

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

1.1. Product identifier

Product form : Mixture
Trade name : TUBALL BATT NMP 0.4 %

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 : The additive used for producing lithium-ion batteries, composites, and other materials

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	OCSiAI PRIVATE LIMITED A504 Universal BusinessPark, Ansa Industrial Estate, Chandivali, Andheri (E) Mumbai 400072
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 3943 09:00-17:00; GMT+8 china@ocsial.com	T +91 22 4120 8615 09:00-17:00; GMT+5.5 india@ocsial.com

1.4. Emergency telephone number ►

Europe:	USA:	Asia:	China:	India:
+352 27 99 03 73 09.00-17.00; GMT+2	+1 415 906 5271 09.00-17.00; GMT-4	+82 32 260 0407 09.00-17.00; GMT+9	+852 3575 3943 09:00-17:00; GMT+8	+91 22 4120 8615 09:00-17:00; GMT+5.5

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
Reproductive toxicity, Category 1B	H360D
Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation	H335

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

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

Hazard pictograms (CLP) :  

GHS07 GHS08

Signal word (CLP) : Danger

Hazard statements (CLP) : H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation
H360D - May damage the unborn child

Precautionary statements (CLP) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray
P264 - Wash hands, forearms and face thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves/protective clothing/eye protection/face protection

2.3. Other hazards

No additional information available

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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]
N-methyl-2-pyrrolidone, 1-methyl-2-pyrrolidone substance listed as REACH Candidate (1-Methyl-2-pyrrolidone)	(CAS No) 872-50-4 (EC no) 212-828-1 (EC index no) 606-021-00-7 (REACH-no) to be provided	>97.0	Repr. 1B, H360D Eye Irrit. 2, H319 STOT SE 3, H335 Skin Irrit. 2, H315
Poly(vinylidene fluoride)	(CAS No) 24937-79-9	2.0	Not classified
Single wall carbon nanotubes*	(EC no) 943-098-9 (REACH-no) 01-2120130006-75	0.4	Eye Irrit. 2, H319
Water	(CAS No) 7732-18-5 (EC no) 231-791-2 (REACH-no) exempt	<0.08	Not classified

Specific concentration limits:

Name	Product identifier	Specific concentration limits
N-methyl-2-pyrrolidone, 1-methyl-2-pyrrolidone	(CAS No) 872-50-4 (EC no) 212-828-1 (EC index no) 606-021-00-7 (REACH-no) to be provided	(C >= 5) Repr. 1B, H360D (C >= 10) STOT SE 3, H335

* Single wall carbon nanotubes TUBALL™

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- First-aid measures after skin contact : Wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing. Wash contaminated clothing before reuse.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a physician.

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

- Symptoms/injuries : Excessive exposure may lead to burning sensation in the mouth and throat, salivation, nausea, abdominal pain, vomiting, and diarrhoea.
- Symptoms/injuries after inhalation : May cause irritation to the respiratory tract.

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.
- Unsuitable extinguishing media : None known

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 : Carbon dioxide. Carbon monoxide.

5.3. Advice for firefighters

- Protective equipment for firefighters : In case of fire: Wear 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. Avoid breathing mist or vapour.

6.1.2. For emergency responders

- Protective equipment : Wear suitable protective clothing, gloves and eye/face protection.
- Emergency procedures : Provide adequate ventilation. Evacuate area. Avoid inhalation of vapours.

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6.2. Environmental precautions

Do not allow to enter into surface water or drains. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

6.3. Methods and material for containment and cleaning up

- For containment : Clean spills promptly. Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Ventilate affected area. Stop leak if safe to do so.
- Methods for cleaning up : Collect in closed containers for disposal. Absorb remaining liquid with sand or inert absorbent and remove to safe place. Clean spills promptly.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : None known
- Precautions for safe handling : Avoid contact with skin, eyes and clothes. Carry out operations in the open/under local exhaust/ventilation or with respiratory protection.
- 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 container tightly closed.
- Storage temperature : > -20 °C

7.3. Specific end use(s)

After 3 month storage, pre-mixing is recommended using a high-speed mixer at 0.1-0.2 kWh per 1 kg of dispersion.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Personal protective equipment:

Safety glasses. Gloves. Protective clothing. Dust production: dust mask with filter type P3.

