SAFETY DATASHEET (SDS)

According to Regulation (EC) No 1907/2006 (REACH), No 1272/2008 (CLP)
and Commission (EU) Regulation No 453/2010

Power source Battery Pack APS 5
Customs commodity code 8507 60 000 0

Issue Date: July 15, 2020

1. SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Trade name:	Battery Pack APS 5 power source
Chemical name (per IUPAC):	None
Synonyms:	Li-ion batteries
CAS Number:	None
EC Number:	None
REACH Number:	Not classified

1.2. Relevant identified applications of the substance or mixture and non-recommended applications

Product Use:	Batteries are designed for use in portable devices and equipment in accordance with supplier's recommendations. Batteries are housed in cells with leads and terminals at ends. When lithium-ion cells, which are used in the battery, are discharging, lithium ions move from the cathode consisting of lithium compounds to the anode. When the battery is charging up, the process is reversed. The battery is housed in a polymeric housing
Applications to avoid:	Batteries shall not be used in conditions, where there is a risk of short circuit, deformation or destruction due to mechanical impact or exposure to higher temperatures or leaks (lack of tightness)

1.3. Details of the supplier of the safety data sheet

Manufacturer:	BELTEX OPTIC 47, Furmanov St., Lida, 231300, Belarus
Phone (fax):	+375 154 535255
E-mail:	beltex@yukonopticsglobal.com

1.4 Emergency phone number

Emergency information:	112 (Russia, EU), 112 and 911 (USA, Canada)
Other information:	www.pulsar-nv.com

2. SECTION 2: HAZARDS IDENTIFICATION

2.1. Product or mixture identification

In accordance with the "Regulation on classification, labelling and packaging of substances and mixtures" (CLP) and "Globally Harmonized System of Classification and Labelling of Chemicals (GHS) No 1272/2008":	Not applicable

2.2. Label elements

Signal word:	None (chemical safety assessment is not needed)
Hazard pictograms:	Not applicable (chemical safety assessment is not needed)
Hazard statements:	Not applicable
Precautionary statements:	Not regulated

2.3. Other hazards

These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if the pack is mechanically, thermally, electrically or physically abused to the point of compromising the enclosure.

If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact.

3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

SAFETY DATASHEET (SDS)

According to Regulation (EC) No 1907/2006 (REACH), No 1272/2008 (CLP)
and Commission (EU) Regulation No 453/2010

Power source Battery Pack APS 5
Customs commodity code 8507 60 000 0

Issue Date: July 15, 2020

Part	Chemical name	CAS No	Mass range in cell (g/g %)
Electrolyte	Contains Electrolyte salt and solvents.		5-20
Electrolyte salt	Lithium hexafluorophosphate	21324-40-3	0.05-5
Electrolyte solvent	Includes one or more of the following; Ethelyne Carbonate Ethyl methyl Carbonate Dimthyl Carbonate	96-49-1 623-53-0 616-38-6	5-20
PVDF	Polyvinylidenfluoride	24937-79-9	<1
Copper	Cu	7440-50-8	3-15
Aluminium	Al	7429-90-5	2-10
Cathode	Lithium nickel cobalt aluminium oxide	193214-24-3	20-50
Anode	Graphite Si	7782-42-5 7440-21-3	10-30
Steel, Nickel, and inert components		Various	Balance

4. SECTION 4: FIRST AID MEASURES

4.1. First aid measures

General guidelines: The hazardous components of this battery are contained within a sealed unit. The following measures are only applicable if exposure has occurred to components when a battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. The hazardous contents are caustic alkaline electrolytes contained in cells with lithium metal oxide cathodes, graphite and carbon anodes and Polyvinylidenfluoride binders.

Eye contact: If eye contact with contents of an open cell occurs, immediately flush the contaminated eye(s) with water.

Skin contact: Immediately flush with water. If irritation or pain persists, seek medical attention.

Inhalation: Remove the patient from exposure into fresh air, seek medical attention.

