

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

1.1. Product identifier ►

Product form : Mixture
Product name : TUBALL MATRIX 209
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: OCSiAl Europe S.a.r.l. L-3364, Leudelange, 1, rue de la Poudrerie, Grand Duchy of Luxembourg T +352 27 99 03 73 09.00-17.00 GMT+2 europe@ocsial.com	USA: OCSiAl LLC 500 S Front St., Suite 860, Columbus, OH 43215, USA T +1 415 906 5271 09.00-17.00 GMT-4 usa@ocsial.com	Asia: OCSiAl Asia Pacific Co., Ltd. Office 208, Pilot Plant Bldg., Incheon Technopark 12 Gaetbeol-ro, Yeonsu-gu, Incheon, 406-840 Republic of Korea T +82 32 260 0407 09.00-17.00 GMT+9 asiapacific@ocsial.com	China: OCSiAl Hong Kong Limited No. 1102, 11/F, Lippo Sun Plaza, 28 Canton Road, Tsim Sha Tsui, Kowloon, Hong Kong T +852 3575 3946 09:00-17:00; GMT+8 china@ocsial.com	India: VIMAL INTERTRADE PVT LTD. Shivam Centrum, Sahar Road, Koldongri, Above Nexa Showroom, Andheri East, Mumbai – 400 069 T +91 22 6288 4200 09:00-17:00; GMT+5.5 india@ocsial.com
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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]

Not classified

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

EUH-statements : EUH210 - Safety data sheet available on request.

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]
Fatty carboxylic acid esters derivatives	Trade Secret	95	Not classified
Single wall carbon nanotubes*	(CAS-No.) Not assigned for EU-REACH (EC-No.) 943-098-9 (REACH-No.) 01-2120130006-75-0000	5	Eye Irrit. 2, H319

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

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*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 contaminated clothing before reuse. Wash with plenty of soap and water.
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 eye contact	: May cause eye irritation.
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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	: Powder, Alcohol-resistant foam, Water spray, Carbon dioxide (CO ₂).
Unsuitable extinguishing media	: None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Combustible.
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).
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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. Avoid contact with skin and eyes.

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 contact with skin and eyes.

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.

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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. Keep container tightly closed. Protect from moisture.
Incompatible products : Strong oxidizing agents.
Storage temperature : -40 / +40 °C
Heat and ignition sources : Keep away from open flames, hot surfaces and sources of ignition.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Fatty carboxylic acid esters derivatives

DNEL/DMEL (Workers)

Long-term - systemic effects, dermal	42 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	235 mg/m ³

DNEL/DMEL (General population)

Long-term - systemic effects, oral	2 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	70 mg/m ³
Long-term - systemic effects, dermal	25 mg/kg bodyweight/day

PNEC (Soil)

PNEC soil	44.7 mg/kg dwt
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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

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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

Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Reusable gloves, Disposable gloves	Nitrile rubber (NBR)		0.4		EN 374

Eye protection:

Chemical goggles or safety glasses. EN 166

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. Wear a respirator conforming to EN140 with Type A/P2 filter or better.

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties ►

Physical state	: Solid
Appearance	: Viscous. Paste.
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	: 224 °C (Fatty carboxylic acid esters derivatives)
Auto-ignition temperature	: 330 °C (Fatty carboxylic acid esters derivatives)
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available

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Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Poorly soluble in water. Soluble in organic solvents.
Partition coefficient n-octanol/water (Log Pow)	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive.
Oxidising properties	: Non oxidizing.
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

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.

10.5. Incompatible materials

Strong oxidizing agents.

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

Fatty carboxylic acid esters derivatives

LD50 oral rat	> 5000 mg/kg - OECD 423
LD50 dermal rat	> 2000 mg/kg - OECD 402

Skin corrosion/irritation	: Slightly irritant but not relevant for classification
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified

Single wall carbon nanotubes (7440-44-0)

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

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NOAEL (animal, F1)	> 1000 mg/kg bw/day - for adverse effects on postnatal development (pup) - OECD 422
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Single wall carbon nanotubes	
NOAEL (oral, rat, 90 days)	> 1000 mg/kg bodyweight/day - OECD 422
Aspiration hazard	: Not classified

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

Fatty carboxylic acid esters derivatives	
LC50 fish - 96h	> 100 mg/l Brachydanio rerio (zebra-fish) - OECD 203 - ISO 7346 - 84/449/EEC
EC50 crustacea - 48h	> 100 mg/l Daphnia magna (Water flea) - OECD 202
EC50 algae - 72h	> 100 mg/l (Growth rate) Scenedesmus subspicatus - OECD 201
NOEC chronic fish	≥ 0.021 mg/l Daphnia magna (Water flea) - OECD 211

12.2. Persistence and degradability

Fatty carboxylic acid esters derivatives	
Persistence and degradability	Readily biodegradable.
Biodegradation	70 – 80 % - 28 days - OECD 301B - ISO 9439 - 92/69/EEC, C.4-C

12.3. Bioaccumulative potential

Fatty carboxylic acid esters derivatives	
Bioconcentration factor (BCF REACH)	189 - 30 days - Brachydanio rerio (zebra-fish) - OECD 305E
Partition coefficient n-octanol/water (Log Kow)	10
Bioaccumulative potential	Does not significantly accumulate in organisms.

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component	
Fatty carboxylic acid esters derivatives	This substance/mixture does not meet the PBT 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	: Disposal through controlled incineration or authorised waste dump.
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

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14.2. UN proper shipping name

Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
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14.3. Transport hazard class(es)

Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
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14.4. Packing group

Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
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14.5. Environmental hazards

Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
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No supplementary information available

14.6. Special precautions for user

Overland transport

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

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

Contains no REACH substances with Annex XVII restrictions

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 1, Slightly 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 : None of the components are listed

SZW-lijst van mutagene stoffen : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting : None of the components are listed

giftige stoffen – Borstvoeding

NIET-limitatieve lijst van voor de voortplanting : None of the components are listed

giftige stoffen – Vruchtbaarheid

NIET-limitatieve lijst van voor de voortplanting : None of the components are listed

giftige stoffen – Ontwikkeling

Switzerland

Storage class (LK) : NG - Non-hazardous

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15.2. Chemical safety assessment

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

Fatty carboxylic acid esters derivatives
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
CAS-No.	Chemical Abstract Service number
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DIRM	Mass-based Dustiness Index
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
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
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:

EUH210	Safety data sheet available on request.
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
H319	Causes serious eye irritation.

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)

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