PRODUCT SAFETY DATA SHEET

Lithium ion battery

10S4P UR18650RX

Item No. 885

1. Identification of the substance and of the manufacturer

Identification	Product category	Lithium ion battery
	Model name	**10S4P WAM UR18650RX**
	Nominal voltage	36 V
	Nominal capacity	7,8 Ah
	Nominal energy	280,8 Wh
	Chemical system	Lithium ion / Graphite
	Rechargeable	Yes
Manufacturer	Name and address	WAMTECHNK sp. Z.o.o. ul. Techniczna 2, 05-500 Piaseczno
	Phone	+48 22 701 26 00
	Telefax	+48 22 701 26 01
	e – mail	office@wamtechnik.pl
Date Prepared		June 2016

2. Hazard identification

Classification	In general lithium ion rechargeable batteries are classified as dangerous good class 9 (§ 2 (1) Transport of Hazardous Goods Act). The nominal voltage in Volt and nominal capacity in Ampere hours must be marked outside the housing
Hazards	If cathode and anode of the battery come into contact with other metals, heat can build up and electrolyte fluid can leak. Electrolyte fluid is flammable. In case of electrolyte leakage, put the battery out of fire range immediately.
Toxicity	If a battery burns, the vapors can irritate eyes, skin and the respiratory tract.

3. Composition and information on ingredients

	%	**CAS NUMBER**
Aluminum Foil	2-10	7429-90-5
Metal Oxide (proprietary)	20-50	Confidential
Polyvinylidene Fluoride (PVDF)	< 5	24937-79-9
Styrene Butadiene Rubber(SBR)	< 5	9003-55-8
Copper Foil	2-10	7440-50-8
Carbon (proprietary)	10-30	7440-44-0
Electrolyte (proprietary)	10-20	Confidential
Aluminum and inert materials	Remainder	N/A

4. First aid measures

The chemicals are contained in sealed cans. Upon normal conditions of use, risk of exposure occurs only if the battery is mechanically abused.
If chemicals leak attend these advices:

Inhalation:	Contents of an opened battery can cause respiratory irritation. Provide fresh air and call a doctor.
Skin contact	Contents of an opened battery can cause skin irritation. Wash skin with soap and water.
Eye contact:	Contents of an opened battery can cause eye irritation. Immediately flush eyes thoroughly with water for 15 minutes and seek medical attention.

5. Firefighting measures

In case of fire:	Use dry chemical extinguishers
Caution:	Before starting to extinguish the fire, be sure, that you are at windward of fire. So you cannot inhale toxic vapors.

6. Accidental release measures

Wipe up leaked electrolyte fluid with an absorbent cloth.
If there is a lot of leaked electrolyte, you should wear:

- protective clothing
- gas mask for organic gases
- safety goggles
- gauntlets

Put the battery out of fire range immediately.

7. Handling and storage

Handling	Do not open the battery. Do not crush, disassemble, drop or solder.
Charging	Charge within limits of 0 °C to + 45 °C temperature. Charge only with specified charger designed for this battery.
Discharging:	Discharge within limits of -20 °C to + 60 °C temperature.
Caution:	Wrong handling can cause fire or explosion.
Storage:	Storage temperature: -20 °C to + 25°C Humidity range: 0 % to 80 % Well ventilated area. Short circuit can ransom burn. Do not store with metal objects.

8. Exposure controls and personal protection

See Point 7 advices must be observed. You have to check continuously that storage temperature is within the bounds. You have to check the ventilation that humidity range is within the bounds, too. For normal use you don't need any protective equipment.

9. Physical and chemical properties

Appearance:	10 cells (series) 4 (parell) in a pink plastic housing.
Weight:	2500 g
Chemical properties:	see Point 3

10. Stability and reactivity

During a long storage the capacity will be reduced and the lifespan of the battery will be shorter. The plastic housing can be damaged by leaking electrolyte.

11. Toxicological information

Upon normal use there will be no leaking and nobody
can come into contact with toxically ingredients of the battery.

