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SOLOLUBE

P-613B 6V CR-P2 Lithium Battery
Material Safety Data Sheet (MSDS)

I. Description and Company Data

Product No.: P-613B
Product Name: CR-P2 Lithium Battery
Product nominal voltage: 6.0 Voltage D.C. (direct current)
Intended Use: Replacement of Automatic Lubricator
Designated for recharge: Negative
Chemical System: Manganese Dioxide Lithium Primary

Supplier Information: Gruetzner GmbH
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Company Information: http://www.G-LUBE.com

II. Chemical Component/Hazardous Ingredients

( ) Simple (Yes) Admixture
English Name: Lithium manganese dioxide cylindrical battery
CAS No.: 1313-13-9
UN No.: 3090 (a lithium battery or battery assembly) or UN 3091(contained in equipment)
Class: 9

Material Component (%)：：	GHS CODE
Lithium：2.7% (0.92g for CR-P2)	H203, H332
MnO_2, 40%	H303, H320, H333
Electrolyte: 16%(Propylene carbonate)	H227, H320, H402
Electrolyte: 16%(1,2 Dimethoxyethane)	H225, H303, H332, H360
Plastic：10%	
Steel：15%	
Others：16.3%	

WARNING: The battery should not be opened or exposed to heat because exposure of the ingredients contained within could be harmful under some circumstances.

III. Possible Hazardous

Harm and effect/Health harm effect:
There is no harm with no breakage battery. If battery is destroyed, there is light excite when contact skin directly.
Environment effect: No
Physics & chemistry harm: No breakage no harm
Special harm: For the small battery, it will clog windpipe When gulp discarefully, influence breath.
Main symptom: Breathe difficultly, dizzy
Dangerous class: (See:GB13690-92):--
Safety Certificated: See UL file no. MH60515

IV. First Aid Measure

Manner: When battery Leak

1. Skin contact: Wash by water
2. Eye contact: Clean by cleaning water at once and see a doctor.
3. Inbreathe: Breathe fresh air
4. Eat: See a doctor at once

Most important symptom and harm effect:
It will clog windpipe When gulp discarefully, influence breath.
Defend first aid person:
Pull on air breath machine, defence armet, glasses, etc.
Instruction for doctor:
It can cause thrill gas and clog windpipe When patient gulp discarefully

V. Firefighting Measures

Applicable fire extinguisher:
CO_2、fire extinguisher、ABC dry powder fire extinguisher、sand, etc.
Special harm when put out fair:
Be able to explode when large quantity battery burn.
Special put out fire procedure:
NOTE: Can't use water to put out fire. Little burnt may use sand to cover. Large burnt need to use fire extinguisher.
Special equipment for fire protection person:
Pull on air breath machine, defence armet, glasses, etc.

VI. Accidental Release

Note item for individual:
Can't dismantle, press, short circuit, heat, pile battery, etc.
Environment note item:
Can't heat battery and put them into fire, can't place them in humidity zone.
Clean manner:

Can't pile battery, can't put them into fire. Else dispose according to general provision.

Steps to be taken in case material is released leaked, or spilled:

The preferred response is to leave the area and allow the batteries to cool and the vapours to dissipate. Avoid skin and eye contact or inhalation of vapours. Collect all released material in a plastic lined metal container and remove spilled liquid with absorbent. Doing this, protect your skin and eyes with gloves and protection glasses.

VII. Handling and Storage

Disposal: Package well, separate each battery, Contact each battery can cause short circuit, burnt etc.

Storage: Don't press battery, destroy package. Storage on the condition of normal temperature, normal humidity, airiness and dry. Disposal them in time if find abnormal situation.

To prevent potential leaking, overheating or explosion of batteries please be advised to take following precautions:

WARNING

- *Do not immerse the battery in water*
- *Store the battery in a cool dry environment*
- *Do not uses or leave the battery near a heat source such as fire or heater*
- *When recharging, use the battery charger specifically for that purpose*
- *Do not reverse the position (+) and negative (-) terminals*
- *Do not dispose the battery in fire or heat*
- *Do not short-circuit the battery by directly connecting the positive (+) and negative (-) terminal with metal objects such as wire*
- *Do not transport or store the battery together with metal objects such as necklaces, hairpins etc.*
- *Do not strike or throw the battery against hard surface*
- *Do not directly solder the battery and pierce the battery with a nail or other sharp object*

VIII. Exposure Control Measures

Project control: Don't short circuit. Control storage temperature and humidity. Work temperature can't be high.

Control parameter: TWA STEL CEILING BEIs

Individual defence equipment: / It isn't necessary under normal situation.

Breath defence:	Hand defence:	Eye defence:
/	/	/
Skin and body defence:	Sanitation measure:	
/	/	

IX. Physics and Chemical Characteristic

Substance station:	Solid state	Shape:	Cylindrical
Color:	Metal nature color	Smell:	No sapor (full)
PH :	/	Boiling point:	/
Disassemble temperature: /		Flash point:	/
		Test manner:	(/) open cup (/) close cup
Natural temperature: /		Explode limit:	Higher than 170℃ will explode
Vapor tension:	/	Vapor density:	/
Relatively density (water=1): /		Dissolve:	/

X. Invariability and Reaction

Invariability: invariability under normal station

Harm effect under special situation:

1. The battery will leak when it is disassembled, staved, destroyed and have light spinule.
2. The battery can burn or explode when the battery is put in fire.
3. Younger gulp.
4. Short circuit can cause heat and burnt.

