GRUETZNER
AUTOMATIC LUBRICATION

1.Product and Company identification

Product No:	P-613B
Product Name:	CR-P2 Lithium Battery
Intended Use:	Replacement of Automatic Lubricator
Supplier's Information:	Gruetzner GmbH Kohlenhofstr. 60 • 90443 Nuremberg, Germany Tel: +49 911 277 399 0 • Fax: +49 911 277 399 99
SDS Requests:	sales@G-LUBE.com
Company Information:	www.G-LUBE.com

Product category: Lithium Manganese Dioxide Primary Battery, Nonrechargeable
Nominal Voltage: 6V
Product name:

Type	Lithium (gr.)
CR-P2	0.98

Note: The battery is neither substance nor mixture but product and having no risk to life and health under normal use or transportation because ingredients of battery is not leaked out by virtue of hermetical sealing with metal case. This sheet notifies possible risk of our battery under abnormal use but mainly aim to provide information about ingredients, notification of handling and transportation regulations as a useful reference.

2.Hazards identifictaion

GHS Classification: Not applicable

Toxicity : Vapor generated from burning batteries, may irritate eyes, skin and throat.

Hazard : Electrolyte and lithium metal are inflammable.

Risk of explosion by fire if batteries are disposed in fire or heated above 100° C.

Stacking or jumbling batteries may cause external short circuits, heat generation, fire or explosion.

3.Composition/information on Ingredients

Manganese Dioxide (CAS Number:1313-13-9)	5 mg Mn/m3 Ceiling	5 mg Mn/m3	20-35
Lithium Metal (CAS Number:7439-93-2)	Not established	Not established	1-3
Lithium Perchlorate (CAS Number:7791-03-9)	Not established	Not established	1.0-1.5
1,3-dioxolane(DOL) (CAS Number:646-06-0)	Not established	Not established	9.0-10.5
Propylene Carbonate(PC) (CAS Number:108-32-7)	Not established	Not established	
Dimethoxyethane(DME) (CAS Number:110-71-4)	Not established	Not established	
Water	/	/	<0.01
Inert material:			
Acetylene black (CAS Number: 1333-86-4)	3.5 mg/m3 TWA (as carbon black)	3.5 mg/m3 TWA (as carbon black)	2-3
Graphite (CAS Number: 7782-42-5)	5 mg/m3 TWA (respirable fraction) 15 mg/m3 TWA (total dust)	2 mg/m3 TWA (respirable fraction)	0.5-2
Adhesive (CAS Number:9002-84-0)	Not established	Not established	1-2
polypropylene (CAS Number:9003-07-0)	Not established	Not established	0.2-0.5
Iron(Fe)	/	/	20-30
Nickel-plate (CAS Number:7440-02-0)	1mg[Ni]/m3	0.05mg/m3[Ni]	<0.2
Aluminium(Al) (CAS Number:7429-90-5)	10mg/m3(dust)	5mg/m3(smog)	4-5
Polyvinyl chloride(PVC) (CAS Number:9002-86-2)	Not established	Not established	2.0-3.0

Heavy metal:			
Hydrargyrum(Hg) (CAS Number:7439-97-6)	0.1mg/m3	0.0025mg[Hg]/m3	<0.0001
Lead(Pb) (CAS Number:7439-92-1)	Not established	0.05mg/m3	<0.0001
Cadmium(Cd) (CAS Number:7440-43-9)	Not established	0.01mg/m3	<0.0002

4.First-aid measures

Inhalation	If ingredient leaked out from inside of a battery and if inhaled it, move to a place where fresh air is provided. Refer for medical attention.
Skin contact	If ingredient leaked out from inside of a battery and stuck on skin, wash the contact areas off immediately with plenty of water and soap. If appropriate procedures are not taken, this may cause sores on the skin. Refer for medical attention.
Eyes contact	If ingredient leaked out from inside of a battery and came into eyes, flush the eyes with plenty of water for at least 15 minutes immediately without rubbing. Take a medical treatment. If appropriate procedures are not taken, this may cause an eye irritation.
Swallowing	In case of swallowing of battery, immediately refer for medical attention.

5.Fire-fighting measures

Fire extinguishing agent:

Dry chemical, alcohol-resistant foam, powder, atomized water; carbon dioxide and dry sand are effective.

Extinguishing method:

Escape batteries to safe place prevent from ignition by spreading fire. Because packaging material of battery is paper, use water extinguisher, CO_2 extinguisher or powder extinguisher as normal extinguisher.

Since vapor, generated from burning batteries may make eyes, nose and throat irritate, be sure to

6.Accidental release measures

Chemical contents are sealed in metal can. But if the battery is mechanically or electrically abused, contents may leak out. In such case, take action as showing below.

Personal precautions: Temporary inhalation of odor and attaching of electrolyte to skin does not cause serious health hazard. Be sure the ventilation and washing out of electrolyte quickly.

Environmental precautions: Clean up it quickly. Specific environmental precaution is not necessary.

Method and materials for containment and methods and materials for cleaning up:

Contain and collect spillage and place in container for disposal according to local regulations.

