

Material Safety Data Sheet (MSDS)

1. PRODUCT IDENTIFICATION

Product series	:	CB,CBN,CBH,CBW,CBL,CBS,CE,CEN,CH,CK,CW,CWH
Product Identifier	:	Super Capacitor
Synonyms	:	Electrical double-layer Capacitor
Manufacturer	:	Taiwan Zhifengwei Technology Co., Ltd.
Address	:	No. 4, Jifeng Road, Wufeng District, Taichung City, Taiwan
Tel	:	+00852-51245060
E-mail	:	zfw@cda-cap.tw

2. HAZARDS IDENTIFICATION

Component name	Material name	Material weight approx.(mg)*	The dosage of a single set of solder paste is about (mg)	Substance content (mg or %)										Other substance contents (mg or %) except "substance content" and "conflict materials"	Material composition information		
				Hg	Pb	Cd	Cr+6	PBB	PBDE	steel	Al	Cu	Plastic		Substance name	CAS No.	Material content
Electrode	Activated carbon	128	/	ND	ND	ND	ND	ND	ND	/	/	/	/	/	C	7440-44-0	100.00%
	PTFE emulsion	8	/	ND	ND	ND	ND	ND	ND	/	/	/	/	/	PTFE	9002-84-0	61.00%
	Carbon black	24	/	ND	ND	ND	ND	ND	ND	/	/	/	/	/	H2O	7732-18-5	36.00%
Shell*2	SUS304	1340	/	ND	ND	ND	ND	ND	ND	/	/	/	/	/	Active agent	9036-19-5	3.00%
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Carbon black	1333-86-4	100.00%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	C	7440-44-0	0.45%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Si	7440-21-3	0.49%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Mn	7439-96-5	1.07%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	P	7723-14-0	0.03%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	S	7704-34-9	0.00%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Ni	7440-02-0	8.04%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Cr	7440-47-3	18.18%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Fe	7439-89-6	71.74%	
Injection molded shell*2	SUS304	1020	/	ND	ND	ND	ND	ND	ND	/	/	/	/	/	C	7440-44-0	0.45%
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Si	7440-21-3	0.49%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Mn	7439-96-5	1.07%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	P	7723-14-0	0.03%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	S	7704-34-9	0.00%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Ni	7440-02-0	8.04%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Cr	7440-47-3	18.18%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	Fe	7439-89-6	71.74%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	EPDM	25038-36-2	32.30%	
			/	ND	ND	ND	ND	ND	/	/	/	/	/	PP	9003-07-0	62.60%	
Diaphragm*2	PP		/	ND	ND	ND	ND	ND	ND	/	/	/	100%	Other additives	/	5.10%	
Electrolyte	/	80	/	ND	ND	ND	ND	ND	ND	/	/	/	75%	PP	9003-07-0	100.00%	
	PP		/	ND	ND	ND	ND	ND	ND	/	/	/	75%	PC	108-32-7	75.00%	
Insulating gasket	/	150	/	ND	ND	ND	ND	ND	ND	/	/	/	/	Other additives	/	25.00%	
	Dye		/	ND	ND	ND	ND	ND	ND	/	/	/	/	PP	9003-07-0	99.00%	
Conductive plastic	/	600	/	ND	ND	ND	ND	ND	ND	/	/	/	/	Dye	/	1.00%	
			/	ND	ND	ND	ND	ND	/	/	/	/	Graphite	7782-42-5	25.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Water-based resin	/	30.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Water	7732-18-5	34.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Other	/	11.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	C	7440-44-0	0.45%		
Connecting seat	/	260	/	ND	ND	ND	ND	ND	ND	/	/	/	/	Si	7440-21-3	0.49%	
			/	ND	ND	ND	ND	ND	/	/	/	/	Mn	7439-96-5	1.07%		
			/	ND	ND	ND	ND	ND	/	/	/	/	P	7723-14-0	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	S	7704-34-9	0.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Ni	7440-02-0	8.04%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Cr	7440-47-3	18.18%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Fe	7439-89-6	71.74%		
			/	ND	ND	ND	ND	ND	/	/	/	/	C	7440-44-0	0.45%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Si	7440-21-3	0.49%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Mn	7439-96-5	1.07%		
Pressure gasket	SUS304	560	/	ND	ND	ND	ND	ND	ND	/	/	/	/	P	7723-14-0	0.03%	
			/	ND	ND	ND	ND	ND	/	/	/	/	S	7704-34-9	0.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Ni	7440-02-0	8.04%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Cr	7440-47-3	18.18%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Fe	7439-89-6	71.74%		
			/	ND	ND	ND	ND	ND	/	/	/	/	C	7440-44-0	0.08%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Mn	7439-96-5	0.36%		
			/	ND	ND	ND	ND	ND	/	/	/	/	P	7723-14-0	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	S	7704-34-9	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Fe	7439-89-6	99.51%		
Round shell	/	2770	/	ND	ND	ND	ND	ND	ND	/	/	/	/	C	7440-44-0	0.08%	
			/	ND	ND	ND	ND	ND	/	/	/	/	Mn	7439-96-5	0.36%		
			/	ND	ND	ND	ND	ND	/	/	/	/	P	7723-14-0	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	S	7704-34-9	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Fe	7439-89-6	99.51%		
Positive pin	DC03	540	/	ND	ND	ND	ND	ND	ND	/	/	/	/	C	7440-44-0	0.08%	
			/	ND	ND	ND	ND	ND	/	/	/	/	Mn	7439-96-5	0.36%		
			/	ND	ND	ND	ND	ND	/	/	/	/	P	7723-14-0	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	S	7704-34-9	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Fe	7439-89-6	99.51%		
Negative pin	DC03	1040	/	ND	ND	ND	ND	ND	ND	/	/	/	/	C	7440-44-0	0.08%	
			/	ND	ND	ND	ND	ND	/	/	/	/	Mn	7439-96-5	0.36%		
			/	ND	ND	ND	ND	ND	/	/	/	/	P	7723-14-0	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	S	7704-34-9	0.03%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Fe	7439-89-6	99.51%		
Casing	PET	5	/	ND	ND	ND	ND	ND	ND	/	/	/	85%	PET	25038-59-9	85.00%	
			/	ND	ND	ND	ND	ND	/	/	/	/	Auxiliary	/	10.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Pigment	/	4.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/	Lubricant	/	1.00%		
			/	ND	ND	ND	ND	ND	/	/	/	/					