Ingestion: Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Quickly transport victim to an emergency care facility.

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

Acute: The contents of the battery are rated as corrosive. Ingestion of the electrolyte could lead to severe gastrointestinal tract irritation with nausea, vomiting and potentially burns. Inhalation of vapours may lead to severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing. Eye contact may lead to severe eye irritation or in worst-case scenario irreversible damage and possible eye burns. Skin contact may lead to irritation and possible skin burns.

Chronic: Skin contact may aggravate/exacerbate existing skin conditions, such as dermatitis. Chronic inhalation may lead to the same symptoms as listed for acute inhalation above.

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

ADVICE TO DOCTOR: Treat symptomatically if the person comes into contact with the corrosive electrolyte liquid contents of a damaged battery.

5. SECTION 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media: Cold water and dry powder in large amount are applicable.
Use metal fire extinction powder or dry sand if only few cells are involved.

Unsuitable extinguishing media: Not known

5.2. Special hazards arising from the substance or mixture

May form hydrofluoric acid if electrolyte comes into contact with water.
In case of fire, the formation of the following flue gases cannot be excluded:
Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide.

5.3. Advice for fire-fighters

Wear self-contained breathing apparatus and protective suit.
If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent. Cel l is not flammable but internal organic material will burn if the cell is incinerated.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Remove the vehicle to the safe area. Cordon off the hazardous area within 100 m. This range may be adjusted after chemical reconnaissance. Remove all persons not involved in the work. Use PPE in the hazard area. Eliminate the cause of leakage. Adhere to fire safety regulations. Give first aid to injured persons. Send personnel from the fire area to medical examination.

6.2. Environmental precautions

Avoid escape to the drainage system or surface water bodies. Notify sanitation and epidemic control authorities in case of damage to the environment

6.3. Methods and material for containment and cleaning up

Remove batteries.
Put spilled electrolyte to a separate container using inert absorbent (sand, sawdust, vermiculite, and kieselguhr) and send to further neutralization. Wash spillage area with hot water and wipe with dry cloth. Turin over the soil in if electrolyte cannot be removed.

6.4. References to other sections

Information on personal protective equipment is given in Section 8 herein and information on removal is given in Section 13 of the present document.

7. SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid short-circuiting the battery. Avoid mechanical damage of the battery. Do not open or disassemble. Advice on protection against fire and explosion. Keep away from open flames, hot surfaces and sources of ignition. .

7.2. Conditions for safe storage, including any incompatibilities

Storage recommendations:	Storage at room temperature (approx. 20°C) at approx. 20~60% of the nominal capacity (OCV approx. 3.6 - 3.9 V).
Packaging and packaging materials:	Battery cell (1 piece) is packaged in a polymeric permanent container. Battery assembly is then packaged in an enclosure and cardboard box.

7.3. Specific guidelines

Check the container for contaminants and other materials before use. Container shall eliminate a short circuit hazard.

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure Control Measures

Exposure Limit Values:	Airborne exposures to hazardous substances are not expected when the batteries are used for their intended purposes. Exposure standards are not applicable to the sealed articles.
Biological Monitoring:	Not applicable.
Control Banding:	Not applicable.
Recommended monitoring procedures:	Follow standard monitoring procedures.
Derived no-effect level (DNEL):	Not applicable
Derived minimal effect level (DMEL):	Not applicable
Predicted no-effect concentrations (PNECs):	Not applicab

8.2. Suitable exposure controls:

Provide workplaces with primary fire extinguishing means. Handle batteries in well-

	ventilated areas. Before being discharged into the atmosphere, air with harmful substances shall be cleaned to the regulated threshold values. At the end of each shift work areas shall be subject to dry or wet cleaning with the use of industrial vacuum cleaners. Food storage, meals and smoking in areas, where batteries are handled, shall be avoided. Wash hands and rinse the mouth before eating; take shower after the shift
Personal protective equipment:	
- eyes and face protection:	Not needed during normal handling.
	
