METHYL ISOBUTYL KETONE, 3, II
Labels	:	3
Packing group	:	II
Class	:	3
Classification Code	:	F1
Environmentally hazardous mark	:	NO
Hazard identification No	:	33

IMDG

UN number	:	1245
Dangerous Good Description	:	UN 1245 METHYL ISOBUTYL KETONE, 3, II, IMDG Code Segregation Group - Not Relevant
Labels	:	3
Packing group	:	II
Class	:	3
Marine pollutant (environmentally hazardous mark)	:	NO
EmS	:	F-E , S-D

IATA

UN number	:	1245
Dangerous Good Description	:	UN 1245 METHYL ISOBUTYL KETONE, 3, II
Labels	:	3
Packing group	:	II
Class	:	3
Environmentally hazardous mark	:	NO
Packing instruction (cargo aircraft)	:	364
Max net qty/pkg	:	60,00 L
Packing instruction (passenger aircraft)	:	353
Max net qty/pkg	:	5,00 L

ADN / ADNR

UN number	: 1245
Dangerous Good Description	: UN 1245 METHYL ISOBUTYL KETONE, 3, II
Labels	: 3
Packing group	: II
Class	: 3
Classification Code	: F1
Environmentally hazardous mark	: NO

Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transport regulations for hazardous materials, it would be advisable to check their validity with your sales office.

15. REGULATORY INFORMATION

According to our knowledge, no specific regulatory information.

16. OTHER INFORMATION

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

R11	Highly flammable.
R20	Harmful by inhalation.
R36/37	Irritating to eyes and respiratory system.
R66	Repeated exposure may cause skin dryness or cracking.

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

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.

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

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P243	Take precautionary measures against static discharge.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position 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.
P403 + P235	Store in a well-ventilated place. Keep cool.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in an other manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.

NB: In this document the numerical separator of the thousands is the "." (point), the decimal separator is "," (comma).