

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

1.1. Product identifier

Product form : Mixture
Product name : TUBALL MATRIX 207
Type of product : Nanoform embedded in a matrix

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Industrial use as additive in polymers, resins and/or coatings

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Europe:	USA:	Asia:	China:	India:
OCSiAI Europe S.a.r.l. L-3364, Leudelange, 1, rue de la Poudrerie, Grand Duchy of Luxembourg	OCSiAI LLC 500 S Front St., Suite 860, Columbus, OH 43215, USA	OCSiAI Asia Pacific Co., Ltd. Office 208, Pilot Plant Bldg., Incheon Technopark 12 Gaetbeol-ro, Yeonsu-gu, Incheon, 406-840 Republic of Korea	OCSiAI Hong Kong Limited No. 1102, 11/F, Lippo Sun Plaza, 28 Canton Road, Tsim Sha Tsui, Kowloon, Hong Kong	VIMAL INTERTRADE PVT LTD. Shivam Centrum, Sahar Road, Koldongri, Above Nexa Showroom, Andheri East, Mumbai – 400 069
T +352 27 99 03 73 09.00-17.00 GMT+2 europe@ocsial.com	T +1 415 906 5271 09.00-17.00 GMT-4 usa@ocsial.com	T +82 32 260 0407 09.00-17.00 GMT+9 asiapacific@ocsial.com	T +852 3575 3946 09:00-17:00; GMT+8 china@ocsial.com	T +91 22 6288 4200 09:00-17:00; GMT+5.5 india@ocsial.com

1.4. Emergency telephone number

EMEA : +44 1865 407333 (English) (Carechem 24)
East/South East Asia : +65 3158 1074 (English, Hindi, Japanese, Korean, Malay, Mandarin) (Carechem 24)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation, Category 2 H315
Serious eye damage/eye irritation, Category 2 H319
Skin sensitisation, Category 1 H317
Full text of H- and EUH-statements: see section 16

Adverse physicochemical, human health and environmental effects

Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS07

Signal word (CLP) : Warning
Hazardous ingredients : Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.
Hazard statements (CLP) : H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
Precautionary statements (CLP) : P261 - Avoid breathing dust, mist, vapours.
P264 - Wash hands thoroughly after handling.
P280 - Wear protective gloves, eye protection, protective clothing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 - Take off contaminated clothing and wash it before reuse.

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2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures ►

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Oxirane, mono[(C12-14-alkoxy)methyl] derivs.	(CAS-No.) 68609-97-2 (EC-No.) 271-846-8 (REACH-No.) 01-2119485289-22	90	Skin Irrit. 2, H315 Skin Sens. 1, H317
Single wall carbon nanotubes*	(CAS-No.) Not assigned for EU-REACH (EC-No.) 943-098-9 (REACH-No.) 01-2120130006-75-0000	10	Eye Irrit. 2, H319

Full text of H- and EUH-statements: see section 16

*Single wall carbon nanotubes TUBALL™	
Name of (set of) nanoform(s)	Tuball™ - grades 1RW02 / 1RW03 are part of one set of nanoform
Value	-
Number based particle size distribution d10	1.2 - 1.45 nm
d50	1.6 - 1.8 nm
d90	1.9 - 2.2 nm
Shape and aspect ratio of particles	Elongated tubes; length to diameter ratio 2000 – 10000:1
Crystallinity	Amorphous
Surface functionalisation / treatment	No
Process	Chemical vapor deposition (CVD)
Specific surface area	300 – 1500 m ² /g
Additional information	G/D range : ≥ 40 (RAMAN at 532 nm)

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Get medical attention.
First-aid measures after skin contact	: Take off immediately all contaminated clothing. Wash with plenty of soap and water. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention.
First-aid measures after eye contact	: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention.
First-aid measures after ingestion	: Rinse mouth out with water. Do not induce vomiting. Get medical attention.

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

Symptoms/effects after skin contact	: Causes skin irritation. May cause an allergic skin reaction.
Symptoms/effects after eye contact	: Causes serious eye irritation.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Dry chemical powder, alcohol-resistant foam, carbon dioxide (CO ₂).
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Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Carbon dioxide. Carbon monoxide.

5.3. Advice for firefighters

Protection during firefighting : Full face mask. Positive pressure self-contained breathing apparatus (SCBA).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Wear suitable protective clothing.
Emergency procedures : Ensure adequate ventilation. Evacuate area.