- skin (hands etc.) protection:	Not needed during normal handling of batteries. In case of emergency use safety gloves and skin protecting creams, cotton coveralls or general safety workwear.
 	
- respiratory protection:	Not needed during normal handling. In case of emergency: use bulky dressing or masks with aerosol cartridge.
	
- protection against heat exposure:	Not applicable

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance:	Products with the shape as shown in detailed drawings with leads and terminals at ends of each cell. Electrolyte is a homogeneous liquid with no visible suspended particles.
Colour:	In accordance with test samples
Odour:	Battery does not have any odour, electrolyte has characteristic odour
Odour threshold:	Not applicable
pH:	Not applicable
Melting point:	No information is available
Flash point:	Not applicable
ignition temperature:	Not applicable
Lower flammability level:	No information is available
Water solubility:	Insoluble
Solubility in other substances:	Insoluble

9.2. Other information

battery capacity:	total capacity – 4900 mA×h (4.9 Axh);
Power:	18,1W
Rated voltage:	3.7 V

10. SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

In normal conditions, there is no reaction of batteries with the environment.

10.2. Stability

In normal storage and handling conditions batteries are stable.

10.3. Possibility of hazardous reactions

No hazardous reactions are known.

10.4. Conditions to avoid

Avoid heating, exposure to open flame, direct sunlight and mechanical damage
Avoid positive and negative terminals closing with metal items. At the same time extremely high short circuit currents may occur. Batteries shall not be disassem-

bled.

10.5. Hazardous decomposition products

In case of open cell, there is the possibility of hydrofluoric acid and carbon monoxide release.

11. SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Skin contact:	Not irritating to skin; does not have resorptive effect on skin
Eye contact:	Direct contact of batteries with eyes is unlikely
Inhalation:	Batteries inhalation is unlikely
Ingestion:	Batteries ingestion is unlikely
Chronic toxicity:	No information is available
Acute toxicity:	No information is available
Respiratory sensitisation:	None
Skin sensitisation:	None
Mutagenic effects:	electrolyte is mutagenic
Carcinogenicity:	None
Reproductive toxicity:	None
Specific target organ toxicity:	Electrolyte has narcotic and neurotoxic effects

11.2. Other information

No gonadotropic or teratogenic effect
Electrolyte has moderate cumulative properties

12. SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

No information is available

12.2. Stability and degradability

When contacting with the environment batteries do not produce secondary hazardous products, but result in soil and water bodies' pollution. Electrolyte vapours may result in air pollution

12.3. Bioaccumulative potential

Poor biological dissimilation (less than 10 %)

12.4. Mobility in soil

No information is available

12.5. Results of PBT and vPvB assessment

No information is available

12.6. Other adverse effects

No adverse effects on bacteria

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Waste treatment methods are similar to methods applying to end products.

13.2. Information on neutralization locations and methods

When spilled, batteries shall be gathered and sent to recycling or disposal in accordance with environmental protection requirements and effective regulations.

14. SECTION 14: TRANSPORT INFORMATION

14.1. UN Number

3480

14.2. UN Proper shipping name

"Li-ion batteries (including Li-Poly batteries)"

14.3. Package group

II

14.4. Environmental hazards

No hazard to the environment if used properly

14.5 Special precautions for user

Emergency card 905 for railway transportation, OEM emergency card for road transportation
Road/railroad transportation (ADR/RID, ADR): package group II, M4; KV, UK, label 9
Sea transportation (IMDG): package group II, code 9033
Air transportation (IATA): package group II, packing instruction 965 (section II), 966 (section II) and 967 (section II) according to the 61-st edition of the IATA Dangerous Goods Regulations
Container marking: "This side up", "Maximum temperature 35 °C"; marking "Rechargeable Li-ion"

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable. Batteries shall be transported packaged only

