

NANORESTORE CLEANING APOLAR COATING

Date of compilation: 21/12/2015
Revision: 0 of 21/12/2015

MATERIAL SAFETY DATA SHEET

In accordance with Regulation (EC) 1907/2006 and Regulation 830/2015

1. Identification of the substance/mixture and of the company/enterprise

1.1 Product identifier: **NANORESTORE CLEANING APOLAR COATING**

1.2 Relevant identified uses of the substance or mixture:

Laboratory chemicals.

1.3 Details of the supplier of the safety data sheet:

CSGI – Consorzio per lo Sviluppo dei Sistemi a Grande Interfase
Via della Lastruccia, 3
50019 Sesto Fiorentino (FI)
Tel.055-4573035
Fax 055-4573036

1.4 Emergency phone number:

055-4573244 (call during office hours)

e-mail TC: products@csgi.unifi.it

2. Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:

Flammable liquid (category 3)

Skin irritation (category 2)

Hazard statement Code(s):

H226 - Flammable liquid and vapour

H315 - Causes skin irritation

The product is a liquid that ignites at temperatures > 23 °C if it exposed to an ignition source.

2.2. Label elements:

Pictogram, Signal Word Code(s):

Warning



Hazard statement Code(s):

H226 - Flammable liquid and vapour.

H315 - Causes skin irritation.

Precautionary statements:

Prevention

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

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): take off immediately all contaminated clothing. Rinse skin with water/shower

P332+P313 - If skin irritation occurs: get medical advice/attention.

P370+P378 - In case of fire: use CO₂, foam, chemical powder for flammable liquids to extinguish

Storage

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

2.3 Other hazards:

none information

3. Composition/Information on ingredients

3.2 Mixtures

Chemical composition:

Name	Concentration (C)	Classification Regulation CE/1272/2008	
1-Pentanol	5 < C < 10	Flam. Liq. 3	H226
Cas No 71-41-0		Skin Irrit. 2	H315
CE No 200-752-1		Eye Irrit. 2	H319
Index No 603-200-00-1		Acute Tox. 4	H332
		STOT SE	H335
Sodium dodecyl sulphate	3 < C < 5	Flam. Sol. 2	H228
Cas No 151-21-3		Acute Tox. 4	H332
CE No 205-788-1		Acute Tox. 4	H302
		Skin Irrit. 2	H315
		Eye Dam. 1	H318
		STOT SE 3	H335
		Aquatic Chronic 3	H412
p-Xylene*	1 < C ≤ 3	Flam. Liq. 3	H226
Cas No 106-42-3		Acute Tox. 4	H312
CE No 203-396-5		Skin Irrit. 2	H315
Index No 601-022-00-9		Acute Tox. 4	H332

The full text of hazard statements is specified in section 16.

* Substance with occupational exposure limit

4. First-aid measures

4.1 Description of first aid measures

Inhalation

Remove to fresh air. If breathing is irregular seek medical advice immediately.

Skin contact

Take off immediately all contaminated clothing and wash with plenty of water and soap. Seek medical attention. Wash contaminated clothing before using them.

Eyes contact

Irrigate copiously with clean, fresh water for at least 15 minutes, keeping eyelids well- opened. In case of irritation seek medical attention.

Ingestion

Obtain medical attention immediately. Induce vomiting only if it is indicated by the doctor. Never give anything by mouth to an unconscious person.

Other

Change contaminated clothing.

4.2. Most important symptoms and effects, both acute and delayed

Not available

4.3. Indication of any immediate medical attention and special treatment needed

Not available

5. Fire-fighting measures

5.1 Extinguishing media

Advised extinguishing agents:

CO₂, foam, chemical powder for flammable liquids.

Unappropriate extinction methods:

Water jets.

Water may not be effective to extinguish the fire, nevertheless it should be used to cool containers exposed to flames and prevent fires and explosions. For leakage and spillage that have not caught fire, nebulized water may be used to disperse the flammable vapors and protect the people involved in stopping the leakage.

5.2. Special hazards arising from the substance or mixture

The product under fire condition may develop irritant/toxic gas (CO_x, SO_x).

5.3. Advice for firefighters

Wear equipment complete with helmet and face shield and protection of the neck, breathing apparatus at pressure or demand, insulative jacket and trousers, with bands around the arms, legs and waist.

Closed containers exposed to heat from fire may build pressure and explode. Contaminated water used to extinguish fire must be disposed in accordance with the laws.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency dust procedures

Avoid the contact with skin and eyes. In the case of vapor formation use suitable protective devices. Supply a good air circulation. Move away any unauthorised person. Eliminate or exclude any source of ignition.

6.2. Environmental precautions

Collect the product in suitable container for disposal. Notify authorities if product enters sewer or public waters.

6.3. Methods and material for containment and cleaning up

Cover the spillage with inert absorbent material. Collect spilled material and place in containers for later disposal. Use water only to remove residuals, so as to prevent the spillage of the product in the sewers.

6.4 *Reference to other sections*

Refer to paragraphs 8 and 13 for more information

7. Handling and storage

7.1. *Precautions for safe handling*

Proper ventilation of the workplace. Vapours may ignite with explosion, it is therefore necessary to avoid accumulation keeping the windows and doors open, ensuring cross ventilation. Without adequate ventilation, the vapors may accumulate at the bottom and ignite at a distance, if triggered off, with the risk of flashback. Ground-bond container and receiving equipment during transfer operations and wear antistatic boots.

Avoid the accumulation of electrostatic charge: Use only non-sparking tools. The strong vigorous stirring and flow of the liquid in the pipes and equipment may cause the formation and accumulation of electrostatic charges due to the low conductivity of the product. To avoid the danger of fire and explosion never use compressed air during movement. Open containers with caution because they may be under pressure. Do not handle until you have read and understood all warnings.

7.2. *Conditions for safe storage, including any incompatibilities*

Store closed containers in a cool, well-ventilated area away from ignition sources. Keep away from heat, sparks and flames, do not smoke, use matches or lighters.

7.3. *Specific end use(s)*

For particular uses of the product, is necessary to refer to the specific information or contact the technical service of the Company.

8. Exposure controls/ personal protection

8.1. *Control parameters*

p-Xylene:

OEL-EU: 221 mg/m³, 50 ppm (as TWA); 442 mg/m³, 100 ppm (as STEL)

8.2 *Exposure controls*

Avoid all unnecessary exposure, handle in accordance with good industrial hygiene and safety procedures. Avoid contact with the eyes and skin .Do not eat, drink or smoke while handling it. Accurately wash the hands with soap and water before meals.

Individual protection

The DPI's choice must be done on the basis of the test's results obtained according to the rule EN 374

Hand protection : protective gloves of nirtile. Penetration time of glove material: the exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
 Eye protection : protective goggles
 Skin protection : suitable protective clothing
 Respiratory protection : mask with filter (Type ABEK) in case of vapor formation

9. Physical and chemical properties

9.1. *Information on basic physical and chemical properties*

Physical and chemical properties	Value	Determination method
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NANORESTORE CLEANING APOLAR COATING

Appearance	colorless liquid	
Odour	characteristic	
Odour threshold	not available	
pH	6-7	
Melting point/freezing point	not available	
Initial boiling point and boiling range	not available	
Flash point	43°C	DIN EN ISO 3679
Evaporation rate	not available	
Flammability (solid, gas)	not pertinent	
Upper/lower flammability or explosive limits	not pertinent	
Vapour pressure	not available	
Vapour density	not available	
Density	0.94 g/cm ³	
Solubility	miscible in water	
Water solubility	miscible	
Partition coefficient: n-octanol/water	not available	
Auto-ignition temperature	not available	
Decomposition temperature	not available	
Viscosity	not available	
Explosive properties	not explosive	
Oxidising properties	not oxidizing	

9.2. Other information

VOC (Directive 1999/13/CE): 11-15%

10. Stability and reactivity

10.1. Reactivity

In contact with strong oxidants exothermic reaction may occur.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

No data available

10.4. Conditions to avoid

No data available

10.5. Incompatible materials

p-Xylene: oxidizing materials

10.6. Hazardous decomposition products

Due to thermal decomposition or in the event of a fire vapours may be produced potentially dangerous to health (CO_x, SO_x).

11. Toxicological information

11.1. Information on toxicological effects

ATE(mix) oral = 20354,2 mg/kg

ATE(mix) dermal = 37931,0 mg/kg

ATE(mix) inhal = 64,0 mg/l/4 h

Acute effects:

(a) acute toxicity: based on available data, the classification criteria are not met.

(b) skin corrosion/irritation: if brought into contact with the skin, the product causes significant

inflammation with erythema, scabs, or edema.