7.Handling and storing

Handling	Do not charge, short-circuit, disassemble, deform, heat above 100 ° C or incinerate. Do not pile up or mingle batteries with each other. Handling Do not place battery on metal case, metal plate or antistatic material. In case of multi cell application, replace all batteries to new at once when replacing used batteries.
Storage	Be sure to store batteries in well-ventilated, dry and cool conditions. Keep away from water, rain, snow , frost or dew condensation. Do not store batteries near source of heat or nozzle of hot air. Do not store batteries in direct sunshine. Take care not to get wet packing by dew condensation when packing is removed from cold to warm and humid condition. Enough number of fire fighting apparatuses should be installed in warehouse.

8.Exposure controls and personal protection

There is no need of personal protective equipment on regular handling and storage. In the event, however, a large amount of electrolyte should be released by mechanical or electrical abuse, use the protections as shown below

Respiratory protection: Mask (with a filter preferably)

Hand protection: Synthetic rubber gloves

Eye protection: Goggles or glasses

9.Physical and chemical properties

State: Solid

Shape: Cylindrical

10.Stability and reactivity

Stability: Stable on regular handling

Conditions to avoid: External short circuit of battery, deformation by crush, exposure at high temperature of more than 100 degree C (may cause heat generation and ignition), direct sunlight, high humidity

Materials to avoid: Substances that cause short circuit.

11.Toxicological information

Since chemicals are contained in a sealed can, there are no hazards.

Toxicological information of main components of battery is shown below as reference.

Manganese Dioxide

Acute toxicity: rabbit*[1]: LDL_0 (blue pipe) = 45 mg/kg, mouse*[2] : $LD5_0$ (subcutaneous) = 422mg/kg

Local effects: Stimulus to an eye, a nose, a throat, and a skin

Chronic toxicity or long-term toxicity: Inhalation of powder dust or fume for a long time (at least 3 months) may cause specific central nerve symptom like Parkinson's disease.

Reproduction toxicity: Mouse*[3] inhalation TCL_0=49 mg/m^3

Lithium metal

Acute toxicity: No information in a metal state

Local effects: Touching on a skin or an eye causes thermal burn and alkaline chemical burn.

Electrolyte

Acute toxicity: No information at present

Local effects: Slight stimulus to an eye

12.Ecological information

Persistence and degradability	No information available

Mobility in soil	No information available

13.Disposal considerations

Dispose of batteries in accordance with applicable federal, state and local regulations.
For safety precaution, battery should be insulated in proper manner; covering both terminals by tape , wrapping of battery in insulative bag or packing battery in original package is recommended in order to prevent ignition or explosion due to short-circuit.

14.Transportation Information

During the transportation of a large amount of batteries by ship, trailer or railway, do not leave them in the places of high temperatures and do not allow them to be exposed to condensation.

During the transportation do not allow packages to be dropped or damaged.

UN Number: UN3090 (only for the Air transport, over 8-cells per package)
: Even though the cells are classified as lithium metal batteries (UN3090 or 3091), they are exempted from Dangerous Goods because they meet the following:

1. For cells, the lithium content is not more than 1g;
2. Each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, PartIII, sub-section 38.3.
3. Each cell is manufactured in ISO9001 certified factory.

Proper shipping Name: P-613B 6V CR-P2 Lithium Battery

UN Class: Class9 (only for the Air transport, over 8-cells per package)
: Not Applicable (for the Air transport by Section II and the Marine transport)

Please refer to the following reference information about concrete ways of transportation. Actual content of packaging label and shipping documents varies by shipping companies. Make sure to confirm in advance with your shipping company.

Information of reference

	Reference (Reference number)	Packing Instruction(PI)/ Special provision(SP)	Note

Air transport	IATA DGR	PI 968 Section A	Cell, Cargo Aircraft only; Net quantity per package Max.35kg
		PI 968 Section B	Cell, Cargo Aircraft only; Net quantity per package Max.25kg
		PI 968 Section	Cell, on Cargo Aircraft only, not more than one package in any single consignment. Maximum number of cells per package; 8cells
		PI 969 Section	Cells packed with equipment
		PI 970 Section	Cells contained in equipment
Marine transport	IMDG Code	SP188	

15.Regulatory information

* IATA Dangerous Goods Regulations 60th Edition, 2019 (IATA DGR)
* IMO International Maritime Dangerous Goods Code 2016 Edition (IMDG Code)
* UN Recommendations on the Transportation of Dangerous Goods, Model Regulations
* UN Recommendations on the Transportation of Dangerous Goods, Manual of Tests and Criteria
* EU Battery Directive (2006/66/EC,2013/56/EU)
* Regulation(EC) NO.1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)
* State of California Regulations – Best ,management practices for Perchlorate Materials.

16.Other information

This PSDS is provided to customers as reference information in order to handle batteries safely. It is necessary for the customer to take appropriate measures depending on the actual situation such as the individual handling, based on this information.