Avoid status: disassemble, stave, destroy, short circuit, heat battery, and far away younger.

Escape substance: metal（Avoid battery anode contact cathode to short circuit）

Harm disassembles substance: --

XI. Toxicological Data

Virulence: breathe: --

Skin: --

Eye: --

LD50(test animal, breathe track): --

LC50(test animal, breathe track): --

Part effect: --

Sensitivity: --

Slow virulence or long virulence: --

Special effect: --

Swallowing: Ingestion of a battery can be harmful.

XII. Ecological Data

Possible environment effect/environment: ---

Under normal condition of use, the battery is hermetically sealed and does not release. Chemicals listed in Section II. It does not pose a physical or health risk to uses.

XIII. Disposal Considerations

Misuse disposal manner:

Disposal battery as normal rubbish after the misuse battery is put in water with conductance rate for 10 days.

Waste disposal method:

1. Dispose in accordance with appropriate national and international regulations, like as per directions in WEEE, etc.
2. Open cells should be treated as hazardous waste.

WARNING: DO NOT INCINERATE or subject battery cells to temperature in excess of 212°F(100°C). Such treatment can cause cell rupture.

XIV. Transportation Information

International transfer provision:

Lithium battery international transfer rules

Provisions for the international transportation:

Our Lithium Battery (not restricted) meet with all the requirements of UN Manual of Tests and criteria Part III, subsection 38. 3

Ref: The batteries are complied with the PACKING INSTRUCTION OF the current IATA (58st regulation) section II of PI969, IMP: ELM

Lithium batteries identified by the manufacturer as being defective for safety reasons, that have been damaged or have the potential of producing a dangerous evolution of heat, fire or short circuit are forbidden for transport (e.g. those being returned to the manufacturer for safety reasons).

Lithium metal or lithium alloy cells and batteries may be offered for transport if they meet the following:

1. a lithium metal cell, the lithium content is not more than 1 g;
2. a lithium metal or lithium alloy battery, the aggregate lithium content is not more than 2 g;
3. each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection

38.3

	Quantity per package Cargo Aircraft Only
Lithium metal cells and batteries	2.5 kg G

1) Cells and batteries must be packed in strong outer packages that conforms to 5.0.2.4, 5.0.2.6.1 and 5.2.12.1.
2) Cells and batteries must be packed in inner packaging that completely enclose the cell or battery.
3) Cells and batteries must be protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to a short circuit.
4) Each package must be capable of withstanding a 1.2 m drop test in any orientation without:
   - Damage to cells or batteries contained therein;
   - Shifting of the contents so as to allow battery to battery (or cell to cell) contact;
   - Release of contents.
5) Each package must be labeled with a lithium battery handling label and cargo aircraft only label.

Lithium metal batteries contained with equipment packing instruction.

If a lithium cell, the lithium content is not more than 1g; or a lithium battery, the lithium content is not more than 2g. They are complied with the PACKING INSTRUCTION OF the current IATA （58st regulation）section II of PI969, IMP: ELM.

International conventions:

Air	IATA	Yes
Sea	IMDG	Yes
Land	ADR (road)	Yes
	RID (rail)	Yes

Organizations governing the transport of lithium batteries

Area	Method	Organization	Special Provision
International	Air	IATA, ICAO	A58 Class 9
International	Water	IMO	188
U.S.A.	Air, Rail, Highway, Water	DOT	49CFR Section 173.185

Their Regulations are based on the UN recommendations. Each special provision provides specifications on exceptions and packaging for lithium batteries shipping.

P-613B lithium batteries do meet the above mentioned provisions.

GENERAL HANDLING INSTRUCTIONS:

Battery cartons should be handled with care. Rough handling may result in batteries being short circuited or damaged. This may cause leakage, explosion, or fie. (refer also to Section VII)

XV. Rule of Law Data

Use statute:

≤Former battery 4th part : lithium battery safety requirement≥ GB8897.4-2002

XVI. Other Information

Reference literature data: --

Key to the H-code contained in Section II of this document (for information only)
H203: Explosive; fire, blast or projection hazard; Explosives, Cat Division 1.3.
H332: Harmful if inhales; Acute toxicity, inhalation, cat 4.
H303: May be harmful if swallowed; Acute toxicity, oral, cat 5.
H320: Causes eye irritation; Serious eye damage/eye irritation, cat 2B.
H333: May be harmful if inhaled; Acute toxicity, inhalation, cat 5.
H227: Combustible liquid; Flammable liquids, cat 4.
H402: Harmful to aquatic life; Hazardous to the aquatic environment, acute hazard, cat 3.
H225: Highly flammable liquid and vapour; Flammable liquid, cat.2.
H360: May damage fertility or the unborn child (state specific effect if known) (state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard), Reproductive toxicity, cat 1A,1B

Remark: 「-」means there is no relative data at present .

「/」means the substance don't apply this column.

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 100ºC (212ºF) or incinerate. Do not short circuit-battery.

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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±2ºC, followed by storage for at least six hours at a test temperature equal to -40±2ºC. 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±5ºC.	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±2ºC 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 ºC. This short circuit condition is continued for at least one hour after the cell external case temperature has returned to 55±2ºC. 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 ºC 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 ºC 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 100ºC (212ºF) or incinerate. Do not short circuit-battery.