



Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the SS586 Specification for Hazard Communication for Hazardous Chemicals and Dangerous Goods.

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This safety data sheet (SDS) is provided as a courtesy in response to a customer request. This product is not regulated under, and a SDS is not required for this product by the SS586 Specification for Hazard communication for hazardous chemicals and dangerous goods because, when used as recommended or under ordinary conditions, it should not present a health and safety hazard. However, use or processing of the product not in accordance with the product's recommendations or not under ordinary conditions may affect the performance of the product and may present potential health and safety hazards.

SECTION 1: Identification

1.1. Product identifier

TR-332 High Capacity Battery

1.2. Recommended use and restrictions on use

Recommended use

Battery

1.3. Supplier's details

Address: 3M Technologies (S) Pte Ltd, 10 Ang Mo Kio Street 65, Singapore 569059
Telephone: +65 6450 8888
Website: www.3m.com.sg

1.4. Emergency telephone number

+65 6591 6601 (8.15am - 5.00pm, Monday - Friday)

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

This product is not classified as hazardous per GHS criteria as implemented by Singapore Standard SS586: 2022.

2.2. Label elements

SIGNAL WORD

Not applicable.

Symbols

Not applicable

Pictograms

Not applicable

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	CAS Nbr	% by Wt
Acrylonitrile-Butadiene -Styrene Copolymers	None	45 - 65
cobalt lithium oxide	12190-79-3	30 - 40
Diethyl carbonate	105-58-8	1 - 5
DIMETHYL CARBONATE	616-38-6	1 - 5
ETHYLENE CARBONATE	96-49-1	1 - 5
lithium hexafluorophosphate(1-)	21324-40-3	1 - 5
PROPYLENE CARBONATE	108-32-7	0.1 - 1

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation

No need for first aid is anticipated. If symptoms develop, remove the affected person to fresh air. Get medical attention.

Skin contact

If exposed, wash with soap and water. If signs/symptoms develop, get medical attention.

Eye contact

If exposed, flush eyes with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms develop, get medical attention.

If swallowed

Do not induce vomiting. Rinse mouth. If you feel unwell, get medical attention.

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

No critical symptoms or effects. See Section 11.1, information on toxicological effects.

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

Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media

In case of fire: Use a carbon dioxide extinguisher to extinguish. damaged.

Battery may burn without external flame when

5.2. Special hazards arising from the substance or mixture

None inherent in this product.

Hazardous Decomposition or By-Products

Substance

Carbon monoxide.

Carbon dioxide.

Toxic vapour, gas, particulate.

Condition

During combustion.

During combustion.

During combustion.

5.3. Special protective actions for fire-fighters

No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Not applicable.

6.2. Environmental precautions

Not applicable.

6.3. Methods and material for containment and cleaning up

Not applicable.

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

This product is considered to be an article which does not release or otherwise result in exposure to a hazardous chemical under normal use conditions. Avoid contact with oxidising agents (eg. chlorine, chromic acid etc.)

7.2. Conditions for safe storage including any incompatibilities

Store away from heat. Store away from acids. Store away from strong bases. Store away from oxidising agents.

SECTION 8: Exposure controls/personal protection**8.1 Control parameters****Occupational exposure limits**

No occupational exposure limit values exist for any of the components listed in Section 3 of this Safety Data Sheet.

8.2. Exposure controls**8.2.1. Engineering controls**

Not applicable.

8.2.2. Personal protective equipment (PPE)**Eye/face protection**

Eye protection not required.

Skin/hand protection

No chemical protective gloves are required.

Respiratory protection

Respiratory protection is not required.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Physical state	Solid.
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Specific Physical Form:	Battery
Color	Black
Odor	Odorless
Odour threshold	<i>Not applicable.</i>
pH	<i>Not applicable.</i>
Melting point/Freezing point	<i>Not applicable.</i>
Boiling point/Initial boiling point/Boiling range	<i>Not applicable.</i>
Flash point	No flash point
Evaporation rate	<i>Not applicable.</i>
Flammability	Not applicable.
Flammable Limits(LEL)	<i>Not applicable.</i>
Flammable Limits(UEL)	<i>Not applicable.</i>
Vapour pressure	<i>Not applicable.</i>
Vapor Density and/or Relative Vapor Density	<i>Not applicable.</i>
Density	<i>No data available.</i>
Relative density	<i>No data available.</i>
Water solubility	<i>Not applicable.</i>
Solubility- non-water	<i>Not applicable.</i>
Partition coefficient: n-octanol/water	<i>No data available.</i>
Autoignition temperature	<i>Not applicable.</i>
Decomposition temperature	<i>Not applicable.</i>
Kinematic Viscosity	<i>Not applicable.</i>
Volatile organic compounds (VOC)	<i>Not applicable.</i>
Percent volatile	<i>Not applicable.</i>
VOC less H₂O & exempt solvents	<i>Not applicable.</i>

Particle Characteristics	<i>Not applicable.</i>
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SECTION 10: Stability and reactivity

10.1 Reactivity

This material may be reactive with certain agents under certain conditions - see the remaining headings in this section

10.2 Chemical stability

Stable. Stable to 130 °C

10.3 Possibility of hazardous reactions

Hazardous polymerisation will not occur.