(c) serious eye damage/irritation: based on available data, the classification criteria are not met.

(d) respiratory or skin sensitization: based on available data, the classification criteria are not met.

(e) germ cell mutagenicity: based on available data, the classification criteria are not met.

(f) carcinogenicity: based on available data, the classification criteria are not met.

(g) reproductive toxicity: based on available data, the classification criteria are not met.

(h) specific target organ toxicity (STOT) single exposure: based on available data, the classification criteria are not met.

(i) specific target organ toxicity (STOT) repeated exposure based on available data, the classification criteria are not met.

(j) aspiration hazard: based on available data, the classification criteria are not met.

1-Pentanol:

LD50: ca. 3645 mg/kg bw (oral, rat)

LC50: < 14 mg/L air/6h (inhalation, mouse)

LD50: 2292 mg/kg bw (dermal, rabbit)

Sodium dodecyl sulphate:

LD50: 1200 mg/kg bw (oral, rat)

p-Xylene:

ROUTES OF EXPOSURE: the substance can be absorbed into the body by inhalation and through the skin and if swallowed.

INHALATION RISK: a harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20 °C.

EFFECTS OF SHORT-TERM: the substance is irritant to eyes and to the skin. The substance may cause effects on the central nervous system. If the liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: the liquid dries the skin. The substance may cause effects on the central nervous system. Animal tests indicate the possibility that this substance causes toxicity to human reproduction or development.

ACUTE HAZARDS / SYMPTOMS

INHALATION: Vertigo. Drowsiness. Headache. Nausea.

SKIN: dry skin. Redness.

EYES: redness. Pain.

INGESTION: burning sensation. Ingestion: Burning sensation. Abdominal pain. (Further see Inhalation).

NOTES: depending on the degree of exposure, periodic medical examination is indicated.

LD50 5627 mg/kg bw (oral, mouse)

12. Ecological information

12.1. Toxicity

Use this product according to good working practices. Avoid litter. Inform the competent authorities, should the product reach waterways or sewers or contaminate soil or vegetation.

1-Pentanol:

LC50: 530 mg / L / 96h (Danio rerio)

EC50: 341.21 mg / L / 48h (Daphnia magna)

Sodium dodecyl sulphate:

LC50: 29 mg / L / 96h (Pimephales promelas)

LC50: 3.15 mg / L / 48h (Artemia salina)

12.2. Persistence and degradability:

1-Pentanol: readily biodegradable: degradability 100% (18 days)

Sodium dodecyl sulphate: degradability 75.5% (35 days)

p-Xylene: Readily biodegradable

BOD5: 2.53 g O₂/g test mat.

COD: 2.62 g O₂/g test mat.

12.3. Bioaccumulative potential:

1-Pentanol: log Pow 1.34

Sodium dodecyl sulphate: log Pow <= -2.03 (20 ° C)

BCF about 1.5

p-Xylene: log Pow 3.2

12.4. Mobility in soil: not available

12.5. Results of PBT and vPvB assessment:

1-Pentanol: the substance is not PBT / vPvB

Sodium dodecyl sulphate: the substance is not PBT / vPvB

p-Xylene: the substance is not PBT / vPvB

This product doesn't contain AOX

13. Disposal considerations

13.1. Waste treatment methods

Operate following the current Local or National Laws.

The non reclaimed containers have to be disposed as the product.

14. Transport information

14.1. UN number

1993

If subject to the following characteristics is ADR exempt:

Combination packagings: per inner packaging 1 L per package 30 Kg

Inner packagings placed in shrink-wrapped or stretch-wrapped trays: per inner packaging 1 L per package 20 Kg



14.2. UN proper shipping name

Flammable liquid, n.o.s (contains: 1-Pentanol, p-xylene)

14.3. Transport hazard class(es)

Class : **3**

Label : **3**

Tunnel restriction code : D/E

Limited quantities : 1 L

EmS : F-E, S-E

14.4. Packing group

III

14.5. Environmental hazards

Product is not environmentally hazardous

Marine polluting agent : Not

14.6. Special precautions for user

No data available.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

It is not intended to carry bulk

15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation	Cas	Substance
428/2009 ex CE 1334/2000 Ann.1	-	-
273/04 Tab.1 Cat.1	-	-
273/04 Tab.1 Cat.2	-	-
273/04 Tab.1 Cat.3	-	-
Reg. CE 1907/2006 Ann. XIV	-	-
Reg. CE 1907/2006 Substances SVHC	-	-
Reg. CE 1907/2006 Ann. XVII	-	-
2003/105/CE Ann.1 part 1	-	-
2003/105/CE Ann.1 part 2	-	-
2012/18/UE Ann.1 part 1	-	Mixture FLAMMABLE
2012/18/UE Ann.1 part 2	71-41-0 151-21-3 106-42-3	1-Pentanol Sodium dodecyl sulphate p-Xylene

15.2. Chemical safety assessment

none

16. Other information

Description of the sentences of risk set out in paragraph 3:

H226 = Flammable liquid and vapour
H315 = Causes skin irritation
H319 = Causes serious eye irritation.
H332 = Harmful if inhaled.
H335 = May cause respiratory irritation
H228 = Flammable solid
H302 = Harmful if swallowed
H318 = Causes serious eye damage
H412 = Harmful to aquatic life with long lasting effects
H312 = Harmful in contact with skin

Classification based by calculation on data of all components of the mixture.

GENERAL BIBLIOGRAPHY:

1. Regolamento (CE) 1907/2006 del Parlamento Europeo (REACH)
2. Regolamento (CE) 1272/2008 del Parlamento Europeo (CLP) e successivi adeguamenti
3. Regolamento (CE) 790/2009
4. Regolamento (UE) 453/2010
5. Regolamento (UE) 830/2015
6. The Merck Index. Ed. 10
7. Handling Chemical Safety

8. Niosh - Registry of Toxic Effects of Chemical Substances
9. INRS - Fiche Toxicologique
10. Patty - Industrial Hygiene and Toxicology
11. N.I. Sax - Dangerous properties of Industrial Materials-7 Ed., 1989
12. ADR direttiva 2008/68/CE e successivi adeguamenti
13. ECHA Web site <http://echa.europa.eu/web/guest>
14. Directive 2012/18/UE
15. Directive 2009/161/UE

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product .This document must not be regarded as a guarantee on any specific product property.The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses

This sheet cancels and substitutes any previous edition.



NANORESTORE CLEANING G

Date of compilation: 02/10/2018
Revision: 1 of 19/10/2018

MATERIAL SAFETY DATA SHEET

In accordance with Regulation (EC) 1907/2006 and Regulation 830/2015

1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier: **NANORESTORE CLEANING G**

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Laboratory chemicals.

1.3 Details of the supplier of the safety data sheet:
CSGI – Consorzio per lo Sviluppo dei Sistemi a Grande Interfase
Via della Lastruccia, 3
50019 Sesto Fiorentino (FI)
Tel.055-4573035
Fax 055-4573036

1.4 Emergency phone number:
055-4573244 (call during office hours)

e-mail TC: products@csgi.unifi.it

2. Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008:
Flammable liquid (category 2)
Serious eye damage (category 1)
Specific target organ toxicity – single exposure (category 3)

Hazard statement Code(s):
H225 - Highly flammable liquid and vapour.
H318 - Causes serious eye damage.
H336 - May cause drowsiness or dizziness.

The product is a liquid that ignites at temperatures > 23 °C if it exposed to an ignition source.

2.2. Label elements:
Pictogram, Signal Word Code(s):
Danger



Hazard statement Code(s):
H225 - Highly flammable liquid and vapour.
H318 - Causes serious eye damage.
H336 - May cause drowsiness or dizziness.

Supplemental Hazard statement Code(s):
EUH066 - Repeated exposure may cause skin dryness or cracking.

Precautionary statements:

Prevention

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 - Keep container tightly closed.

P261 - Avoid breathing vapours/spray.

Response

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 - Immediately call a POISON CENTER/doctor/...