6.1.2. For emergency responders

Protective equipment : Wear suitable protective clothing, gloves and eye/face protection. In case of fire: Positive pressure self-contained breathing apparatus (SCBA).
Emergency procedures : Provide adequate ventilation. Evacuate area. Avoid inhalation of vapours.

6.2. Environmental precautions

Do not allow to enter into surface water or drains. Collect contaminated extinguishing water separately and must not enter the sewage system.

6.3. Methods and material for containment and cleaning up

For containment : Clean spills promptly. Ventilate affected area. Stop leak if safe to do so.
Methods for cleaning up : Clear up rapidly by scoop or vacuum. Collect in closed container and remove to a safe place for disposal by burning.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid contact with skin, eyes and clothing. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection. Avoid breathing dust, fume. To prevent thermal burns avoid contact with hot product.
Hygiene measures : Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities ►

Storage conditions : Store in dry, well-ventilated area. Store at ambient temperature. Protect from sunlight. Protect from moisture.
Incompatible products : Oxidizing agent.
Storage temperature : 5 – 40 °C
Heat and ignition sources : Keep away from open flames, hot surfaces and sources of ignition.
Information on mixed storage : Store away from water (including sewage plant).
Special rules on packaging : Keep only in original container. Keep container tightly closed.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.

DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	1 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	3.6 mg/m ³

DNEL/DMEL (General population)

Long-term - systemic effects, oral	0.5 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0.87 mg/m ³

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Long-term - systemic effects, dermal	0.5 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	0.106 mg/l
PNEC aqua (marine water)	0.011 mg/l
PNEC aqua (intermittent, freshwater)	0.072 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	307.16 mg/kg dwt
PNEC sediment (marine water)	30.72 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	10 mg/l

Single wall carbon nanotubes	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	No hazard identified
Acute - systemic effects, inhalation	Low hazard (no threshold identified)
Acute - local effects, dermal	No hazard identified
Acute - local effects, inhalation	Low hazard (no threshold identified)
Long-term - systemic effects, dermal	No hazard identified
Long-term - local effects, dermal	No hazard identified
Long-term - local effects, inhalation	Low hazard (no threshold identified)
DNEL/DMEL (General population)	
Acute - systemic effects, dermal	No hazard identified
Acute - systemic effects, inhalation	Low hazard (no threshold identified)
Acute - systemic effects, oral	No hazard identified
Acute - local effects, dermal	No hazard identified
Acute - local effects, inhalation	No hazard identified
Long-term - systemic effects, dermal	No hazard identified
Long-term - local effects, dermal	No hazard identified
Long-term - local effects, inhalation	No hazard identified
PNEC (Water)	
PNEC aqua (freshwater)	No hazard identified
PNEC aqua (marine water)	No hazard identified
PNEC (Sediment)	
PNEC sediment (freshwater)	No hazard identified
PNEC sediment (marine water)	No hazard identified
PNEC (Soil)	
PNEC soil	No hazard identified
PNEC (Oral)	
PNEC oral (secondary poisoning)	No potential to cause toxic effects if accumulated (in higher organisms) via the food chain
PNEC (STP)	
PNEC sewage treatment plant	No data available: testing technically not feasible

8.2. Exposure controls ►

Personal protective equipment:

Gloves. Safety glasses. Protective clothing.

Hand protection:

Chemically resistant protective gloves. EN 374. The suitability for a specific workplace should be discussed with the producers of the protective gloves

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Reusable gloves, Disposable gloves	Butyl rubber	1-6 (10 - 480 minutes)	> 0.18		EN 374

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Reusable gloves, Disposable gloves	Nitrile rubber (NBR)	1-6 (10 - 480 minutes)	-		EN 374
Reusable gloves, Disposable gloves	Neoprene rubber (HNBR)	1-6 (10 - 480 minutes)	0.7		EN 374

Eye protection:

Chemical goggles or safety glasses. EN 166. Emergency eye wash fountain with clean water

Skin and body protection:

Protective clothing (with elasticated cuffs and closed neck). EN 14605

Respiratory protection:

In case of inadequate ventilation wear respiratory protection. Selection of respiratory protection must be based on the result of the risk assessment

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties ►

Physical state	: Solid
Appearance	: Flakes. Pasty.
Colour	: Black.
Odour	: Slight.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Insoluble in water.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: No data available

Single wall carbon nanotubes

Particle size	See section 3.2
Particle size distribution	See section 3.2
Particle shape	See section 3.2
Particle aspect ratio	See section 3.2
Particle aggregation state	Bundles of nanotubes
Particle agglomeration state	Single wall carbon nanotubes are embedded in a matrix
Particle specific surface area	See section 3.2
Particle dustiness	1660 mg/kg (DIRM - Single wall carbon nanotubes)

9.2. Other information

No additional information available

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SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None known.

