

Material Safty

7th October 2021

Section 1. | Product and Company Identification

Name of company	Anton Bauer
Address	
Telephone number	+44 1284 757918
Fax number:	
Website	www.antonbauer.com
Email	support@vitecgroup.com
Emergency contact	
Name of Product	Rechargeable Lithium-Ion battery pack
Model	All models listed in the table in Section 2

Section 2. | Composition of the goods

Battery Model	Voltage	Capacity	Wh	Chemistry	Equivalent Lithium Content
Dionic 26V 98Wh	25.4V	3.9Ah	99Wh	Lithium-Ion	8.40g
Dionic 26V 240Wh	25.2V	9.9Ah	250Wh	Lithium-Ion	21.74g
Dionic XT 90	14.1V	6.9Ah	97Wh	Lithium-Ion	10.44g
Dionic XT 150	14.4V	10.8Ah	156Wh	Lithium-Ion	13.92g
Dionix XT 90	14.4V	6.8Ah	98Wh	Lithium-Ion	8.16g
Dionic XT 150	14.4V	10.7Ah	154Wh	Lithium-Ion	12.84g
GO90	14.4V	6.8Ah	98Wh	Lithium-Ion	8.04g
Titon Base	14.4V	4.75Ah	68Wh	Lithium-Ion	5.88g
Titon SL90	14.4V	6.6Ah	95Wh	Lithium-Ion	8.28g
Titon SI150	14.4V	9.9Ah	143Wh	Lithium-Ion	12.42g
Titon Micro 45	14.4V	3.25Ah	47Wh	Lithium-Ion	4.02g
Titon Micro 90	14.4V	6.5Ah	94Wh	Lithium-Ion	8.04g
Titon Micro 150	14.4V	9.75Ah	140Wh	Lithium-Ion	12.06
Titon 90	14.2V	6.5Ah	92Wh	Lithium-Ion	9.00g
Titon 150	14.4V	10Ah	144Wh	Lithium-Ion	12.00g
Titon 240	14.4V	16.5Ah	238Wh	Lithium-Ion	20.70g

UN Classification:	UN3480 (standalone battery pack) UN3481 (contained in equipment or packed with equipment)
Class:	9 - Miscellaneous Dangerous Goods

Section 3. | Hazards identification

During normal use there is no physical danger of ignition, explosion or chemical danger of hazardous material leakage and the product is safe. The chemical materials are stored in a hermetically sealed metal case which is designed to withstand temperatures and pressures encountered during normal use.

However, mistreatment, mishandling and/or misuse can cause damage to the product and there will be a possibility of electrolyte leakage, generation of smoke, rupturing metals, flaming or acid gas emissions.

IMPORTANT hazards and effects:

Human health effects:

- **Skin contact:** The vapour of the electrolyte stimulates the skin and can cause sores.
- **Inhalation:** The vapour of the electrolyte has an anaesthetic effect and stimulates the respiratory tract.
- **Eye contact:** The vapour of the electrolyte irritates eyes. An electrolyte-eye contact can cause sores and irritation of the eye. In particular, substances that cause a strong inflammation of the eyes are contained within.

Specific hazards:

- Do not expose the battery to fire as this may cause it to explode.
- Do not short circuit the battery as this may result in fire.
- If the electrolyte comes into contact with water it can generate detrimental hydrogen fluoride.
- Leaked electrolyte is an inflammable liquid and it should not be brought close to fire or exposed to any flames.

Environmental effects:

The battery pack is to be disposed according to the regulation procedures.

Section 4. | First Aid measures

This product contains organic electrolyte and in case of leakage the required actions are described below.

Skintouch – Remove all contaminated clothing and flush extraneous matter with soap and plenty of water immediately for at least 15 minutes. Get medical aid.

Eyes contact – In case of electrolyte contact with eyes, rinse immediately with plenty of water. Have the victims remove contact lenses if they are wearing them before rinsing. Do not let the victims rub their eyes. Get medical aid. If appropriate procedures are not taken loss of sight may occur.

Inhalation – Remove to fresh air. Give oxygen or artificial respiration if needed. Get medical aid.