P370+P378 - In case of fire: use CO₂, foam, chemical powder for flammable liquids to extinguish

Storage

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

Contains:

Butanone, butan-2-ol, ethyl acetate, Alkyl(C9-11) alcohol, ethoxylated

2.3 Other hazards:

none information

3. Composition/Information on ingredients

3.2 Mixtures

Chemical composition:

Name	Concentration (C)	Classification Regulation CE/1272/2008	
Butanone*	10 ≤ C ≤ 14	Flam. Liq. 2	H225
Cas No 78-93-3		Eye Irrit. 2	H319
CE No 201-159-0		STOT SE	H336
Index No 606-002-00-3		EUH066	
Butan-2-ol	7 ≤ C ≤ 10	Flam. Liq. 3	H226
Cas No 78-92-2		Eye Irrit. 2	H319
CE No 201-158-5		STOT SE	H335
Index No 603-127-00-5		STOT SE	H336
Propylene carbonate	4 ≤ C ≤ 8	Eye Irrit. 2	H319
Cas No 108-32-7			
CE No 203-572-1			
Index No 607-194-00-1			
Ethyl acetate*	4 ≤ C ≤ 8	Flam. Liq. 2	H225
CAS No 141-78-6		Eye Irrit. 2	H319
CE No 205-500-4		STOT SE	H336
Index No 607-022-00-5			
Reg No 01-2119475103-46-XXXX			
Alkyl(C9-11) alcohol, ethoxylated	4 ≤ C ≤ 7	Acute Tox. 4	H302
CAS No 68439-46-3		Eye Dam. 1	H318
Polymer			

The full text of hazard statements is specified in section 16.

* Substance with occupational exposure limit

4. First-aid measures

4.1 Description of first aid measures

Inhalation

Remove to fresh air. If breathing is irregular seek medical advice immediately.

Skin contact

Take off immediately all contaminated clothing and wash with plenty of water and soap. In case of irritation seek medical attention. Wash contaminated clothing before using them.

Eyes contact

Irrigate copiously with clean, fresh water for at least 15 minutes, keeping eyelids well- opened. Seek medical attention immediately.

Ingestion

Obtain medical attention immediately. Induce vomiting only if it is indicated by the doctor. Never give anything by mouth to an unconscious person.

Other

Change contaminated clothing.

4.2. Most important symptoms and effects, both acute and delayed

Not available

4.3. Indication of any immediate medical attention and special treatment needed

Immediately call a POISON CENTER/doctor

5. Fire-fighting measures

5.1 Extinguishing media

Advised extinguishing agents:

CO₂, foam, chemical powder for flammable liquids.

Unappropriate extinction methods:

Water jets.

Water may not be effective to extinguish the fire, nevertheless it should be used to cool containers exposed to flames and prevent fires and explosions. For leakage and spillage that have not caught fire, nebulized water may be used to disperse the flammable vapors and protect the people involved in stopping the leakage.

5.2. Special hazards arising from the substance or mixture

The product under fire condition may develop irritant/toxic gas (CO_x).

5.3. Advice for firefighters

Wear equipment complete with helmet and face shield and protection of the neck, breathing apparatus at pressure or demand, insulative jacket and trousers, with bands around the arms, legs and waist.

Closed containers exposed to heat from fire may build pressure and explode. Contaminated water used to extinguish fire must be disposed in accordance with the laws.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency dust procedures

Avoid the contact with skin and eyes. In the case of vapor formation use suitable protective

devices. Supply a good air circulation. Move away any unauthorised person. Eliminate or exclude any source of ignition.

6.2. Environmental precautions

Collect the product in suitable container for disposal. Notify authorities if product enters sewer or public waters.

6.3. Methods and material for containment and cleaning up

Cover the spillage with inert absorbent material. Collect spilled material and place in containers for later disposal. Use water only to remove residuals, so as to prevent the spillage of the product in the sewers.

6.4 Reference to other sections

Refer to paragraphs 8 and 13 for more information

7. Handling and storage

7.1. Precautions for safe handling

Proper ventilation of the workplace. Vapours may ignite with explosion, it is therefore necessary to avoid accumulation keeping the windows and doors open, ensuring cross ventilation. Without adequate ventilation, the vapors may accumulate at the bottom and ignite at a distance, if triggered off, with the risk of flashback. Ground-bond container and receiving equipment during transfer operations and wear antistatic boots.

Avoid the accumulation of electrostatic charge: Use only non-sparking tools. The strong vigorous stirring and flow of the liquid in the pipes and equipment may cause the formation and accumulation of electrostatic charges due to the low conductivity of the product. To avoid the danger of fire and explosion never use compressed air during movement. Open containers with caution because they may be under pressure. Do not handle until you have read and understood all warnings.

7.2. Conditions for safe storage, including any incompatibilities

Store closed containers in a cool, well-ventilated area away from ignition sources. Keep away from heat, sparks and flames, do not smoke, use matches or lighters.

7.3. Specific end use(s)

For particular uses of the product, is necessary to refer to the specific information or contact the technical service of the Company.

8. Exposure controls/ personal protection

8.1. Control parameters

Butanone:

OEL: 600 mg/m³, 200 ppm (as TWA); 900 mg/m³; 300 ppm (as STEL)

ethyl acetate:

OEL-EU: 734 mg/m³, 200 ppm (as TWA); 1468 mg/m³, 400 ppm (as STEL)

DNEL:

Systemic effects to long-term exposure - inhalation: 734 mg/m³

Systemic effects to acute/short term exposure - inhalation: 1468 mg/m³

Local effects to long-term exposure - inhalation: 734 mg/m³

Local effects to acute/short term exposure - inhalation: 1468 mg/m³

Systemic effects to long term exposure - dermal: 63 mg/kg bw/day

PNEC:

Freshwater: 0.24 mg/l

Intermittent releases: 1.65 mg/L

Marine water: 0.024 mg/l
 STP: 650 mg/l
 Sediment (freshwater): 1.15 mg/kg dw
 Sediment (marine water): 0.115 mg/kg dw
 Soil: 0.148 mg/kg dw
 Oral: 0.2 g/kg

8.2 Exposure controls

Avoid all unnecessary exposure, handle in accordance with good industrial hygiene and safety procedures. Avoid contact with the eyes and skin .Do not eat, drink or smoke while handling it. Accurately wash the hands with soap and water before meals.

Individual protection

The DPI's choice must be done on the basis of the test's results obtained according to the rule EN 374

Hand protection : protective gloves of nirtile. Penetration time of glove material: the exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
 Eye protection : protective goggles
 Skin protection : suitable protective clothing
 Respiratory protection : mask with filter (Type AX) in case of vapor formation

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical and chemical properties	Value	Determination method
Appearance	colorless liquid	
Odour	characteristic	
Odour threshold	not available	
pH	6-7	
Melting point/freezing point	not available	
Initial boiling point and boiling range	not available	
Flash point	<23°C	
Evaporation rate	not available	
Flammability (solid, gas)	not pertinent	
Upper/lower flammability or explosive limits	not pertinent	
Vapour pressure	not available	
Vapour density	not available	
Density	0.93 g/cm ³	
Solubility	soluble in water	
Water solubility	soluble	
Partition coefficient: n-octanol/water	not available	
Auto-ignition temperature	not available	
Decomposition temperature	not available	
Viscosity	not available	
Explosive properties	not explosive	
Oxidising properties	not oxidizing	

9.2. Other information

VOC (Directive 1999/13/CE): 23-27%

10. Stability and reactivity

10.1. Reactivity

In contact with strong oxidants exothermal reaction may occur.

ethyl acetate: oxidizing agents, acids, alkalis.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

butan-2-ol: the substance can form explosive peroxides. Reacts with aluminum, when heated to 100 ° C, reacts with strong oxidants (as chromium trioxide) forming flammable / explosive gas (hydrogen).

10.4. Conditions to avoid

butan-2-ol: Avoid heat, sparks, open flames and other ignition sources.

ethyl acetate: Ignition sources.

10.5. Incompatible materials

Butanone: Strong oxidizing agents, chloroform/alkali hydroxides. Unsuitable materials: various plastics, rubber.

butan-2-ol: Attacks some forms of plastic, rubber and coatings. Caustics, Amines, Alkanolamines, Aldehydes, Ammonia, Chlorinated Compounds, strong oxidisers

ethyl acetate: oxidizing agents, acids, alkalis.

10.6. Hazardous decomposition products

Due to thermal decomposition or in the event of a fire vapours may be produced potentially dangerous to health (CO_x).

Butanone: Peroxides

11. Toxicological information

11.1. Information on toxicological effects

ATE(mix) oral = 10526.3 mg/kg

Acute effects:

- (a) acute toxicity: based on available data, the classification criteria are not met.
- (b) skin corrosion/irritation based on available data, the classification criteria are not met.
- (c) serious eye damage/irritation: If brought into contact with eyes, the product causes serious damages to eyes, such as an opaque cornea or injury to iris.
- (d) respiratory or skin sensitization: based on available data, the classification criteria are not met.
- (e) germ cell mutagenicity: based on available data, the classification criteria are not met.
- (f) carcinogenicity: based on available data, the classification criteria are not met.
- (g) reproductive toxicity: based on available data, the classification criteria are not met.
- (h) specific target organ toxicity (STOT) single exposure: Warning: Vapours inhalation may cause sleepiness and giddiness
- (i) specific target organ toxicity (STOT) repeated exposure based on available data, the classification criteria are not met.
- (j) aspiration hazard: based on available data, the classification criteria are not met.