10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Direct sunlight. Moisture.

10.5. Incompatible materials

Oxidizing agent.

10.6. Hazardous decomposition products

Carbon dioxide. Carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified

Acute toxicity (dermal) : Not classified

Acute toxicity (inhalation) : Not classified

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.

LD50 oral rat	> 26.8 g/kg
LD50 dermal rabbit	> 4000 ml/kg
LC50 Inhalation - Rat	> 0.15 mg/l - 7 Hours

Skin corrosion/irritation : Causes skin irritation.

Serious eye damage/irritation : Causes serious eye irritation.

Respiratory or skin sensitisation : May cause an allergic skin reaction.

Germ cell mutagenicity : Not available

Carcinogenicity : Not available

Reproductive toxicity : Not available

Single wall carbon nanotubes

NOAEL (animal/female, F0/P)	> 1000 mg/kg bw/day - OECD 422
NOAEL (animal, F1)	> 1000 mg/kg bw/day - for adverse effects on prenatal development (conceptus to birth) - OECD 422
NOAEL (animal, F1)	> 1000 mg/kg bw/day - for adverse effects on postnatal development (pup) - OECD 422

STOT-single exposure : Not available

STOT-repeated exposure : Not available

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.

LOAEL (dermal, rat/rabbit, 90 days)	10 mg/kg bodyweight/day
NOAEL (dermal, rat/rabbit, 90 days)	1 mg/kg bodyweight/day

Single wall carbon nanotubes

NOAEL (oral, rat, 90 days)	> 1000 mg/kg bodyweight/day - OECD 422
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Aspiration hazard : Not available

SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.

LC50 fish - 96h	> 100 mg/l Oncorhynchus mykiss (Rainbow trout) - OECD 203
EC50 crustacea - 48h	7.2 mg/l Daphnia magna (Water flea) - OECD 202

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EC50 algae - 72h	843.75 mg/l <i>Selenastrum capricornutum</i> - OECD 201
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12.2. Persistence and degradability

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)

Persistence and degradability	Readily biodegradable.
Biodegradation	87 % - 28 days - OECD 301F

12.3. Bioaccumulative potential

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. (68609-97-2)

Partition coefficient n-octanol/water (Log Pow)	> 3.77 (20 °C) - OECD 107
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12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component

Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
Single wall carbon nanotubes	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations ►

13.1. Waste treatment methods

Regional legislation (waste)	: Dispose of this material and its container at hazardous or special waste collection point.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations	: Prevent entry to sewers and public waters.
Product/Packaging disposal recommendations	: Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.
Additional information	: Clean up even minor leaks or spills if possible without unnecessary risk.
European List of Waste (LoW) code	: 06 13 99 - wastes not otherwise specified

SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
No supplementary information available				

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

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Inland waterway transport

Not regulated

Rail transport

Not regulated

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

Reference code	Applicable on	Entry title or description
3(b)	Oxirane, mono[(C12-14-alkyloxy)methyl] derivs.	Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

15.1.2. National regulations

Germany

Employment restrictions : Observe restrictions according Act on the Protection of Working Mothers (MuSchG)
Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG)

Water hazard class (WGK) : WGK 2, Significantly hazardous to water (Classification according to AwSV, Annex 1)

Hazardous Incident Ordinance (12. BImSchV) : Is not subject of the Hazardous Incident Ordinance (12. BImSchV)

Netherlands

SZW-lijst van kankerverwekkende stoffen : Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. is listed

SZW-lijst van mutagene stoffen : Oxirane, mono[(C12-14-alkyloxy)methyl] derivs. is listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : None of the components are listed

Denmark

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product

Switzerland

Storage class (LK) : LK 11/13 - Solids

15.2. Chemical safety assessment

For the following substances of this mixture a chemical safety assessment has been carried out

Single wall carbon nanotubes

SECTION 16: Other information

Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BLV	Biological limit value
CAS-No.	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DIRM	Mass-based Dustiness Index

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DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
EC-No.	European Community number
EN	European Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

Full text of H- and EUH-statements:

Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
Skin Irrit. 2	Skin corrosion/irritation, Category 2
Skin Sens. 1	Skin sensitisation, Category 1

Revision : All recent revision(s) are noted by a bold triangle pointed to right '►'.
Disclaimer : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product. It is the user's responsibility to take mentioned precaution measures and ensure that this information is complete and sufficient for the use of this product.

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.