10.4 Conditions to avoid

Heat.

10.5 Incompatible materials

Strong oxidising agents.

Reducing agents.

Strong acids.

Strong bases.

10.6 Hazardous decomposition products

Substance

None known.

Condition

Refer to section 5.2 for hazardous decomposition products during combustion.

Under recommended usage conditions, hazardous decomposition products are not expected. Hazardous decomposition products may occur as a result of oxidation, heating, or reaction with another material.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labelling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1 Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation

No health effects are expected.

Skin contact

No health effects are expected.

Eye contact

No health effects are expected.

Ingestion

No health effects are expected.

Additional information:

This product, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. However, use or processing of the product in a manner not in accordance with the product's directions for use may affect the performance of the product and may present potential health and safety hazards.

Toxicological Data

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Diethyl carbonate	Dermal	Professional judgement	LD50 estimated to be > 5,000 mg/kg
Diethyl carbonate	Inhalation-Vapor (4 hours)	Rat	LC50 > 25.8 mg/l
Diethyl carbonate	Ingestion	Rat	LD50 > 4,876 mg/kg
DIMETHYL CARBONATE	Dermal		estimated to be > 5,000 mg/kg
DIMETHYL CARBONATE	Inhalation-Dust/Mist		estimated to be > 12.5 mg/l
DIMETHYL CARBONATE	Inhalation-Vapor		estimated to be > 50 mg/l
DIMETHYL CARBONATE	Ingestion		estimated to be > 5,000 mg/kg

PROPYLENE CARBONATE	Dermal	Rabbit	LD50 > 3,000 mg/kg
PROPYLENE CARBONATE	Ingestion	Rat	LD50 > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Diethyl carbonate	Rabbit	No significant irritation
PROPYLENE CARBONATE	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Diethyl carbonate	Rabbit	No significant irritation
PROPYLENE CARBONATE	Rabbit	Severe irritant

Sensitization:

Skin Sensitisation

Name	Species	Value
Diethyl carbonate	Mouse	Not classified

Respiratory Sensitisation

For the component/components, either no data are currently available or the data are not sufficient for classification.

Germ Cell Mutagenicity

Name	Route	Value
Diethyl carbonate	In vivo	Not mutagenic
Diethyl carbonate	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
Diethyl carbonate	Ingestion	Mouse	Some positive data exist, but the data are not sufficient for classification

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test result	Exposure Duration
Diethyl carbonate	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	premating into lactation
Diethyl carbonate	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	40 days
Diethyl carbonate	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	during gestation

Target Organ(s)

Specific Target Organ Toxicity - single exposure

For the component/components, either no data are currently available or the data are not sufficient for classification.

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
Diethyl carbonate	Inhalation	heart endocrine system hematopoietic system liver kidney and/or bladder respiratory system	Not classified	Rat	NOAEL 19 mg/l	28 days
Diethyl carbonate	Ingestion	endocrine system hematopoietic system eyes	Not classified	Rat	NOAEL 1,000 mg/kg/day	90 days

Aspiration Hazard

For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

12.1. Toxicity**Acute aquatic hazard:**

Not acutely toxic to aquatic life by GHS criteria.

Chronic aquatic hazard:

Not chronically toxic to aquatic life by GHS criteria.

No product test data available.

Material	CAS Nbr	Organism	Type	Exposure	Test endpoint	Test result
cobalt lithium oxide	12190-79-3	Fathead minnow	Analogous Compound	34 days	LC10	0.59 mg/l
cobalt lithium oxide	12190-79-3	Green algae	Analogous Compound	72 hours	ErC10	0.11 mg/l
cobalt lithium oxide	12190-79-3	Water flea	Analogous Compound	7 days	EC10	0.013 mg/l
Diethyl carbonate	105-58-8	Activated sludge	Experimental	30 minutes	EC50	>10,000 mg/l
Diethyl carbonate	105-58-8	Green algae	Experimental	72 hours	EC50	>100 mg/l
Diethyl carbonate	105-58-8	Water flea	Experimental	48 hours	EC50	>100 mg/l
Diethyl carbonate	105-58-8	Zebra Fish	Experimental	96 hours	LC50	>100 mg/l
Diethyl carbonate	105-58-8	Green algae	Experimental	72 hours	NOEC	100 mg/l
DIMETHYL CARBONATE	616-38-6	Activated sludge	Experimental	3 hours	EC50	>1,000 mg/l
DIMETHYL CARBONATE	616-38-6	Green algae	Experimental	72 hours	ErC50	>100 mg/l
DIMETHYL CARBONATE	616-38-6	Water flea	Experimental	48 hours	EC50	>100 mg/l
DIMETHYL CARBONATE	616-38-6	Zebra Fish	Experimental	96 hours	LC50	>100 mg/l
DIMETHYL CARBONATE	616-38-6	Green algae	Experimental	72 hours	NOEC	100 mg/l
DIMETHYL CARBONATE	616-38-6	Water flea	Experimental	21 days	NOEC	25 mg/l