Butanone:

ROUTES OF EXPOSURE: the substance can be absorbed into the body by inhalation and ingestion.
RISKS FOR INHALATION: harmful contamination of air can be reached slowly by evaporation of the substance at 20°C.

EFFECTS OF SHORT TERM EXPOSURE: the substance is irritant to eyes and respiratory tract. The substance may cause effects on the central nervous system. Exposure far above OEL could cause lowering of consciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: the liquid degreases the skin. Test on animals shows that this substance may be toxic for reproduction and human development.

ACUTE HAZARDS / SYMPTOMS

INHALATION Cough. Nausea. Vertigo. Headaches. Sleepiness. Vomiting.

EYES. Redness.Pain.

INGESTION. Unconsciousness. (Further see Inhalation).

NOTE the odour is an insufficient advertizing of overcoming of exposure limit.

LD50: 2054 mg/kg bw (oral, rat)

butan-2-ol:

ROUTES OF EXPOSURE:The substance can be absorbed into the body by inhalation of its vapour and by ingestion.

INHALATION RISK: A harmful contamination of the air will be reached rather slowly by evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE: The substance is irritating to the eyes. Exposure far above the OEL may result in unconsciousness. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid degreases the skin.

ACUTE HAZARDS / SYMPTOMS

INHALATION Vertigo. Drowsiness. Headache.

SKIN Dry skin.

INGESTION Vertigo. Drowsiness

EYES Redness. Pain.

LD50: 2054 mg/kg bw (oral, rat)

LD50> 2 000 mg/kg bw (dermal, rat)

Propylene carbonate:

LD50: > 5000 mg/kg bw (oral, rat)

LD50: >= 2 000 mg/kg bw (dermal, rabbit)

ethyl acetate:

At average vapour concentrations ethyl acetate has an irritating effect on the mucous membranes; at higher vapour

concentration it has a narcotic effect. The same effect occurs after swallowing. Symptoms experienced after inhalation are a scratching sensation in the throat, loss of appetite, abdominal pain and headaches. Higher concentrations can cause subnarcotic to narcotic symptoms and possibly respiratory paralysis, depending on the quantity absorbed. Hypersensitivity reactions have been observed after chronic exposure. Due to the defatting effect eczema is possible.

ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation of its vapors.

INHALATION RISK: A harmful contamination of the air can be reached rather quickly on evaporation of this substance

at 20° C.

EFFECTS OF SHORT-TERM The substance 'irritating to eyes and respiratory tract. The substance may cause effects on the central nervous system Exposure far above OEL may result in death.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats skin.

ACUTE HAZARDS / SYMPTOMS

INHALATION Cough. Vertigo. Drowsiness. Headache. Nausea. Sore throat. Unconsciousness. Weakness.

SKIN Dry skin. Bloodshot eyes. Pain.

NOTE The use of alcoholic beverages enhances the harmful effect.

LD50: 5620 mg/kg bw (oral, rat)

LC50: 57.7 mg/L air (nominal) (inhalation, rat)

LD50: >20000 mg/kg bw (dermal, rabbit)

12.1. Toxicity

Use this product according to good working practices. Avoid litter. Inform the competent authorities, should the product reach waterways or sewers or contaminate soil or vegetation.

ethyl acetate:

LC50: 230mg/l/96h (Pimephales promelas)

EC50: 1350 mg/l/48h (Daphnia magna)

12.2. Persistence and degradability:

ethyl acetate: Readily biodegradable, Degr. 94% (28 days)

12.3. Bioaccumulative potential:

ethyl acetate: Log Pow: 0.68

12.4. Mobility in soil: not available

12.5. Results of PBT and vPvB assessment:

ethyl acetate: The substance is not PBT/vPvB

13. Disposal considerations

13.1. Waste treatment methods

Operate following the current Local or National Laws.

The non reclaimed containers have to be disposed as the product.

Consider the possibility of burning the product in a suitable incinerator.

14. Transport information

14.1. UN number

1993

If subject to the following characteristics is ADR exempt:

Combination packagings: per inner packaging 1 L per package 30 Kg

Inner packagings placed in skrink-wrapped or stretch-wrapped trays: per inner packaging 1 L per package 20 Kg



14.2. UN proper shipping name

ADR/RID/IMDG: FLAMMABLE LIQUID, N.O.S. (Butanone, butan-2-ol, ethyl acetate)

ADR/RID/IMDG: FLAMMABLE LIQUID, N.O.S. (Butanone, butan-2-ol, ethyl acetate)

ICAO-IATA: FLAMMABLE LIQUID, N.O.S. (Butanone, butan-2-ol, ethyl acetate)

14.3. Transport hazard class(es)

ADR/RID/IMDG/ICAO-IATA: Class : 3

ADR/RID/IMDG/ICAO-IATA: Label : 3

ADR: Tunnel restriction code : E

ADR/RID/IMDG/ICAO-IATA: Limited quantities : 5 L

IMDG - EmS : F-E, S-E

14.4. Packing group

II

14.5. Environmental hazards

Product is not environmentally hazardous

Marine polluting agent : Not

14.6. Special precautions for user

No data available.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

It is not intended to carry bulk

15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation	CAS	Substance
Reg. (EC) 428/2009 ex CE 1334/2000 Ann.1	-	-
Reg. (EC) 273/04 Tab.1 Cat.1	-	-
Reg. (EU) 1258/2013 ex Reg. (EC) 273/04 Tab.1 Cat.2	-	-
Reg. (EC) 273/04 Tab.1 Cat.3	-	-
Reg. (EU) 98/2013 Ann. 1	-	-
Reg. (EU) 98/2013 Ann. 2	-	-
Reg. (EC) 1907/2006 Ann. XIV	-	Mixture (Entry 3; Entry 40)
Reg. (EC) 1907/2006 Substances SVHC	-	-
Reg. (EC) 1907/2006 Ann. XVII	-	-
Directive 2012/18/UE Ann.1 part 1	-	Mixture classified HIGHLY FLAMMABLE (P5)
Directive 2012/18/UE Ann.1 part 2	-	-

15.2. Chemical safety assessment:

The supplier hasn't made a chemical safety assessment for the mixture. The supplier has made a chemical safety assessment for the substances:

ethyl acetate: CAS No 141-78-6

16. Other information

Description of the sentences of risk set out in paragraph 3:

H225 = Highly flammable liquid and vapour.

H319 = Causes serious eye irritation.

H336 = May cause drowsiness or dizziness.

H226 = Flammable liquid and vapour.

H335 = May cause respiratory irritation.

H302 = Harmful if swallowed.

H318 = Causes serious eye damage.

EUH066 = Repeated exposure may cause skin dryness or cracking

Classification based on data of all components of the mixture

Abbreviations and acronyms:

ATE = Acute Toxicity Estimate

CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]

DNEL = Derived No Effect Level

PNEC = Predicted No Effect Concentration

PBT = Persistent, Bioaccumulative and Toxic

vPvB = Very Persistent and Very Bioaccumulative

LD50 = Lethal Dose 50

CL50 = Lethal concentration 50

GENERAL BIBLIOGRAPHY:

1. Regulation (EC) 1907/2006 of the European Parliament (REACH)
2. Regulation (EC) 1272/2008 of the European Parliament (CLP) and its amendments and adjustments
3. Regulation (EC) 790 / 2009
4. Regulation (EU) 453/2010
5. Regulation (EU) 830/2015
6. The Merck Index. Ed 10
7. Handling Chemical Safety
8. NIOSH - Registry of Toxic Effects of Chemical Substances
9. INRS - Fiche Toxicologique
10. Patty - Industrial Hygiene and Toxicology
11. NI Sax - Dangerous Properties of Industrial Materials-7, 1989 Edition
12. ADR Directive 2008/68/CE and its amendments and adjustments
13. ECHA Web site <http://echa.europa.eu/web/guest>
14. Directive 2012/18/UE
15. Directive 2009/161/UE

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product .This document must not be regarded as a guarantee on any specific product property. The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.



CSGI

Consorzio Interuniversitario per lo Sviluppo dei Sistemi a Grande Interfase
Center for Colloid and Surface Science

NANORESTORE CLEANING POLAR COATING B

Date of compilation: 21/12/2015
Revision: 0 of 21/12/2015

MATERIAL SAFETY DATA SHEET

In accordance with Regulation (EC) 1907/2006 and Regulation 830/2015

1. Identification of the substance/mixture and of the company/enterprise

1.1 Product identifier: **NANORESTORE CLEANING POLAR COATING B**

1.2 Relevant identified uses of the substance or mixture:

Laboratory chemicals.