12. Ecological information

Upon normal use there won't be any environmental pollution.
If the battery is unusable, you must recycle it. See Point 13.

13. Disposal considerations

The battery is hazardous waste.
It is not allowed to dispose it with common waste.
If the battery is unusable, dispose it according to the applicable recycling regulations.

14. Transportation information

Note:

Only regularly instructed personnel is allowed to be involved in the transportation of lithium batteries! If lithium batteries are transported per air, the involved personnel must have been regularly trained by the German Federal Office of Civil Aviation or its authorized training companies!

In the following the dangerous goods regulations of the corresponding carriers are cited only in part.
WAMTECHNIK excludes any liability!

Transportation according to Guideline UN 3480 (1):

As the nominal energy is not more than 100 Wh you needn't to transport the battery as dangerous good, if the regulations of the corresponding carrier are fulfilled:

You can apply the Special Provision 188 of the regulations on the carriage of dangerous goods ADR/RID (2), IMDG-Code (3) as well as Packing Instruction 965, part II; of the regulation on the carriage on dangerous goods IATA (4) with following requirements:

- The nominal energy of the battery is not more than 100 Wh.
- It must have passed the UN transportation test according to the UN Manual of Tests and Criteria, Part III, Section 38.3.
- Ensure that lithium batteries are individually packed in fully enclosed inner packaging. The battery must be protected against short circuit.
- Protector for inward over pressure.
- The package must withstand a free fall from a height of 1.2 m without displacing the content.

Road and railway: ADR / RID 2015 (2)

Classification Information

(1) UN Number:	**3480**	(2) Proper Shipping Name (PSN): (in bold)	**LITHIUM ION BATTERIES** (including lithium ion polymer batteries)
	Variation:	For stowage on or under deck.	
(3a) Class:	9	(3b) Classification Code:	M4
(4) Packing Group:	-	(6) Special Provisions:	188 230 310 348 376 377
(7a) Limited quantities:	0	(7b) Excepted quantities:	E0

ADR Tank Information

(13) ADR Tank Special Provisions:	-	(14) Vehicle for Tank Carriage:	-

Special Provisions for Carriage

(16) Packages:	-	(17) Bulk	-
(18) Loading, Unloading and Handling	-	(19) Operation	-

Additional Information

(20) Hazard Identification Number:	-	Emergency Action Code:	4W
(15) Transport Category:	2	(15) Tunnel Restriction Code:	E

Road carriage in a transport chain including maritime carriage

From ADR 1.1.4.2, packages, containers, portable tanks and tank-containers, which do not entirely meet the requirements for packing, mixed packing, marking, labelling of packages or placarding and orange plate marking, of ADR, but are in conformity with the requirements of the IMDG Code shall be accepted for carriage in a transport chain including maritime carriage subject to the following conditions:

(a) If the packages are not marked and labelled in accordance with ADR, they shall bear markings and danger labels in accordance with the requirements of the IMDG Code;

(b) The requirements of the IMDG Code shall be applicable to mixed packing within a package;

(c) For carriage in a transport chain including maritime carriage, if the containers, portable tanks or tank-containers are not marked and placarded in accordance with ADR Chapter 5.3, they shall be marked and placarded in accordance with Chapter 5.3 of the IMDG Code. In such case, only ADR 5.3.2.1.1 (blank orange plates) is applicable to the marking of the vehicle itself. For empty, uncleaned portable tanks and tank-containers, this requirement shall apply up to and including the subsequent transfer to a cleaning station.

This derogation does not apply in the case of goods classified as dangerous goods in classes 1 to 9 of ADR and considered as non-dangerous goods according to the applicable requirements of the IMDG Code.

Vehicles other than those carrying containers, portable tanks or tank containers, which are not placarded in accordance with the provisions of ADR 5.3.1 but which are marked and placarded in accordance with Chapter 5.3 of the IMDG Code, shall be accepted for carriage in a transport chain including maritime transport provided that the orange-coloured plate marking provisions of ADR 5.3.2 are complied with.

