

## 1. Chemical product and company identification

### 1.1. Product identifier

Product form	: Mixture
Trade name	: TUBALL MATRIX 601
Generic name	: TUBALL MATRIX 601
Type of product	: Nanoform embedded in a matrix
Product group	: Trade product

### 1.2. Recommended uses and restrictions

#### Use Categories

No data available

#### 1.2.1. Recommended use

Industrial use as additive in polymers, resins and/or coatings.

#### 1.2.2. Restrictions on use

No data available

### 1.3. Supplier information ▶

아시아:	중국:	인도:
OCSiAI 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@ocisial.com	OCSiAI 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@ocisial.com	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@ocisial.com

### 1.4. Emergency telephone number

<b>EMEA</b>	: +44 1865 407333 (English) (Carechem 24)
<b>East/South East Asia</b>	: +65 3158 1074 (English, Hindi, Japanese, Korean, Malay, Mandarin) (Carechem 24)
<b>China (Mainland)</b>	: **0532 8388 9090 (English, Mandarin)

## 2. Hazards identification

### 2.1. Classification of the substance or mixture

Serious eye damage/eye irritation, Category 2 H319

### 2.2. Label elements

#### 2.2.1. Hazard pictograms (GHS KR)



#### 2.2.2. Signal word (GHS KR)

Warning.

#### 2.2.3. Hazard statements (GHS KR)

H319 - Causes serious eye irritation.

# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

### 2.2.4. Precautionary statements (GHS KR)

#### Precaution:

P264 - Wash hands thoroughly after handling.

P280 - Wear eye protection, protective gloves, protective clothing.

#### Treatment:

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, medical attention.

#### Storage:

#### Disposal:

### 2.3. Hazards - Other hazards which do not result in classification - Hazard Risk

No data available

## 3. Composition/information on ingredients ►

Product form : Mixture

Substance name	Other Names	Product identifier number	Concentration (%)
Single wall carbon nanotubes*	-	CAS-No.: Trade Secret KECI-No.: Trade Secret	10
Polydimethylsiloxane	-	CAS-No.: Trade Secret KECI-No.: Trade Secret	90

Comments : \* Single wall carbon nanotubes TUBALL™.

## 4. First-aid measures

### 4.1. First-aid measures after eye contact

Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

### 4.2. First-aid measures after skin contact ►

Take off contaminated clothing.

Wash contaminated clothing before reuse.

Wash with plenty of soap and water.

Wash skin with plenty of water.

If skin irritation or rash occurs: Get medical advice/attention.

### 4.3. First-aid measures after inhalation

Remove person to fresh air and keep comfortable for breathing.

### 4.4. First-aid measures after ingestion

Rinse mouth out with water.

Get medical advice/attention.

### 4.5. Other medical advice or treatment

Treat symptomatically.

# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

### 5. Fire-fighting measures

#### 5.1. Suitable (and unsuitable) extinguishing media ►

Suitable extinguishing media : Powder, Alcohol-resistant foam, Water spray, Carbon dioxide (CO<sub>2</sub>).  
Unsuitable extinguishing media : None known.

#### 5.2. Special hazards arising from the substance or mixture

Fire hazard : None known.  
Explosion hazard : None known.

#### 5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

### 6. Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

Wear suitable protective clothing.  
Ventilate spillage area.  
Avoid contact with skin and eyes.  
Do not attempt to take action without suitable protective equipment.  
For further information refer to section 8: "Exposure controls/personal protection".  
Provide adequate ventilation.  
Evacuate area.  
Avoid inhalation of vapours.  
Dispose of materials or solid residues at an authorized site.

#### 6.2. Environmental precautions and protective procedures ►

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

Clean spills promptly.  
Ventilate affected area.  
Stop leak if safe to do so.  
Collect in closed container and remove to a safe place for disposal by burning.  
Clear up rapidly by scoop or vacuum.  
Mechanically recover the product.

### 7. Handling and storage ►

#### 7.1. Precautions for safe handling

Avoid breathing dust, fume, gas, mist, spray, vapours.  
Carry out operations in the open/under local exhaust/ventilation or with respiratory protection.  
Avoid contact with skin, eyes and clothing.  
Do not eat, drink or smoke when using this product.  
Always wash hands after handling the product.

#### 7.2. Conditions for safe storage

Protect from sunlight.  
Store in dry, cool, well-ventilated area.  
Keep cool.  
Keep away from open flames, hot surfaces and sources of ignition.  
Store away from water (including sewage plant).  
Keep container tightly closed.

# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

### 8. Exposure controls/personal protection

#### 8.1. Occupational Exposure Limits

<b>TUBALL MATRIX 601</b>	
<b>Single wall carbon nanotubes</b>	
<b>Japan - Occupational Exposure Limits</b>	
Exposure limits (JSOH)	【Occupational exposure limits for dusts】 (Class 1) Respirable dust 0.5mg/m <sup>3</sup> Total dust 2mg/m <sup>3</sup>
<b>Polydimethylsiloxane</b>	
No additional information available	

#### 8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.  
Environmental exposure controls : Avoid release to the environment.

#### 8.3. Personal protection ►

##### Personal protective equipment:

Safety glasses. Protective clothing. Gloves.

<b>Hand protection:</b>					
Chemically resistant protective gloves					
Type	Material	Permeation	Thickness (mm)	Penetration	Standard
Disposable gloves, Reusable gloves	Butyl rubber, Nitrile rubber (NBR)		≥ 0.11		

<b>Eye protection:</b>
Chemical goggles or safety glasses.

<b>Skin and body protection:</b>
Protective clothing (with elasticated cuffs and closed neck).

<b>Respiratory protection:</b>
In case of insufficient ventilation, wear suitable respiratory equipment

##### Personal protective equipment symbol(s):



### 9. Physical and chemical properties ►

- |                    |                     |
|--------------------|---------------------|
| a) Appearance      | : Paste.            |
| Physical state     | : Solid.            |
| Colour             | : Black.            |
| b) Odour           | : Characteristic.   |
| c) Odour threshold | : No data available |
| d) pH              | : No data available |

# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

e) Melting / freezing point	: -55 °C (Polydimethylsiloxane) /
f) Initial boiling point and boiling range	: No data available
g) Flash point	: > 150 °C (Polydimethylsiloxane)
h) Evaporation rate	: No data available
i) Flammability (solid, gas)	: No data available
j) Upper / lower flammability or explosive limits	: No data available
k) Vapour pressure	: < 0.1 hPa 20 °C (Polydimethylsiloxane)
l) Solubility	: Insoluble in water.
m) Vapour density	: No data available
n) Relative density	: No data available
o) Partition coefficient n-octanol/water	: No data available
p) Auto-ignition temperature	: No data available
q) Decomposition temperature	: > 250 °C (Polydimethylsiloxane)
r) Viscosity, kinematic	: No data available
Viscosity, dynamic	: 95 – 105 mPa.s 25 °C (Polydimethylsiloxane)
s) Molecular mass	: No data available

### Other information

Density : 0.96 g/cm<sup>3</sup> 25 °C (Polydimethylsiloxane)

## 10. Stability and reactivity

### 10.1. Chemical stability and Possibility of hazardous reactions

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

Stable under normal conditions.

No dangerous reactions known under normal conditions of use.

### 10.2. Conditions to avoid ►

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

### 10.3. Incompatible materials

Strong oxidizing agents.

### 10.4. Hazardous decomposition products ►

Thermal combustion may release carbon monoxide and dioxide.

## 11. Toxicological information

### 11.1. Information on exposure routes

Oral	: Not classified
Skin and eyes contact	: Causes serious eye irritation.
Inhalation	: Not classified

### 11.2. Health hazards ►

#### Acute toxicity (oral):

Not classified

#### Acute toxicity (dermal):

Not classified.

#### Acute toxicity (inhalation):

Not classified

Polydimethylsiloxane	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rat	> 2008 mg/kg

#### Skin corrosion/irritation:

Not classified

# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

### Serious eye damage/irritation:

Causes serious eye irritation.

### Respiratory sensitization:

Not classified

### Skin sensitization:

Not classified

### Carcinogenicity:

Not classified

### Mutagenicity:

Not classified

### Reproductive toxicity:

Not classified

Single wall carbon nanotubes	
NOAEL (animal/female, F0/P)	no adverse effects seen at highest dose tested > 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

Single wall carbon nanotubes	
NOAEL (oral, rat, 90 days)	no adverse effects seen at highest dose tested > 1000 mg/kg bodyweight/day - OECD 422

### Aspiration hazard:

Not classified

## 12. Ecological information

### 12.1. Ecotoxicity

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 data available

### 12.3. Bioaccumulative potential

No data available

### 12.4. Mobility in soil

No data available

### 12.5. Other adverse effects

Ozone : Not classified

Other adverse effects : No additional information available

# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

### 13. Disposal considerations

#### 13.1. Disposal method

Dispose of this material and its container at hazardous or special waste collection point.  
Disposal through controlled incineration or authorised waste dump.