1.3 Details of the supplier of the safety data sheet:

CSGI – Consorzio per lo Sviluppo dei Sistemi a Grande Interfase
Via della Lastruccia, 3
50019 Sesto Fiorentino (FI)
Tel.055-4573035
Fax 055-4573036

1.4 Emergency phone number:

055-4573244 (call during office hours)

e-mail TC: products@csgi.unifi.it

2. Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008:

Flammable liquid (category 2)

Serious eye damage (category 1)

Specific target organ toxicity – single exposure (category 3)

Hazard statement Code(s):

H225 - Highly flammable liquid and vapour.

H318 - Causes serious eye damage.

H336 - May cause drowsiness or dizziness

The product is a liquid that ignites easily at temperatures < 23 °C if it exposed to an ignition source.

2.2. Label elements:

Pictogram, Signal Word Code(s):

Danger



Hazard statement Code(s):

H225 - Highly flammable liquid and vapour.

H318 - Causes serious eye damage.

H336 - May cause drowsiness or dizziness

Supplemental Hazard statement Code(s):

EUH066 - Repeated exposure may cause skin dryness or cracking.

Precautionary statements:

Prevention

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233 - Keep container tightly closed.

P243 - Take precautionary measures against static discharge.

P261 - Avoid breathing vapours/spray.

Response

P303+P361+P353 - IF ON SKIN (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P340 - IF INHALED: 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.

P310 - Immediately call a POISON CENTER/doctor.

P370+P378 - In case of fire: Use CO₂, foam, chemical powder for flammable liquids to extinguish.

Storage

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

Contains:

Butanone, Alkyl(C₉₋₁₁) alcohol, ethoxylated

2.3 Other hazards:

none information

3. Composition/Information on ingredients

3.2 *Mixtures*

Chemical composition:

Name	Concentration (C)	Classification Regulation	
		CE/1272/2008	
Butanone*	15 < C ≤ 22	Flam Liq. 2	H225
Cas No 78-93-3		Eye Irrit. 2	H319
CE No 201-159-0		STOT SE 3	H336
Index No 606-002-00-3			EUH066
Butan-2-ol	5 < C ≤ 10	Flam. Liq. 3	H226
Cas No 78-92-2		Eye Irrit. 2	H319
CE No 201-158-5		STOT SE 3	H335
Index No 603-127-00-5		STOT SE 3	H336
Alkyl(C ₉₋₁₁)alcohol, ethoxylated	2 < C ≤ 4	Acute Tox. 4	H302
Cas No 68439-46-3		Eye Dam. 1	H318
Polymer			

The full text of hazard statements is specified in section 16.

* Substance with occupational exposure limit

4. First-aid measures

4.1 Description of first aid measures

Inhalation

Remove to fresh air. If breathing is irregular seek medical advice immediately.

Skin contact

Take off all contaminated clothing and wash with plenty of water and soap. In case of irritation seek medical attention. Wash contaminated clothing before using them.

Eyes contact

Irrigate copiously with clean, fresh water for at least 15 minutes, keeping eyelids well- opened. Seek medical attention immediately.

Ingestion

Obtain medical attention immediately. Induce vomiting only if it is indicated by the doctor. Never give anything by mouth to an unconscious person.

Other

Change contaminated clothing.

4.2. Most important symptoms and effects, both acute and delayed

Not available

4.3. Indication of any immediate medical attention and special treatment needed

Not available

5. Fire-fighting measures

5.1 Extinguishing media

Advised extinguishing agents:

CO₂, foam, chemical powder for flammable liquids.

Unappropriate extinction methods:

Water jets.

Water may not be effective to extinguish the fire, nevertheless it should be used to cool containers exposed to flames and prevent fires and explosions. For leakage and spillage that have not caught fire, nebulized water may be used to disperse the flammable vapors and protect the people involved in stopping the leakage.

5.2. Special hazards arising from the substance or mixture

The product under fire condition may develop irritant/toxic gas (CO_x)

5.3. Advice for firefighters

Wear equipment complete with helmet and face shield and protection of the neck, breathing apparatus at pressure or demand, insulative jacket and trousers, with bands around the arms, legs and waist.

Closed containers exposed to heat from fire may build pressure and explode. Contaminated water used to extinguish fire must be disposed in accordance with the laws.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency dust procedures

Avoid the contact with skin and eyes. In the case of vapor formation use suitable protective

devices. Supply a good air circulation. Move away any unauthorised person. Eliminate or exclude any source of ignition.

6.2. Environmental precautions

Collect the product in suitable container for disposal. Notify authorities if product enters sewer or public waters.

6.3. Methods and material for containment and cleaning up

Cover the spillage with inert absorbent material. Collect spilled material and place in containers for later disposal. Use water only to remove residuals, so as to prevent the spillage of the product in the sewers.

6.4 Reference to other sections

Refer to paragraphs 8 and 13 for more information

7. Handling and storage

7.1. Precautions for safe handling

Proper ventilation of the workplace. Vapours may ignite with explosion, it is therefore necessary to avoid accumulation keeping the windows and doors open, ensuring cross ventilation. Without adequate ventilation, the vapors may accumulate at the bottom and ignite at a distance, if triggered off, with the risk of flashback. Ground-bond container and receiving equipment during transfer operations and wear antistatic boots.

Avoid the accumulation of electrostatic charge: Use only non-sparking tools. The strong vigorous stirring and flow of the liquid in the pipes and equipment may cause the formation and accumulation of electrostatic charges due to the low conductivity of the product. To avoid the danger of fire and explosion never use compressed air during movement. Open containers with caution because they may be under pressure. Do not handle until you have read and understood all warnings.

7.2. Conditions for safe storage, including any incompatibilities

Store closed containers in a cool, well-ventilated area away from ignition sources. Keep away from heat, sparks and flames, do not smoke, use matches or lighters.

7.3. Specific end use(s)

For particular uses of the product, is necessary to refer to the specific information or contact the technical service of the Company.

8. Exposure controls/ personal protection

8.1. Control parameters

Butanone:

TLV: 600 mg/m³, 200 ppm (as TWA);900 mg/m³; 300 ppm (as STEL)

8.2 Exposure controls

Avoid all unnecessary exposure, handle in accordance with good industrial hygiene and safety procedures. Avoid contact with the eyes and skin .Do not eat, drink or smoke while handling it. Accurately wash the hands with soap and water before meals.

Individual protection

The DPI's choice must be done on the basis of the test's results obtained according to the rule EN 374

Hand protection : protective gloves of butyl rubber, latex viton.
 Penetration time of glove material: the exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
 Eye protection : protective goggles
 Skin protection : suitable protective clothing
 Respiratory protection : mask with filter (Type ABEK)

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical and chemical properties	Value	Determination method
Appearance	colorless liquid	
Odour	characteristic	
Odour threshold	not available	
pH	6-7	
Melting point/freezing point	not available	
Initial boiling point and boiling range	not available	
Flash point	6° C	DIN EN ISO 3679
Evaporation rate	not available	
Flammability (solid, gas)	not pertinent	
Upper/lower flammability or explosive limits	not pertinent	
Vapour pressure	not available	
Vapour density	not available	
density	0.90 g/cm ³	
Solubility	not pertinent	
Water solubility	not pertinent	
Partition coefficient: n-octanol/water	not available	
Auto-ignition temperature	not available	
Decomposition temperature	not available	
Viscosity	not available	
Explosive properties	not explosive	
Oxidising properties	not oxidizing	

9.2. Other information

VOC (Directive 1999/13/CE): 28-32%

10. Stability and reactivity

10.1. Reactivity

In contact with strong oxidants exothermal reaction may occur.

Butanone: it reacts with light metals, such as aluminum, and with strong oxidizing agents.

Butan-2-ol: reacts with aluminum, when heated to 100° C.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

Butan-2-ol: the substance can form explosive peroxides. Reacts with strong oxidants (as chromium trioxide) forming flammable / explosive gas (hydrogen).

10.4. Conditions to avoid

Butan-2-ol: avoid heat, sparks, open flames and other ignition sources.

10.5. Incompatible materials

Butanone: attacks different types of plastic.

Butan-2-ol: attacks some forms of plastic, rubber and coatings. Caustics, Amines, Alkanolamines, Aldehydes, Ammonia, Chlorinated Compounds, oxidizing agents

10.6. Hazardous decomposition products

Due to thermal decomposition or in the event of a fire vapours may be produced potentially dangerous to health (CO_x).