Materials for protective clothing:

Wear suitable protective clothing. Wear chemical resistant protective clothing (EN 14605) and protective shoes (S1P or S3).

Hand protection:

Wear suitable gloves tested to EN 374. NBR (Nitrile rubber). Thickness of glove material: > 0.35 mm. Breakthrough time : > 60 minutes. Unsuitable material: neoprene.

Eye protection:

Safety glasses with side shields according to EN 166.

Skin and body protection:

Safety glasses with face shield according to DIN EN 14605.

Respiratory protection:

Dust production: dust mask with filter type P3. Half-mask with filter according to EN 149.



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Colour : Black
- Odour : Odourless
- Odour threshold : No data available
- pH : No data available
- Relative evaporation rate (butylacetate=1) : No data available
- Melting point : No data available
- Freezing point : -20 °C

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Boiling point	: 202 °C
Flash point	: 91 °C closed cup
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: No data available
Vapour pressure	: 0.39 - 0.42 hPa at 20°C
Relative vapour density at 20 °C	: 3.42
Relative density	: 1.28 g/cm ³ at 25°C
Density	: 1.7 - 1.9 g/m ³
Solubility	: insoluble in: Water. organic solvents.
Log Pow	: -0.46
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 1.3 vol % 9.5 vol %

9.2. Other information

VOC content	: < 5 %
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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

10.5. Incompatible materials

Strong oxidizing agents

10.6. Hazardous decomposition products

Thermal combustion may release carbon monoxide and dioxide

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
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TUBALL BATT NMP	
LD50 oral rat	3914 mg/kg
LD50 dermal rabbit	8000 mg/kg
Water (7732-18-5)	
LD50 oral rat	> 90 ml/kg

Skin corrosion/irritation	: Causes skin irritation pH: 7.7 - 8
Serious eye damage/irritation	: Causes serious eye irritation pH: 7.7 - 8
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: May damage the unborn child
STOT-single exposure	: May cause respiratory irritation
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified

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SECTION 12: Ecological information

12.1. Toxicity

TUBALL BATT NMP	
LC50 fish 1	4000 mg/l

12.2. Persistence and degradability

TUBALL BATT NMP	
Persistence and degradability	Readily biodegradable
Biodegradation	90 %

12.3. Bioaccumulative potential

TUBALL BATT NMP	
Log Pow	-0.46

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Component	
N-methyl-2-pyrrolidone, 1-methyl-2-pyrrolidone (872-50-4)	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 to 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 / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No
No supplementary information available				

14.6. Special precautions for user

- Overland transport

No data available

- Transport by sea

No data available

- Air transport

No data available

- Inland waterway transport

No data available

- Rail transport

No data available

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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 a substance on the REACH candidate list in concentration $\geq 0.1\%$ or with a lower specific limit: 1-Methyl-2-pyrrolidone (EC 212-828-1, CAS 872-50-4).

Contains no REACH Annex XIV substances.

15.1.2. National regulations

Germany

VwVwS Annex reference : Water hazard class (WGK) 1, low hazard to waters (Classification according to VwVwS, Annex 4)
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

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 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 : N-methyl-2-pyrrolidone, 1-methyl-2-pyrrolidone is listed

15.2. Chemical safety assessment

CSA has not been established

SECTION 16: Other information

Full text of H- and EUH-statements:

Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Repr. 1B	Reproductive toxicity, Category 1B
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H315	Causes skin irritation
H319	Causes serious eye irritation
H335	May cause respiratory irritation
H360D	May damage the unborn child

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Skin Irrit. 2	H315	
Eye Irrit. 2	H319	
Repr. 1B	H360D	
STOT SE 3	H335	

List of Abbreviations:

ADN	The 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	Chemical Abstracts Service
CLP	Classification, Labeling, Packaging
CSA	Chemical Safety Assessment
IATA	International Air Transport Association
IMDG	International Maritime Code for Dangerous Goods
PBT	A substance that is persistent, bioaccumulative and toxic
RID	Regulation Concerning the International Transport of Dangerous Goods by Rail
vPvB	A substance that is very persistent and very bioaccumulative

Revision : All recent revision(s) are noted by a bold triangle pointed to right '►'.

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SDS EU (REACH Annex II)

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