3. Hazards Identification

NFPA/HMIS Rating (0 = minimal, 1 = slight, 2 = moderate, 3 = serious, 4 = severe)

Propylene Carbonate: Health = 1 / Fire = 1 / Reactivity = 0

Ammonium Salt: Health = 1 / Fire = 1 / Reactivity = 0

General Safety considerations

1.Cells may rupture if overcharged, reverse charged, incinerated or heated above 150°C.

2.Do not crush, mutilate, nail penetrate or disassemble.

3.High case temperature may result from abuse of the cell.

Primary Routes of Entry

Skin Contact	:	No
Skin Adsorption	:	No
Eye Contact	:	No
Inhalation	:	No
Ingestion	:	No

Symptoms of Exposure

Skin Contact	:	No effect under routine handling and use
Skin Absorption	:	NA
Eye contact	:	No effect under routine handling and use
Inhalation	:	NA

Reported as Carcinogen

NA

4.First Aid Procedures

Inhalation	:	Not a health hazard
Eye Contact	:	Not a health hazard
Skin Contact	:	Not a health hazard
Ingestion	:	If swallowed, obtain medical attention immediately.

If the outer casing of the cell is damaged, and exposure to internal materials within the cell occurs, the following actions are recommended.

Inhalation	:	Not a health hazard
Eye Contact	:	Rinse eyes with water for 15 minutes and seek medical attention.
Skin Contact	:	Wash area thoroughly with soap and water.
Ingestion	:	Drink milk/water and induce vomiting; seek medical attention.