11. Toxicological information

11.1. Information on toxicological effects

Acute effects:

ATE(mix) oral = 14285,7 mg/kg

- (a) acute toxicity: based on available data, the classification criteria are not met.
- (b) skin corrosion/irritation: based on available data, the classification criteria are not met.
- (c) serious eye damage/irritation: if brought into contact with eyes, the product causes serious damages to eyes, such as an opaque cornea or injury to iris.
- (d) respiratory or skin sensitization: based on available data, the classification criteria are not met.
- (e) germ cell mutagenicity: based on available data, the classification criteria are not met.
- (f) carcinogenicity: based on available data, the classification criteria are not met.
- (g) reproductive toxicity: based on available data, the classification criteria are not met.
- (h) specific target organ toxicity (STOT) single exposure: warning: vapours inhalation may cause sleepiness and giddiness
- (i) specific target organ toxicity (STOT) repeated exposure based on available data, the classification criteria are not met.
- (j) aspiration hazard: based on available data, the classification criteria are not met.

Butanone:

ROUTES OF EXPOSURE: the substance can be absorbed into the body by inhalation and ingestion.
RISKS FOR INHALATION: harmful contamination of air can be reached slowly by evaporation of the substance at 20°C.

EFFECTS OF SHORT TERM EXPOSURE: the substance is irritant to eyes and respiratory tract. The substance may cause effects on the central nervous system. Exposure far above OEL could cause lowering of consciousness.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: the liquid degreases the skin. Test on animals shows that this substance may be toxic for reproduction and human development.

ACUTE HAZARDS / SYMPTOMS

INHALATION Cough. Nausea. Vertigo. Headaches. Sleepiness. Vomiting.

EYES. Redness. Pain.

INGESTION. Unconsciousness. (Further see Inhalation).

NOTE: the odour is an insufficient advertising of overcoming of exposure limit.

LD50: 2193 mg/kg bw (oral, rat)

Butan-2-ol:

ROUTES OF EXPOSURE: the substance can be absorbed into the body by inhalation of its vapour and by ingestion.

INHALATION RISK: a harmful contamination of the air will be reached rather slowly by evaporation of this substance at 20°C.

EFFECTS OF SHORT-TERM EXPOSURE: the substance is irritating to the eyes. Exposure far above the OEL may result in unconsciousness. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: the liquid degreases the skin.

ACUTE HAZARDS / SYMPTOMS

INHALATION Vertigo. Drowsiness. Headache.

SKIN Dry skin.

INGESTION Vertigo. Drowsiness
EYES Redness. Pain.
LD50: 2054 mg/kg bw (oral, rat)
LD50: > 2000 mg/kg bw (dermal, rat)

12. Ecological information

12.1. Toxicity

Use this product according to good working practices. Avoid litter. Inform the competent authorities, should the product reach waterways or sewers or contaminate soil or vegetation.

Butanone:

LC50: 2993 mg/l/96h (Pimephales promelas)

EC50: 308 mg/l/48h (Daphnia Magna)

NOEC: 68 mg/l/48h (Daphnia Magna)

Butan-2-ol

LC50 3520 mg/L/48h (Leuciscus idus melanotus)

EC50: 2300 mg/L/24h (Daphnia magna)

12.2. Persistence and degradability:

Butanone: readily biodegradable. Degradability: 98% (28 days)

Butan-2-ol: readily biodegradable. Degradability: 86% (5 days)

BOD5: 2.15 g O₂/g test mat.

COD: 2.49 g O₂/g test mat.

12.3. Bioaccumulative potential:

Butanone: LogPow: 0,3

Butan-2-ol: log Pow: 0.6

12.4. Mobility in soil: not available

12.5. Results of PBT and vPvB assessment:

Butanone: the substance is not PBT / vPvB

Butan-2-ol: the substance is not PBT / vPvB

12.6. Other adverse effects: not available

This product doesn't contain AOX

13. Disposal considerations

13.1. Waste treatment methods

Operate following the current Local or National Laws.

The non reclaimed containers have to be disposed as the product.

14. Transport information

14.1. UN number

1993

If subject to the following characteristics is ADR exempt:

Combination packagings: per inner packaging 1 L per package 30 Kg

Inner packagings placed in shrink-wrapped or stretch-wrapped trays: per inner packaging 1 L per package 20 Kg



14.2. UN proper shipping name

Flammable liquid, n.o.s (contains Butanone, Butan-2-ol)

14.3. Transport hazard class(es)

Class : **3**

Label : **3**

Tunnel restriction code : D/E

Limited quantities : 1 L

EmS : F-E, S-E

14.4. Packing group

II

14.5. Environmental hazards

Product is not environmentally hazardous

Marine polluting agent : Not

14.6. Special precautions for user

No data available.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

It is not intended to carry bulk

15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation	Cas	Substance
428/2009 ex CE 1334/2000 Ann.1	-	-
273/04 Tab.1 Cat.1	-	-
273/04 Tab.1 Cat.2	-	-
273/04 Tab.1 Cat.3	-	-
Reg. CE 1907/2006 Ann. XIV	-	-
Reg. CE 1907/2006 Substances SVHC	-	-
Reg. CE 1907/2006 Ann. XVII	-	-
2003/105/CE Ann.1 part 1	-	-
2003/105/CE Ann.1 part 2	-	-
2012/18/UE Ann.1 part 1	-	Mixture HIGHLY FLAMMABLE
2012/18/UE Ann.1 part 2	78-93-3 78-92-2	Butanone Butan-2-ol

15.2. Chemical safety assessment

none

16. Other information

Description of the sentences of risk set out in paragraph 3:

H225 = Highly flammable liquid and vapour

H319 = Causes serious eye irritation

H336 = May cause drowsiness or dizziness
H226 = Flammable liquid and vapour
H335 = May cause respiratory irritation
H302 = Harmful if swallowed
H318 = Causes serious eye damage.
EUH066 - Repeated exposure may cause skin dryness or cracking

Classification based by calculation on data of all components of the mixture.

GENERAL BIBLIOGRAPHY:

1. Regolamento (CE) 1907/2006 del Parlamento Europeo (REACH)
2. Regolamento (CE) 1272/2008 del Parlamento Europeo (CLP) e successivi adeguamenti
3. Regolamento (CE) 790/2009
4. Regolamento (UE) 453/2010
5. Regolamento (UE) 830/2015
6. The Merck Index. Ed. 10
7. Handling Chemical Safety
8. Niosh - Registry of Toxic Effects of Chemical Substances
9. INRS - Fiche Toxicologique
10. Patty - Industrial Hygiene and Toxicology
11. N.I. Sax - Dangerous properties of Industrial Materials-7 Ed., 1989
12. ADR direttiva 2008/68/CE e successivi adeguamenti
13. ECHA Web site <http://echa.europa.eu/web/guest>
14. Directive 2012/18/UE
15. Directive 2009/161/UE

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product .This document must not be regarded as a guarantee on any specific product property.The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses

-This sheet cancels and substitutes any previous edition.



NANORESTORE CLEANING POLAR COATING S

Date of compilation: 18/12/2015
Revision: 0 of 18/12/2015

MATERIAL SAFETY DATA SHEET

In accordance with Regulation (EC) 1907/2006 and Regulation 830/2015

1. Identification of the substance/mixture and of the company/enterprise

1.1 Product identifier: **NANORESTORE CLEANING POLAR COATING S**

1.2 Relevant identified uses of the substance or mixture:
Professional use

1.3 Details of the supplier of the safety data sheet:
CSGI – Consorzio per lo Sviluppo dei Sistemi a Grande Interfase
Via della Lastruccia, 3
50019 Sesto Fiorentino (FI)
Tel.055-4573035
Fax 055-4573036

1.4 Emergency phone number:
055-4573244 (call during office hours)

e-mail TC: products@csgi.unifi.it

2. Hazards identification

2.1 Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008:

Flammable liquid (category 2)

Skin irritation (category 2)

Eye irritation (category 1)

Hazard statement Code(s):

H225 - Highly flammable liquid and vapour.

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

The product is a liquid that ignites easily at temperatures < 23 °C if it exposed to an ignition source.

2.2 Label elements:

Pictogram, Signal Word Code(s):

Danger



Hazard statement Code(s):

H225 - Highly flammable liquid and vapour.

H315 - Causes skin irritation.

H319 - Causes serious eye irritation.

Supplemental Hazard statement Code(s):

EUH066 - Repeated exposure may cause skin dryness or cracking.