Ingestion – Swallowing is not anticipated in normal condition. If accidentally eaten seek medical attention **immediately**, dilute by giving plenty of water. Assure that mucus does not obstruct the airway. Do not give anything by mouth to an unconscious person

Section 5. | Fire-fighting measures

Clear the fire area of all non-emergency personnel. Clear away any combustible substances from near the fire area.

Extinguishing method – Vapour generated from burning battery packs causes irritation of the eyes, nose and throat so when extinguishing any fire note the direction of the wind. Wear respiratory protective equipment.

Fire extinguishing agents – Plenty of water, CO₂, dry chemical foam and alcohol resistant foam are recommended.

Section 6. | Measures for electrolyte leakage

If accidental electrolyte leakage occurs move the battery packs away from the fire area immediately. Avoid contact with any spilled or released material. Immediately remove any contaminated clothing.

Person related measures – Wear personal protective equipment adapted to the situation (protection gloves, face protection, breathing protection).

Environment protection measures – In the event of battery rupture, prevent skin contact and collect all released material in a plastic lined container. Bind released ingredients with powder (rock salt, sand). Dispose of according to the local law and rules. Avoid leached substances to penetrate into the earth, canalization or water. Do not dispose of in drains.

Methods for cleaning up – If battery casing is dismantled, small amounts of electrolyte may leak. Package the battery tightly including ingredients together with sand, acid binder, universal binder or rock salt and if possible pick up and transfer to properly labelled containers. Reduction of gasses/fumes can be achieved with water dilution.

Note

- See section 8 for exposure control.
- See section 13 for disposal consideration.

Section 7. | Handling and storage

Handling

- Before handling the batteries, the users should read the product specification carefully.
- Avoid improper handling of the packaging box, so as not to drop or damage it.
- When packing the batteries do not allow the terminals to contact each other or make contact with other metals.
- Do not disassemble, reconstruct, swallow, incinerate or heat the product
- Do not leave unpacked batteries laying around in bulk
- Do not immerse the product in water or seawater.
- Do not throw the battery into a fire.
- Do dispose of, or recycle the product, according to your local government legislation/regulations.
- Keep away from children.
- Do keep the batteries in their original packaging.

Storage

- Do not store the battery packs in places where the temperature exceeds 35 degrees or under direct sunlight as this can affect the battery performance. Try to avoid storing the batteries in areas where large temperature changes occur.
- Be sure to install suitable fire extinguishing equipment, such as automatic extinguishers.
- Avoid storing the batteries in places of humidity and not expose the battery pack to condensation or water drops.
- Do not store in frozen environments.
- Avoid storing the battery pack in places where it can be exposed to static electricity to not damage the protection circuit of the battery pack.

Storage of large amounts:

- Follow the recommendations of the German Insurance Association (GDV - "Gesamtverband der Deutschen Versicherungswirtschaft e.V.") concerning lithium batteries: VdS 3103.
- In case of storage of large amounts (used storage volume > 7 m³ and/or more than 6 pallets) batteries shall be stored in fire-resistant or separated rooms or areas (e.g. warehouse or container for hazardous materials). Mixed storage with other products is not allowed. The storage area shall be monitored by an automatic fire detection system, connected to a permanently manned place

Section 8.

Exposure controls
(in case of electrolyte leakage from the battery)

Personal protective equipment:

- Respiratory protection: Respirator with air cylinder, dust mask.
- Hand protection: Protective rubber gloves.
- Eye protection: Safety goggles or protective glasses designed to protect against liquid splashes.
- Skin and body protection: Rubber apron and protective clothing, long sleeve and long trousers.

Section 9.

Physical and chemical properties

Appearance:

- Physical state: Solid.
- Colour: Black.
- Form: Generally prismatic shape, size can vary.
- Odour: No odour

Section 10.

Stability and reactivity

Batteries function by chemical reaction and are considered a chemical product. As such battery performance will deteriorate over time even if they are stored for a long period without being used. The various usage conditions such as charge, discharge, ambient temperature, etc if not maintained with the specified ranges can shorten the life expectancy of the battery, or the device in which the battery is used could be damaged by electrolyte leakage.

Stability – Chemical stability is stable under recommended storage conditions and normal use.

