

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

1.1. Product identifier ►

Product form : Mixture
Product name : TUBALL MATRIX 610
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: |
| OCSiAl Europe S.a.r.l. L-3364, Leudelange, 1, rue de la Poudrerie, Grand Duchy of Luxembourg | OCSiAl LLC 500 S Front St., Suite 860, Columbus, OH 43215, USA | OCSiAl Asia Pacific Co., Ltd. Office 208, Pilot Plant Bldg., Incheon Technopark 12 Gaetbeol-ro, Yeonsu-gu, Incheon, 406-840 Republic of Korea | OCSiAl 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]

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] |
|--|--|------|---|
| Severely refined paraffinic mineral oils | (CAS-No.) trade secret | 85.5 | Not classified |
| Olefin polymer | (CAS-No.) not available | 9.5 | 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 |

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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. |
| First-aid measures after skin contact | : Take off immediately all contaminated clothing and wash it before reuse. Wash with plenty of soap and water. |
| First-aid measures after eye contact | : Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. |

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

| | |
|-------------------------------------|--|
| Symptoms/effects | : Excessive exposure may lead to burning sensation in the mouth and throat, salivation, nausea, abdominal pain, vomiting, and diarrhoea. |
| Symptoms/effects after inhalation | : May cause respiratory irritation. |
| Symptoms/effects after skin contact | : May cause moderate irritation, including burning sensation, tearing, redness or swelling. |

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|------------------------------|---|
| Suitable extinguishing media | : Powder, Alcohol-resistant foam, Water spray, Carbon dioxide (CO ₂). |
|------------------------------|---|

5.2. Special hazards arising from the substance or mixture

| | |
|--|--|
| Fire hazard | : None known. |
| Explosion hazard | : None known. |
| Hazardous decomposition products in case of fire | : Sulphur oxides. Phosphorus oxides. Nitrous gasses. Incomplete combustion releases dangerous carbon monoxide, carbon dioxide and other toxic gases. |

5.3. Advice for firefighters

| | |
|--------------------------------|---------------------------------------|
| Protection during firefighting | : Self-contained breathing apparatus. |
|--------------------------------|---------------------------------------|

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. |

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6.1.2. For emergency responders

- Protective equipment : Wear suitable protective clothing, gloves and eye/face protection. Use self-contained breathing apparatus.
- Emergency procedures : Provide adequate ventilation. Evacuate area.

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

For further information refer to section 8: "Exposure controls/personal protection". For disposal of contaminated materials refer to section 13: "Disposal considerations".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Avoid contact with skin, eyes and clothing. Ensure good ventilation of the work station.
- 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, cool, well-ventilated area. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Storage temperature : -40 / +40 °C

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Severely refined paraffinic mineral oils

PNEC (Oral)

| | |
|---------------------------------|-----------------|
| PNEC oral (secondary poisoning) | 9.33 mg/kg food |
|---------------------------------|-----------------|

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 |

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| 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. Protective clothing. Protective goggles.

Materials for protective clothing:

Wear suitable protective clothing. EN 14605

Hand protection:

Protective gloves. EN 374. Use neoprene or rubber gloves. Nitrile-rubber protective gloves

Eye protection:

Chemical goggles or safety glasses

| Type | Field of application | Characteristics | Standard |
|----------------|----------------------|-----------------|----------|
| Safety goggles | | | EN 166 |

Skin and body protection:

Protective clothing (with elasticated cuffs and closed neck)

Respiratory protection:

No respiratory protection needed under normal use conditions

Personal protective equipment symbol(s):



Environmental exposure controls:

Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|--|---------------------|
| Physical state | : Solid |
| Appearance | : Viscous. Pasty. |
| Colour | : Black. |
| Odour | : No data available |
| Odour threshold | : No data available |
| pH | : No data available |
| Relative evaporation rate (butylacetate=1) | : No data available |
| Melting point | : No data available |
| Freezing point | : Not applicable |
| Boiling point | : No data available |
| Flash point | : Not applicable |
| Auto-ignition temperature | : Not applicable |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : Non flammable. |
| Vapour pressure | : No data available |

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| | |
|---|---------------------|
| Relative vapour density at 20 °C | : No data available |
| Relative density | : No data available |
| Solubility | : No data available |
| Partition coefficient n-octanol/water (Log Pow) | : No data available |
| Viscosity, kinematic | : Not applicable |
| Viscosity, dynamic | : No data available |
| Explosive properties | : No data available |
| Oxidising properties | : No data available |
| Explosive limits | : Not applicable |

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

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Stable under normal conditions of use.

10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges.

10.5. Incompatible materials

Strong oxidizing agents. Acids. Bases.

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 |
| Skin corrosion/irritation | : Not classified |
| 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

| | |
|-----------------------------|---|
| 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 classified |
| STOT-repeated exposure | : Not classified |

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Severely refined paraffinic mineral oils

| | |
|-------------------------------------|---|
| LOAEL (oral, rat, 90 days) | 125 mg/kg bodyweight Animal: rat, Animal sex: male, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents) |
| NOAEL (dermal, rat/rabbit, 90 days) | ≈ 1000 mg/kg bodyweight Animal: rabbit, Guideline: OECD Guideline 410 (Repeated Dose Dermal Toxicity: 21/28-Day Study) |

Single wall carbon nanotubes

| | |
|----------------------------|--|
| NOAEL (oral, rat, 90 days) | > 1000 mg/kg bodyweight/day - OECD 422 |
|----------------------------|--|

Aspiration hazard : Not classified

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| | |
|----------------------|----------------|
| Viscosity, kinematic | Not applicable |
|----------------------|----------------|

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

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component

| | |
|------------------------------|---|
| 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.

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 | | | | |

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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 : PLI PROCESS OIL P 460 is listed

SZW-lijst van mutagene stoffen : PLI PROCESS OIL P 460 is 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

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 |
| BCF | Bioconcentration factor |
| BLV | Biological limit value |
| BOD | Biochemical oxygen demand (BOD) |
| COD | Chemical oxygen demand (COD) |
| DIRM | Mass-based Dustiness Index |
| DMEL | Derived Minimal Effect level |
| DNEL | Derived-No Effect Level |

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| | |
|--|--|
| EC-No. | European Community number |
| EC50 | Median effective concentration |
| EN | European Standard |
| IARC | International Agency for Research on Cancer |
| 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 |
| OECD | Organisation for Economic Co-operation and Development |
| OEL | Occupational Exposure Limit |
| PBT | Persistent Bioaccumulative Toxic |
| PNEC | Predicted No-Effect Concentration |
| RID | Regulations concerning the International Carriage of Dangerous Goods by Rail |
| SDS | Safety Data Sheet |
| STP | Sewage treatment plant |
| ThOD | Theoretical oxygen demand (ThOD) |
| TLM | Median Tolerance Limit |
| VOC | Volatile Organic Compounds |
| CAS-No. | Chemical Abstract Service number |
| N.O.S. | Not Otherwise Specified |
| vPvB | Very Persistent and Very Bioaccumulative |
| ED | Endocrine disrupting properties |
| Full text of H- and EUH-statements: | |
| Eye Irrit. 2 | Serious eye damage/eye irritation, Category 2 |
| H319 | Causes serious eye irritation. |
| EUH210 | Safety data sheet available on request. |

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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