(END)

UN TEST REPORT

Reference: ST/SG/AC.10/11/REV.4
Product: CR-P2 battery pack No. P-613B

No.	Test	Item	Sample size	Test procedure	Test phenomena	Reject number	Decision
Test.1	Altitude simulation	UN-38.3.4.1	20	Test sample shall be stored at a pressure of 11.6kPa or less for at least 6 h at ambient temperature.	No mass loss no leakage no venting no disassembly no rupture no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90%	0	pass
Test.2	Thermal impact	UN-38.3.4.2	20	Test cells are to be stored for at least six hours at a test temperature equal 75±2°C, followed by storage for at least six hours at a test temperature equal to -40±2°C. The maximum time interval between test temperature extremes is 30 minutes. This procedure is to be repeated 10 times, after which all test cells are to be stored for 24 hours at ambient temperature 20±5°C.	No mass loss no leakage no venting no is assembly no rupture no fire if the open circuit voltage of each test cell or battery after testing is not less than 90%	0	pass
Test.3	Vibration	UN-38.3.4.3	20	Cells are firmly secured to the platform of the vibration machine without distorting the cells in such a manner as to faithfully transmit the vibration. The vibration shall be a sinusoidal waveform with a logarithmic sweep between 7 Hz and 200Hz and back to 7Hz traversed in 15 minutes. This cycle shall be repeated 12 times for a total of 3 hours for each of three mutually perpendicular mounting positions of the cell. One of the directions of vibration must be perpendicular to the terminal face. The logarithmic frequency sweep is follows: from 7 Hz a peak acceleration of 1gn is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8mm (1.6 mm total excursion) and the frequency increased until the frequency is increased until a peak acceleration of 8gn occurs (approximately 50Hz). A peak acceleration of 8gn is then maintained until the frequency is increased to 200 Hz	No mass loss no leakage no venting no is assembly no rupture no fire	0	pass
Test.4	Shock	UN-38.3.4.4	20	Test cells shall be secured to the testing machine by means of a rigid mount which will support all mounting surfaces of each test cell. Each cell shall be subjected to a half-sine shock of peak acceleration of 150gn and pulse duration of 6 milliseconds, Each cell shall be subjected to three shocks in the positive direction followed by three shocks in the negative direction of three mutually perpendicular mounting positions of the cell for a total of 18 shocks.	And if the open circuit voltage of each test cell or battery after testing is not less than 90%	0	pass
Test.5	External short circuit	UN-38.3.4.5	20	The cell to be tested shall be temperature stabilized so that its external case temperature reaches 55±2°C and then the cell shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 55±2 °C. This short circuit condition is continued for at least one hour after the cell external case temperature has returned to 55±2°C. The cell must be observed for a further six hours for the test to be concluded.	Cells and batteries meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly, no rupture and no fire within six hours of this test.	0	pass
Test.6	Impact	UN-38.3.4.6	10	The cell to be tested shall be placed on a flat surface. A 15.8 mm diameter bar is to be placed across the centre of the sample. A 9.1kg mass is to be dropped from a height of 61 ±2.5cm onto the sample. A cylindrical cell is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8 mm diameter curved surface lying across the centre of the test sample. Each sample is to be subjected to only a single impact. Separate samples are to be used for each impact.	Cells and batteries meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly and no fire within six hours of this test.	0	pass
Test.8	Forced discharge	UN-38.3.4.8	10	Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12v D.C. power supply at an initial current equal to the maximum discharge current specified by the manufacturer. The specified discharged current is to be obtained by connecting a resistive load of the appropriate size and rating in series with the test cell. Each cell shall be forced discharged for a time interval (in hours) equal to its rated capacity divided by the initial test current (in Ampere)	Primary or rechargeable cells meet this requirement if no disassembly and no fire within seven days of the test.	0	pass

Note: Test 1 to test 5 is conduct din sequence on the same cell. The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use. **WARNING:** Risk of fire and burns. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate. Do not short circuit-battery.

Certificate of Package Drop Test for lithium battery pack

Name of Goods: No. P-613B Lithium Battery Pack, CR-P2 6.0V

Item	Test	Standard requirement or The clause Number of Standard	Test Result	Conclusion
1	1.2m Drop Test	Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (15th) (for short; UN Model Regulations) SPECIAL PROVISION 188	**To drop by face** The package is not cracked, the contents are not damaged and not shifted.	passed
			To drop by slanted towards The package is not cracked, the contents are not damaged and not shifted.	passed
			To drop by free angle The package is not cracked, the contents are not damaged and not shifted.	passed
2	Gross Weight Measure	Recommendations on the TRANSPORT OF DANGEROUS GOODS Model Regulations (15th) (for short; UN Model Regulations) SPECIAL PROVISION 188	2.5Kg	passed

Note: The information and recommendations are offered for the user's consideration and examination. It is the user's responsibility to satisfy itself that the product is suitable for the intended use.

WARNING: Risk of fire and burns. Do not recharge, disassemble, heat above 100°C (212°F) or incinerate. Do not short circuit-battery.

Auditor/Date:
Tony Lee 2013/01/30

Inspector/Date:
Annie Tan 2013/01/30