Hazardous reactions occurring under specific conditions. Conditions to avoid – Avoid direct sunlight, high temperatures, high humidity over prolonged periods, impact, deconstruction, sparks, open flames and possible ignition sources.

Materials to avoid – Conductive materials, Acids, Bases, Oxidising agents and sea water.

Hazardous decomposition products – Irritant or acrid gas may be emitted if burned or exposed to fire.

Section 11. | Toxicological information (in case of electrolyte leakage from the battery)

Irritation – Irritation to eyes, skin, respiratory tract.

Sensitivity – Sensitivity to skin

Respiratory irritation – Inhalation of vapours may cause irritation to the respiratory system.

Section 12. | Ecological information

- Lithium-Ion batteries do not present an environmental hazard.
- Heavy metal in battery: Mercury(Hg) and Cadmium(Cd) are neither contained nor used in batteries.
- Do not bury or dispose of the battery into the environment.

Section 13. | Disposal considerations

When the battery is worn out, no longer useable dispose of the battery in accordance with applicable regulations, which vary from country to country.

In more countries the discard of used batteries is forbidden and the end- users are invited to dispose of them properly using a local recycling scheme. Lithium-ion batteries should have their terminals insulated and be preferably wrapped in plastic bags prior to disposal.

Section 14. | Transport information

During the transportation of a large amount of battery packs by sea, air, trailer, or railway, do not leave these in a location of high temperature and do not allow them to be exposed to condensation. Confirm there is no leakage or spillage from the container. Properly store cargo to prevent falling, dropping and breakage. Prevent collapse of cargo piles and exposure to rain. The container must be handled carefully. Do not give shocks that result in dents on the product. Do not transport the goods near/together corrosive chemicals.

Please also refer to Section 7 – Handling and storage.

Note This report applies to transportation of by air or by sea or by road.
The rechargeable Li-ion Batteries listed in Section 2. have passed the test Section 38.3 of Recommendations on the Transport of Dangerous Goods, Manual of Test and Criteria.

The transportation of lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code.

UN regulation

UN Classification:	UN3480 (standalone battery pack) UN3481 (contained in equipment or packed with equipment)
Proper shipping name:	Lithium ion batteries Lithium ion batteries contained in equipment or Lithium ion batteries packed with equipment
Class:	9 - Miscellaneous Dangerous Goods
Packing group:	II
UN requirements:	Each battery pack is of the type proved to meet the requirements of each test in the UN Manual of Tests and Criteria, Part, sub-section 38.3

Regulation depends on region and transportation mode:

Worldwide, air transportation:

- **IATA-DGR:** packing instruction 965 Section II, when capacity is below 100Wh and other conditions are met.
- **IATA-DGR:** packing instruction 965 Section IB, when capacity is below 100Wh and other conditions are met.
- **IATA-DGR:** packing instruction 965 Section IA, when capacity is over 100Wh.
- When batteries are packaged with equipment or contained in equipment, refer to packing instruction 966 or 967 instead of 965.

Worldwide, sea transportation:

- IMO-IMDG Code [special provision 188]

Europe, road transportation:

- ADR [special provision 188]

Packaging Mark:

- Each package must be labelled with a lithium battery label.

Section 15. | Regulatory information

- UN (United Nations): Recommendations on the Transport of Dangerous Goods Model Regulations.
- ISO11014-2009 Safety datasheet for chemical products – Content and order of sections.
- GB/T 16483-2008 Safety datasheet for chemical products -Content and order of sections
- The International Maritime Dangerous Goods (IMDG) Code
- International Air Transport Association (IATA) Dangerous Goods Regulations, 62nd, 2021.
- The European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)
- The Regulations Concerning the International Transport of Dangerous Goods by Rail (RID) U.S. Department of Transportation (DOT)
- Globally Harmonized System of Classification and labeling of Chemicals (GHS)

Section 16. | Additional information

The above information is based on the present state of knowledge and current legislation of which we are aware and is believed to be correct.

Since this information may be applied under conditions beyond our control and with which maybe unfamiliar and since data made available subsequent to the data here of may suggest modifications of the information, we do not assume any responsibility for the result of its use.

This information is furnished upon condition that the person receiving it shall make their own determination of the suitability of the material for this particular purpose



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