ETHYLENE CARBONATE	96-49-1	Activated sludge	Experimental	30 minutes	EC50	>1,000 mg/l
ETHYLENE CARBONATE	96-49-1	Green algae	Experimental	72 hours	ErC50	>100 mg/l
ETHYLENE CARBONATE	96-49-1	Rainbow trout	Experimental	96 hours	LC50	>100 mg/l
ETHYLENE CARBONATE	96-49-1	Water flea	Experimental	48 hours	LC50	5,900 mg/l
ETHYLENE CARBONATE	96-49-1	Green algae	Experimental	72 hours	NOEC	100 mg/l
lithium hexafluorophosphate(1-)	21324-40-3	Rainbow trout	Estimated	96 hours	LC50	68 mg/l
lithium hexafluorophosphate(1-)	21324-40-3	Activated sludge	Experimental	3 hours	EC50	>1,000 mg/l
lithium hexafluorophosphate(1-)	21324-40-3	Green algae	Experimental	96 hours	EC50	>100 mg/l
lithium hexafluorophosphate(1-)	21324-40-3	Water flea	Experimental	48 hours	EC50	>100 mg/l
lithium hexafluorophosphate(1-)	21324-40-3	Fathead minnow	Estimated	22 days	NOEC	4.4 mg/l
lithium hexafluorophosphate(1-)	21324-40-3	Water flea	Estimated	21 days	NOEC	4.9 mg/l
lithium hexafluorophosphate(1-)	21324-40-3	Green algae	Experimental	96 hours	NOEC	22 mg/l
PROPYLENE CARBONATE	108-32-7	Activated sludge	Experimental	30 minutes	EC10	>=800 mg/l
PROPYLENE CARBONATE	108-32-7	Bacteria	Experimental	17 hours	EC50	>10,000 mg/l
PROPYLENE CARBONATE	108-32-7	Common Carp	Experimental	96 hours	LC50	>1,000 mg/l
PROPYLENE CARBONATE	108-32-7	Green algae	Experimental	72 hours	EC50	>900 mg/l
PROPYLENE CARBONATE	108-32-7	Water flea	Experimental	48 hours	EC50	>1,000 mg/l
PROPYLENE CARBONATE	108-32-7	Green algae	Experimental	72 hours	EC10	900 mg/l

12.2. Persistence and degradability

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
cobalt lithium oxide	12190-79-3	Data not available-insufficient	N/A	N/A	N/A	N/A
Diethyl carbonate	105-58-8	Experimental Biodegradation	27 days	BOD	75 %BOD/ThOD	OECD 301F - Manometric respirometry
DIMETHYL CARBONATE	616-38-6	Experimental Biodegradation	28 days	BOD	86 %BOD/ThOD	OECD 301C - MITI test (I)
ETHYLENE CARBONATE	96-49-1	Experimental Biodegradation	29 days	CO2 evolution	92.7 %CO2 evolution/THCO2 evolution	OECD 301B - Modified sturm or CO2
lithium hexafluorophosphate(1-)	21324-40-3	Experimental Hydrolysis		Half-life (t 1/2)	<1 minutes (t 1/2)	
PROPYLENE CARBONATE	108-32-7	Experimental Biodegradation	28 days	BOD	82 %BOD/ThOD	OECD 301C - MITI test (I)

12.3 : Bioaccumulative potential

Material	CAS Nbr	Test type	Duration	Study Type	Test result	Protocol
cobalt lithium oxide	12190-79-3	Analogous Compound BCF - Fish	63 days	Bioaccumulation factor	190	
Diethyl carbonate	105-58-8	Estimated Bioconcentration		Bioaccumulation factor	9.8	
DIMETHYL CARBONATE	616-38-6	Experimental Bioconcentration		Log Kow	0.354	OECD 107 log Kow shke flask mtd
ETHYLENE CARBONATE	96-49-1	Experimental Bioconcentration		Log Kow	0.11	EC A.8 Partition Coefficient
lithium hexafluorophosphate(1-)	21324-40-3	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
PROPYLENE CARBONATE	108-32-7	Experimental Bioconcentration		Log Kow	-0.41	

12.4. Mobility in soil

Please contact manufacturer for more details

12.5 Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Disposal methods

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Prior to disposal, consult all applicable authorities and regulations to insure proper classification. Dispose of waste product in a permitted industrial waste facility. If no other disposal options are available, waste product may be placed in a landfill properly designed for industrial waste.

SECTION 14: Transport Information

International Regulations

UN No.: None assigned

UN Proper shipping name: None assigned

Transportation Class (IMO): None assigned

Transportation Class (IATA): None assigned

Other Dangerous Goods Descriptions (IMO): None assigned

Other Dangerous Goods Descriptions (IATA): None assigned

Packing Group: None assigned

Marine pollutant: None assigned

SECTION 15: Regulatory information

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

Contact 3M for more information.

SECTION 16: Other information

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

3M Singapore SDSs are available at www.3m.com.sg