Precautionary statements:

Prevention

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking

P233 - Keep container tightly closed

P243 - Take precautionary measures against static discharge

Response

P303+P361+P353 - IF ON SKIN (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower

P305+P351+P338 - IF IN EYES: rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P337+P313 - If eye irritation persists: get medical advice/attention

P370+P378 - In case of fire: Use CO₂, foam, chemical powder for flammable liquids to extinguish

Storage

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

2.3 Other hazards:

none information

3. Composition/Information on ingredients

3.2 *Mixtures*

Chemical composition:

Name	Concentration (C)	Classification	
		Regulation CE/1272/2008	
Propylene carbonate Cas No 108-32-7 CE No 203-572-1 Index No 607-194-00-1	4 ≤ C ≤ 10	Eye Irrit. 2	H319
Ethyl acetate Cas No 141-78-6 CE No 205-500-4 Index No 607-022-00-5 Reg. No 01-2119475103-46-xxxx	4 ≤ C ≤ 10	Flam. Liq. 2 Eye Irrit. 2 STOT SE 3 EUH 066	H225 H319 H336
1-Pentanol Cas No 71-41-0 CE No 200-752-1 Index No 603-200-00-1	3 ≤ C ≤ 9	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2 Acute Tox. 4 STOT SE	H226 H315 H319 H332 H335
Sodium dodecyl sulphate Cas No 151-21-3 CE No 205-788-1	2 ≤ C ≤ 4	Flam. Sol. 2 Acute Tox. 4 Acute Tox. 4 Skin Irrit. 2 Eye Dam. 1 STOT SE 3 Aquatic Chronic 3	H228 H332 H302 H315 H318 H335 H412

The full text of hazard statements is specified in section 16.

4. First-aid measures

4.1 Description of first aid measures

Inhalation

Remove to fresh air. If breathing is irregular seek medical advice.

Skin contact

Take off immediately all contaminated clothing and wash with plenty of water and soap. Seek medical attention. Wash contaminated clothing before using them.

Eyes contact

Irrigate copiously with clean, fresh water for at least 15 minutes, keeping eyelids well- opened. Seek medical attention.

Ingestion

Obtain medical attention immediately. Induce vomiting only if it is indicated by the doctor. Never give anything by mouth to an unconscious person.

Other

Change contaminated clothing.

4.2. Most important symptoms and effects, both acute and delayed

Not available

4.3. Indication of any immediate medical attention and special treatment needed

Not available

5. Fire-fighting measures

5.1 Extinguishing media

Advised extinguishing agents:

CO₂, foam, chemical powder for flammable liquids.

Unappropriate extinction methods:

Water jets.

Water may not be effective to extinguish the fire, nevertheless it should be used to cool containers exposed to flames and prevent fires and explosions. For leakage and spillage that have not caught fire, nebulized water may be used to disperse the flammable vapors and protect the people involved in stopping the leakage.

5.2. Special hazards arising from the substance or mixture

The product under fire condition may develop irritant/toxic gas (CO_x, SO_x)

5.3. Advice for firefighters

Wear equipment complete with helmet and face shield and protection of the neck, breathing apparatus at pressure or demand, insulative jacket and trousers, with bands around the arms, legs and waist.

Closed containers exposed to heat from fire may build pressure and explode. Contaminated water used to extinguish fire must be disposed in accordance with the laws.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency dust procedures

Avoid the contact with skin and eyes. In the case of vapor formation use suitable protective

devices. Supply a good air circulation. Move away any unauthorised person. Eliminate or exclude any source of ignition.

6.2. Environmental precautions

Collect the product in suitable container for disposal. Notify authorities if product enters sewer or public waters.

6.3. Methods and material for containment and cleaning up

Cover the spillage with inert absorbent material. Collect spilled material and place in containers for later disposal. Use water only to remove residuals, so as to prevent the spillage of the product in the sewers.

6.4 Reference to other sections

Refer to paragraphs 8 and 13 for more information

7. Handling and storage

7.1. Precautions for safe handling

Proper ventilation of the workplace. Vapours may ignite with explosion, it is therefore necessary to avoid accumulation keeping the windows and doors open, ensuring cross ventilation. Without adequate ventilation, the vapors may accumulate at the bottom and ignite at a distance, if triggered off, with the risk of flashback. Ground-bond container and receiving equipment during transfer operations and wear antistatic boots. Avoid the accumulation of electrostatic charge: Use only non-sparking tools. The strong vigorous stirring and flow of the liquid in the pipes and equipment may cause the formation and accumulation of electrostatic charges due to the low conductivity of the product. To avoid the danger of fire and explosion never use compressed air during movement. Open containers with caution because they may be under pressure. Do not handle until you have read and understood all warnings.

7.2. Conditions for safe storage, including any incompatibilities

Store closed containers in a cool, well-ventilated area away from ignition sources. Keep away from heat, sparks and flames, do not smoke, use matches or lighters.

7.3. Specific end use(s)

For particular uses of the product, is necessary to refer to the specific information or contact the technical service of the Company.

8. Exposure controls/ personal protection

8.1. Control parameters

Ethyl acetate:

DNEL:

Systemic effects for short-term exposure -inhalation: 1468 mg / m³

Systemic effects for long exposure termine- skin: 63 mg / kg

Systemic effects from exposure to long-term inhalation: 734 mg / m³

Local effects from exposure to long-term inhalation: 734 mg /

Local effects from exposure to short-term inhalation 1468 m / m³

PNEC:

Freshwater: 0:24 mg / L

sea water: 0.024 mg / L

Water (intermittent release): 1.65 mg / L

STP: 650 mg / L

Sediment (freshwater): 1.15 mg / kg

sediment (sea water): 0115 mg / kg

Soil: 0.148 mg / kg

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Oral: 0.2 g / kg

SU3	industrial use
SU22	Professional uses
PC21	Laboratory chemical
PC20	regulators, flocculants, precipitants, neutralization agents
PROC3	-Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (SU3)
PROC4	-Chemical production where opportunity for exposure arises (SU3)
PROC5	-Mixing or blending in batch processes (SU3)
PROC8b	-Transfer of substance or mixture (charging and dis charging) at dedicated facilities (SU3)
PROC9	-Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (SU3)
PROC15	-Use as laboratory reagent (SU3, SU22)
ERC1	-Manufacture of the substance (SU3)
ERC2	-Formulation into mixture (SU3)
ERC6b	-Use of reactive processing aid at industrial site (no inclusion into or onto article) (SU3)
ERC4	-Use of non- reactive processing aid at industrial site (no inclusion into or onto article) (SU3, SU22)
ERC8a	-Widespread use of non- reactive processing aid (no inclusion into or onto article, indoor) (SU22)
Concentration of the Substance in Mixture / Article	Includes percentage substance in the product up to 100% (unless stated differently)
Physical Form (at time of use)	Liquid medium volatile
Exposure duration per day	> 4 h
Frequency of use	220 days / year
Technical conditions and measures to control dispersion of the source to workers	Provide adequate ventilation. It requires a good working practice. Ensure that operators are trained to minimize exposure.
Conditions and measures related to	Wear suitable gloves tested to EN374., See Section 8 for personal protective equipment.

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personal protection, hygiene and health evaluation	Without local ventilation: Dermal 0.343 mg / kg body weight / day Without local ventilation: Inhalation 25.699 mg / m ³
Other operational conditions affecting workers in the work	Outdoor / Indoor: Indoor

8.2 Exposure controls

Avoid all unnecessary exposure, handle in accordance with good industrial hygiene and safety procedures. Avoid contact with the eyes and skin .Do not eat, drink or smoke while handling it. Accurately wash the hands with soap and water before meals.

Individual protection

The DPI's choice must be done on the basis of the test's results obtained according to the rule EN 374

Hand protection : protective gloves of butyl, latex. Penetration time of glove material: the exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection : protective goggles

Skin protection : suitable protective clothing

Respiratory protection : mask with filter (Type ABEK) in case of vapor formation et/or insufficient ventilation

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical and chemical properties	Value	Determination method
Appearance	colorless liquid	
Odour	characteristic	
Odour threshold	not available	
pH	6-7	
Melting point/freezing point	not available	
Initial boiling point and boiling range	not available	
Flash point	15° C	DIN EN ISO 3679
Evaporation rate	not available	
Flammability (solid, gas)	not pertinent	
Upper/lower flammability or explosive limits	not pertinent	
Vapour pressure	not available	
Vapour density	not available	
density	0.96 g/cm ³	
Solubility	not pertinent	
Water solubility	not pertinent	
Partition coefficient: n-octanol/water	not available	
Auto-ignition temperature	not available	
Decomposition temperature	not available	
Viscosity	not available	
Explosive properties	not explosive	
Oxidising properties	not oxidizing	

9.2. Other information

VOC (Directive 1999/13/CE): 15-20%

10. Stability and reactivity

10.1. Reactivity

In contact with strong oxidants exothermal reaction may occur.