15. SECTION 15: REGUATORY INFORMATION

GOST 19433-88	Dangerous goods. Classification and marking
GOST 31340-2013	Labelling of chemicals. General requirements
GOST 32419-2013	Globally Harmonized System of Classification and General requirements
GOST 32423-2013	Mixtures classification of hazard for health
SanPiN 2.1.7.1322-03	Hygienic Requirements for Placement and Decontamination of Production and Consumption Waste
GN 2.2.5.2893-11	Maximum permissible levels (MPL) of skin contamination by harmful substances
GN 2.2.5.1313-03	Maximum permissible concentration (MPC) of harmful substances in work area air.
GN 2.1.5.1315-03	Maximum permissible concentration (MPC) of chemicals in water of water bodies used for potable water, business, domestic and cultural needs
GN 2.1.6.1338-03	Maximum permissible concentration of pollutants in the air of inhabited areas
R 2.2.755-99	Hygienic criteria of evaluation and classification of working environment by harm and hazard of exposure factors

"Regulations for water quality of fishery water bodies including regulations for maximum permissible concentrations of harmful substances in water of water bodies used for fishery". Approved by Decree No 20 dd 18.01.2010 by the Federal Fishery Agency.
"Unified sanitary and epidemiological requirements to products, which are subject to sanitary and epidemiological and hygienic supervision (inspection)" (approved by the Decree of the Customs Union Board dd May 28, 2010 No 299), Ch. II, Section 19
"Unified list of products subject to sanitary and epidemiological and hygienic supervision at customs board and customs area of the CU", approved by the Decree of the Customs Union Board dd May 28, 2010 No 299
PN ISO 11014-1:2008 Standard: "Chemical safety - Safety data sheet for chemical products".
Regulation No 1907/2006/WE on Registration, Evaluation and Authorization and Limited Use of Chemicals (REACH), establishing the European Chemicals Agency and amending the Directive 1999/45/EC and superseding the Council Regulation (EEC) No 793/93 and Regulation (EC) No 1488/94, and EC Directive 76/769/EEC and EC Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.
Regulation 1272/2008/WE of the European Parliament and Council dd December 16, 2008 on Classification, Labelling and Packaging of Chemicals and Mixtures, amending and superseding EC Directives 67/548/EEC and 1999/45/EC and amending the EC Regulation (EC) No 1907/2006.
EC REGULATION (EC) No 790/2009 dd August 10, 2009 amending the Regulation (EC) No 1272/2008 of the European Parliament and Council for the adaptation to the scientific and technical development in terms of classification, labelling and packaging of chemicals and their mixtures.
EC REGULATION (EC) No 453/2010 dd May 20, 2010 amending the Regulation (EC) No 1907/2006 of the European Parliament and Council in terms of registration, evaluation, authorization and limited use of chemicals (REACH).

16. SECTION 16: OTHER INFORMATION

16.1. Abbreviations and acronyms

IUPAC	International Union of Pure and Applied Chemistry
CAS No	Unique numerical indicator of chemical compounds, polymers, biological sequences of nucleotides or aminoacids, mixtures and allows introduced in the Chemical Abstracts Service register
EC No	Number determined by the EC for the classification and labelling of hazardous sub-

		stances
	GOST	National standard approved by the "Interstate Council for Standardization, Metrology and Certification" (ICSMC)
	CU TR	Technical Regulation of the Customs Union
	MESG	Maximum experimental safe gap
	MEOL	Minimum explosive oxygen level
16.2.	**Disclamer**	
		Information presented herein is given for the description of batteries in terms of required safety rules. It shall not guarantee certain properties and it is based on scientific information, normative and technical regulations, that are currently available. No representations are given
16.3.	**Regulation of reference documentation**	
		National standards and codes, which are referred herein, are mandatory in the Russian Federation and states of the CIS that have accepted them. In other states they shall be used for reference only

Issued by:

Lead Quality Manager
at BELTEX OPTIC
/ Taras A. /

" 15 " July 2020