For carriage in a transport chain including maritime carriage, the information required under ADR 5.4.1 and 5.4.2 and under any special provision of ADR Chapter 3.3 may be substituted by the transport document and information required by the IMDG Code provided that any additional information required by ADR is also included.

Sea: IMDG Code Amendment 37-14 (3)

Classification Information

(1) UN Number:	**3480**	(2) Proper Shipping Name (PSN): (in bold)	**LITHIUM ION BATTERIES** (including lithium ion polymer batteries)
		Variation:	For stowage on or under deck.
		Coded Variant:	0001
(3) Class or division:	9	(4) Subsidiary Risks:	
(5) Packing Group:	-	(6) Special Provisions:	188 230 310 348 376 377
(7a) Limited quantities:	0	(7b) Excepted quantities:	E0

Packing Information

(8) Packing instructions:	P903 P908 P909 LP903 LP904	(9) Packing provisions:	-
(10) IBC instructions:	-	(11) IBC provisions:	-
(13) Tank instructions:	-	(14) Tank provisions:	-

Additional Information

(15) Emergency Schedule:	F-A,S-I	Flashpoint:	-
High Consequence:	No	State:	Solid

(16a) Stowage and Handling

Category A.

SW19 For batteries transported in accordance with special provisions 376 or 377 category C, unless transported on a short international voyage.

(16b) Segregation

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* Class	1.1/1.2/1.5	1.3/1.6	1.4	2.1	2.2	2.3	3	4.1	4.2	4.3	5.1	5.2	6.1	6.2	7	8	9
Segregation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

(17) Properties and Observations

Electrical batteries containing lithium ion encased in a rigid metallic body. Lithium ion batteries may also be shipped in, or packed with, equipment. Electrical lithium batteries may cause fire due to an explosive rupture of the body caused by improper construction or reaction with contaminants.

Segregation Groups

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General Stowage Requirements

Cargo Ships - On or under deck.	Passenger Ships - On or under deck.
-	-

Package Labels (minimum dimensions 100 mm by 100 mm, except in the case of packages of such dimensions that they can only bear smaller labels)	Additional Marks for Packages

For marking and labelling of packages, including IBCs see section 5.2 of the IMDG Code.

CTU Placards (minimum dimensions 250 mm by 250 mm)	Additional Marks for CTUs

For placarding and marking of cargo transport units see section 5.3 of the IMDG Code.

ADR/RID, IMDG-Code

Each shipment must have the following label and covering note see below:

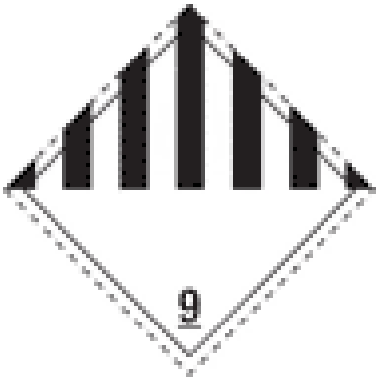
Air: IATA 2016 (4)

A) Lithium Ion Batteries

- UN3480
- PI 965
- Section IA
- IMP: RLI

Labels:

Size: 120 x 110 [mm]



Size: 100 x 100 [mm]

Covering note:

CAUTION

The packages in this consignment consist of

LITHIUM ION BATTERIES

Shipment must be handled with care

Damaging can cause fire or explosion

If the package is damaged it must be quarantined, inspected and repacked

For further information contact: Phone: +48 22 701 26 00

15. Regulatory information

(1) UN 3480 / UN 3481:	Transportation regulations for lithium ion batteries including the tests according to the "UN Manual of Tests and Criteria, Part III, Section 38.3".
(2) ADR / RID 2015:	Regulations on the transportation of dangerous goods by road and railway
(3) IMDG-Code 37-14:	Regulations on the transportation of dangerous goods by sea.
(4) IATA 2016:	Regulations on the transportation of dangerous goods by air.

16. Other information

none