5.Fire Fighting Measures**General Hazard**

Internal organic material will burn if the cell is incinerated. Combustion products include, but are not limited to, carbon monoxide and carbon dioxide.

Extinguishing Media

Use fire extinguisher type A,B, C or D.

Special Firefighting Instructions

If possible, remove cell(s) from fire fighting area. If heated above 150°C, cell(s) may rupture/vent.

Firefighting Equipment

Use NIOSH/OSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

6.Accidental Release Measures

On Land	:	Place material into suitable containers and call local fire/police department.
In Water	:	If possible, remove from water and call local fire/police department.

7. Precautions for Safe Handling and Storage

Handling	:	No special protective clothing required for handling individual cells.
Storage	:	Store in a cool, dry place.

8. Exposure Controls / Personal Protection**Engineering Controls**

Keep away from heat and open flame. Store in a cool, dry place.

Personal Protection

Respirator	:	Not required during normal operations. SCBA required in the event of a fire.
Eye/face protection	:	Not required beyond safety practices of employer.
Gloves	:	Not required for handling of cells.
Foot protection	:	Steel-toed shoes recommended for large container handling.

9. Physical and Chemical Properties

State	:	Solid
Odor	:	NA
pH	:	NA
Vapor pressure	:	NA
Vapor density	:	NA
Boiling point	:	NA
Solubility in water	:	Insoluble
Specific gravity	:	~2.5

10. Stability and Reactivity

Reactivity	:	None
Incompatibilities	:	None during normal operation. Avoid exposure to heat, open flame, and corrosives.
Hazardous Decomposition Products	:	None during normal conditions
Conditions to Avoid	:	Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

11. Toxicological Information

This product is not toxic during routine handling and use.

Sensitization	:	NO
Teratogenicity	:	NO
Reproductive Toxicity	:	NO
Acute Toxicity	:	NO

12. Ecological Information

Under normal conditions, cells pose no risk to persons or the surrounding environment.

13. Disposal Considerations

OSHA hazard communication standard (29 CFR § 1910.1200)

14. Transport Information

General information:

Not hazardous according to RID, ADR, ADNR, IMDG, IATA-DGR

A. DOT	:	Not Noted
B. OCEAN (IIVDG)	:	Not Noted
C. AIR (IATA DGR 65th edition)	:	Not Classified As Dangerous Goods Energy storage capacity is less than 0.3Wh The content has been packaged in accordance with IATA Edition 65 Special Packaging A186 Packaging Guidelines
D. WHMIS (CANADA)	:	Not Noted

General requirements:

UN number and proper shipping name	Quantity-Passenger aircraft	Quantity-Freighter
UN 3499 Capacitor, electric double layer 电容器, 双电层	Unlimited	Unlimited
UN 3499 Capacitor, asymmetric(with an energy storage capacity greater than 0.3Wh) 电容器, 非对称性(能量储存能力大于 0.3 瓦时(Wh))	<u>Unlimited</u>	<u>Unlimited</u>

For UN3499 greater than 0.3 watt hours (Wh)

- Each capacitor must be shipped in an uncharged state. Capacitors, or components containing capacitors, must be equipped with metal strips connecting the terminals.
- Capacitors must be securely padded in the outer packaging.

15. Regulatory Information

OSHA hazard communication standard (29 CFR § 1910.1200)

Hazardous x Non-hazardous

16. Other Information

Document Informations:

Document Name:	:	Material Safety Data Sheet(MSDS)for Supercapacitor
Document Control No.	:	/
Revision No.:	:	V04
Revision Date:	:	2024.01.09

17. About mention contents:

The information contained herein is based on the data available to us and is believed to be correct. However, Taiwan Zhifengwei Technology Co., Ltd. makes no warranty, expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof. Taiwan Zhifengwei Technology Co., Ltd. assumes no responsibility for injury from the use of the product described herein. If you don't understand other details, please contact our local authorized agents and dealers.