#### 13.2. Disposal precaution

Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

Prevent entry to sewers and public waters.

Clean up even minor leaks or spills if possible without unnecessary risk.

### 14. Transport information

UN RTDG	ADR	IMDG	IATA
<b>14.1. UN number</b>			
Not regulated for transport			
<b>14.2. UN proper shipping name</b>			
Not applicable	Not applicable	Not applicable	Not applicable
<b>14.3. Transport hazard class(es)</b>			
Not applicable	Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable
<b>14.4. Packing group</b>			
Not applicable	Not applicable	Not applicable	Not applicable
<b>14.5. Marine pollutant</b>			
Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
No supplementary information available			

#### 14.6. Special precautions for user

No data available

### 15. Regulatory information

#### 15.1. Occupational Safety and Health Act

Hazardous Substances Prohibited for Manufacturing	Not applicable
Hazardous Substances Requiring Permission	Not applicable
Threshold Limit Values Chemicals	Not applicable
Hazardous Substances Below Permissible Level	Not applicable
Hazardous Substances Subject to Working Environment Measurement	Not applicable
Hazardous Substances Subject to Workers Requiring Health Examination	Not applicable
Hazardous Substances Subject to Control	Not applicable
Substance Subject to Submission of PSM	Not applicable

#### 15.2. Chemicals Control Act

Toxic Chemicals	Not applicable
Prohibited Chemicals	Not applicable

# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

Restricted Chemicals Not applicable  
Substance requiring preparation for accidents Not applicable

### 15.3. Act on Registration and Evaluation of Chemicals (K-REACH) ►

Korea Existing Chemicals Inventory (MOE, Korea) Single wall carbon nanotubes  
Polydimethylsiloxane  
Single wall carbon nanotubes. Listing of country or region list name (yes/no) \*  
Korea Inventory of Existing Chemicals (ECL) Yes  
\*\*Yes\* indicates that all ingredients in this product comply with the inventory requirements of the country(s) Indicates that there is no exemption.

Priority Existing Chemical ('PEC') – subject to registration Not applicable

Substances Subject to Intensive Control (MOE, Korea) Not applicable

CMR Substances (Korea) Not applicable

### 15.4. Safety Control of Dangerous Substances Act

Safety Control of Dangerous Substances Act

### 15.5. Wastes Control Act

Hazardous Substances in Designated wastes

### 15.6. Other Domestic and International Regulatory Information

#### Domestic

Persistent Organic Pollutants(POPs) Control Act Not applicable  
Ozone Depleting Substances(ODS) Not applicable

#### International

#### EU Regulatory Information

EU Candidate list (SVHC) Contains no substance(s) listed on the REACH Candidate List  
EU authorization list (REACH Annex XIV) Contains no substance(s) listed on REACH Annex XIV (Authorisation List)  
EU restriction list (REACH Annex XVII) Not applicable

#### US Regulatory Information

CERCLA Section 103 (40CFR302.4) Not applicable  
EPCRA Section 302 (40CFR355.30) Not applicable  
EPCRA Section 304 (40CFR355.40) Not applicable  
EPCRA Section 313 (40CFR372.65) Not applicable

#### International agreements

No data available

## 16. Other information

16.1. Data sources: No data available  
16.2. Issue date: 2021/06/01  
16.3. Revision number and date: 1.1, 2023/03/02  
16.4. Other information: No data available  
16.5. Indication of changes: No data available

#### 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
WGK	Water Hazard Class
VOC	Volatile Organic Compounds
N.O.S.	Not Otherwise Specified
OEL	Occupational Exposure Limit



# TUBALL MATRIX 601

## Safety Data Sheet

In Accordance with MOEL Public notice No 2020-130

REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
ATE	Acute Toxicity Estimate
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
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
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
vPvB	Very Persistent and Very Bioaccumulative
BLV	Biological limit value
CAS	Chemical Abstract Service number
EC	European Community number
EN	European Standard
IOELV	Indicative Occupational Exposure Limit Value
IARC	International Agency for Research on Cancer
TLM	Median Tolerance Limit

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.

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.

TUBALL MATRIX 601