Ethyl acetate: Reacts with strong oxidants, acids or bases.

10.2. Chemical stability

The product is stable in normal conditions of use and storage.

10.3. Possibility of hazardous reactions

Ethyl acetate: heating may cause violent combustion or explosion.

10.4. Conditions to avoid

No data available

10.5. Incompatible materials

Ethyl acetate: attacks aluminum and plastics.

10.6. Hazardous decomposition products

Due to thermal decomposition or in the event of a fire vapours may be produced potentially dangerous to health (COx, SOx).

Ethyl acetate: the substance decomposes under the influence of UV light, bases, acids.

11. Toxicological information

11.1. Information on toxicological effects

ATE(mix) oral = 32566,9 mg/kg

ATE(mix) inhal = 100,0 mg/l/4 h

Acute effects:

(a) acute toxicity: based on available data, the classification criteria are not met.

(b) skin corrosion/irritation: if brought into contact with the skin, the product causes significant inflammation with erythema, scabs, or edema.

(c) serious eye damage/irritation: if brought into contact with eyes, the product, causes significant irritations which may last for more than 24 hours.

(d) respiratory or skin sensitization: based on available data, the classification criteria are not met.

(e) germ cell mutagenicity: based on available data, the classification criteria are not met.

(f) carcinogenicity: based on available data, the classification criteria are not met.

(g) reproductive toxicity: based on available data, the classification criteria are not met.

(h) specific target organ toxicity (STOT) single exposure: based on available data, the classification criteria are not met.

(i) specific target organ toxicity (STOT) repeated exposure based on available data, the classification criteria are not met.

(j) aspiration hazard: based on available data, the classification criteria are not met.

Propylen carbonate:

LD50: > 5000 mg/kg bw (oral, rat)

Ethyl acetate:

at average vapour concentrations ethyl acetate has an irritating effect on the mucous membranes; at higher vapour concentration it has a narcotic effect. The same effect occurs after swallowing. Symptoms experienced after inhalation are a scratching sensation in the throat, loss of appetite, abdominal pain and headaches. Higher concentrations can cause subnarcotic to narcotic symptoms and possibly respiratory paralysis, depending on the quantity

absorbed. Hypersensitivity reactions have been observed after chronic exposure. Due to the defatting effect eczema is possible.

ROUTES OF EXPOSURE: the substance can be absorbed into the body by inhalation of its vapors.

INHALATION RISK: a harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20° C.

EFFECTS OF SHORT-TERM: the substance irritating to eyes and respiratory tract. The substance may cause effects on the central nervous system Exposure far above OEL may result in death.

EFFECTS OF LONG-TERM OR REPEATED EXPOSURE: The liquid defats skin.

ACUTE HAZARDS / SYMPTOMS

INHALATION Cough. Vertigo. Drowsiness. Headache. Nausea. Sore throat. Unconsciousness. Weakness.

SKIN Dry skin. Bloodshot eyes. Pain.

NOTE: the use of alcoholic beverages enhances the harmful effect.

LD50: 5620 mg/kg (oral, rat)

LD50: >20000 mg/kg (dermal, rabbit)

1-Pentanol:

LD50: 3645 about mg/kg bw (oral, rat)

LD50: 2292 mg/kg bw (dermal, rabbit)

Sodium dodecyl sulphate:

LD50: 977 mg/kg bw (oral, rat)

12. Ecological information

12.1. Toxicity

Use this product according to good working practices. Avoid litter. Inform the competent authorities, should the product reach waterways or sewers or contaminate soil or vegetation.

Propylen carbonate

LC50 > 1000 mg / L / 96h (Cyprinus carpio)

EC50: > 1000 mg / L / 48h (Daphnia magna)

Ethyl acetate:

LC50: 230 mg/l/96h (Pimephales promelas)

EC50: 590 mg/l/48h (Daphnia magna)

1-Pentanol:

LC50: 530 mg / L / 96h (Danio rerio)

EC50: 341.21 mg / L / 48h (Daphnia magna)

Sodium dodecyl sulphate:

LC50: 29 mg / L / 96h (Pimephales promelas)

LC50: 3.15 mg / L / 48h (Artemia salina)

12.2. Persistence and degradability:

Propylen carbonate: readily biodegradable. Degradability: 87.1% (29 days)

Ethyl acetate: Degr. ab. 69% (20 days)

1-Pentanol: readily biodegradable. Degradability: 100% (18 days)

Sodium dodecyl sulphate: Readily biodegradable. Degradability: 75.5% (35 days)

BCF ca. 1.5

12.3. Bioaccumulative potential:

Propylen carbonate: LogPow: 0.0788

Ethyl acetate: logPow: 0.68

1-Pentanol: logPow 1:34

Sodium dodecyl sulphate: logPow <= -2.03

12.4. Mobility in soil: not available

12.5. Results of PBT and vPvB assessment: not available

Propylen carbonate: the substance is not PBT / vPvB

Ethyl acetate: the substance is not PBT / vPvB

1-Pentanol: the substance is not PBT / vPvB

Sodium dodecyl sulphate: the substance is not PBT / vPvB

12.6. Other adverse effects: not available

This product doesn't contain AOX

13. Disposal considerations

13.1. Waste treatment methods

Operate following the current Local or National Laws.

The non reclaimed containers have to be disposed as the product.

14. Transport information

14.1. UN number

1993

If subject to the following characteristics is ADR exempt:

Combination packagings: per inner packaging 1 L per package 30 Kg

Inner packagings placed in skrink-wrapped or stretch-wrapped trays: per inner packaging 1 L per package 20 Kg



14.2. UN proper shipping name

Flammable liquid, n.o.s (contains Ethyl acetate, 1-Pentanol)

14.3. Transport hazard class(es)

Class : **3**

Label : **3**

Tunnel restriction code : D/E

Limited quantities : 1 L

EmS : F-E, S-E

14.4. Packing group

II

14.5. Environmental hazards

Product is not environmentally hazardous

Marine polluting agent : Not

14.6. Special precautions for user

No data available.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

It is not intended to carry bulk

15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation	Cas	Substance
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428/2009 ex CE 1334/2000 Ann.1	-	-
273/04 Tab.1 Cat.1	-	-
273/04 Tab.1 Cat.2	-	-
273/04 Tab.1 Cat.3	-	-
Reg. CE 1907/2006 Ann. XIV	-	-
Reg. CE 1907/2006 Substances SVHC	-	-
Reg. CE 1907/2006 Ann. XVII	-	-
2003/105/CE Ann.1 part 1	-	-
2003/105/CE Ann.1 part 2	-	-
2012/18/UE Ann.1 part 1	-	Mixture HIGHLY FLAMMABLE
2012/18/UE Ann.1 part 2	141-78-6 71-41-0 151-21-3	Ethyl acetate 1-Pentanol Sodium dodecyl sulphate

15.2. Chemical safety assessment
none

16. Other information

Description of the sentences of risk set out in paragraph 3:

H319 = Causes serious eye irritation
H225 = Highly flammable liquid and vapour
H336 = May cause drowsiness or dizziness
H226 = Flammable liquid and vapour
H315 = Causes skin irritation
H332 = Harmful if inhaled
H335 = May cause respiratory irritation
H228 = Flammable solid
H302 = Harmful if swallowed
H318 = Causes serious eye damage
H412 = Harmful to aquatic life with long lasting effects
EUH066 - Repeated exposure may cause skin dryness or cracking

Classification based by calculation on data of all components of the mixture.

GENERAL BIBLIOGRAPHY:

1. Regulation (EC) 1907/2006 of the European Parliament (REACH)
2. Regulation (EC) 1272/2008 of the European Parliament (CLP) and its amendments and adjustments
3. Regulation (EC) 790 / 2009
4. Regulation (EU) 453/2010
5. Regulation (EU) 830/2015
6. The Merck Index. Ed 10
7. Handling Chemical Safety
8. NIOSH - Registry of Toxic Effects of Chemical Substances
9. INRS - Fiche Toxicologique
10. Patty - Industrial Hygiene and Toxicology
11. NI Sax - Dangerous Properties of Industrial Materials-7, 1989 Edition
12. ADR Directive 2008/68/CE and its amendments and adjustments
13. ECHA Web site <http://echa.europa.eu/web/guest>
14. Directive 2012/18/UE

15. Directive 2009/161/UE

Note for users:

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product .This document must not be regarded as a guarantee on any specific product property. The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses

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