

**MATERIAL SAFETY DATA SHEET**  
**Batteries, Wet, Non-Spillable, electric storage (VRLA - AGM / Gel)**

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**I. PRODUCT IDENTIFICATION** **COMPANY DETAILS**

Product Name	LEAD ACID BATTERY, WET, NON SPILLABLE, electric storage (VRLA - AGM / Gel)	LINCON BATTERIES LTD
Other Name	Battery, Wet, Non Spillable	Faraday Works, 25/26 Faraday Road, Leigh-on-Sea, Essex, SS9 5JU
Manufacturer's Product Code	Various	Tel: +44 1702 525 374
UN Number	2800	Emergency Number +44 1702 525 374
Dangerous Goods Class	8	
Packing Group	not assigned	
Hazchem Code	2W	
Poisons Schedule Number	56	

**PHYSICAL DATA**

Appearance	A battery is a manufactured article
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**2. HAZARD IDENTIFICATION**

Battery	<b>Mechanical</b>	VRLA - AGM / Gel batteries can be heavy. Correct manual handling techniques and/or mechanical lifting aids must be used.
	<b>Electrical</b>	VRLA - AGM / Gel batteries can contain large amounts of electrical energy, which can give high discharge currents and severe electrical shock if the terminals are short circuited.
	<b>Chemical</b>	VRLA - AGM / Gel batteries present no chemical hazard during normal operation provided recommendations for handling, storage, transport and use are observed
		VRLA - AGM / Gel batteries can emit hydrogen gas which is highly flammable and can form explosive mixtures in air. This can be ignited by a spark at any voltage, naked flames of other sources of ignition.  If the battery case is broken and the internal components exposed, hazards may exist which require attention
Plate Grid and Active Materials	<b>Metallic Lead, Lead alloys and Lead inorganic compounds</b> Lead poisoning is usually caused by inhalation of minute particles of Lead fume and dust, which are absorbed by the blood stream from the lungs and deposited in the bone marrow Lead is only slowly released from bone and thus has an accumulative effect causing chronic poisoning TOXIC by ingestion or inhalation of dust, vapour or fumes May cause harm to an unborn child Harmful by inhalation and if swallowed Danger of cumulative effects	
Battery Electrolyte	Severe IRRITATION and DAMAGE to internal tissues if swallowed IRRITATION of eyes and skin and may cause BURNS and DERMATITIS	
Case Material	Polypropylene or ABS; UL94 HB and Flame Retardant (FR) Grade. UL94:V0 Not hazardous in normal use Material can burn in a fire emitting toxic smoke and decomposition product	
Separator Material	PVC, Rubber or Fibre Glass. Fibres may cause IRRITATION to skin or eyes upon exposure and to internal tissues if inhaled or swallowed	

**3. COMPOSITION / INFORMATION ON INGREDIENTS**

Battery	A battery is a manufactured article				
Components	Plate Grid	<b>Substances</b>	<b>Approximate %</b>	<b>Chemical Symbol</b>	<b>CAS No</b>
		Metallic Lead	30 to 40	Pb	7439-92-1
Active Materials		Calcium	< 0.2	Ca	7440-70-2
		tin	< 3	Sn	7440-31-5
		Lead Monoxide	< 0.1	PbO	1317-36-8
Battery Electrolyte		Lead Dioxide (Lead IV Oxide)	35 to 45	PbO2	1309-60-0
		Barium Compound	< 1.5	Ba	7440-39-3
Case Material		Dilute Sulphuric Acid	10 to 20	H2SO4	7664-93-9
Separator Material		Acrylonitrile Butadiene Styrene copolymer	5 to 10	C8H8C4H6C3H3N	9003-56-9
		Polypropylene copolymer	5 to 10	(C3H6)N	9003-07-0
Separator Material		Polyvinylchloride	2 to 5	(C2H3Cl)N	9002-86-2
		Rubber	2 to 5		9006-04-6
		Absorbent Glass Mat (Borosilicate Glass Microfibre)	2 to 5		65997-17-3

Note: Inorganic Lead and Battery Electrolyte (Dilute Sulphuric Acid) are the main ingredients of VRLA, AGM or Gel batteries. Other substances may be present but in small amounts dependent on battery type. Contact Shield Batteries Ltd for further information


**4. FIRST AID MEASURES FOR ACUTE EXPOSURE**

**NOTE:** This information is only of relevance if the VRLA, AGM or Gel battery has been damaged, the contents exposed and persons have direct contact with the internal components

Components Plate Grids and Active Materials	<b>Exposure</b>	<b>Action</b>
	Inhalation	Remove the patient from exposure to fresh air
Self Protection for the First Aider	Ingestion	Seek advice from medical professional Wash out mouth with water and give plenty of water to drink. DO NOT INDUCE VOMITING
	Skin Contact	Seek advice from medical professional Wash off with plenty of water and soap to prevent accidental ingestion or inhalation
	Eye Contact	Seek advice from medical professional Immediately irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart Then take the person to hospital without delay
	Self Protection for the First Aider	Eye Protection (safety glasses or face shield) and protective duty gloves are required In case of inhalation, a face mask or respirator may be required
Battery Electrolyte	<b>SPEED IS ESSENTIAL - OBTAIN IMMEDIATE MEDICAL ATTENTION</b>	
	Inhalation	Remove the patient from exposure to fresh air If the patient continues to feel unwell, seek advice from a medical professional
	Ingestion	Wash out mouth with water and give plenty of water to drink. DO NOT INDUCE VOMITING If the patient continues to feel unwell, seek advice from a medical professional
	Skin Contact	Drench the patient with copious quantities of water Remove contaminated clothing and place in water to dilute the acid Continue to wash the affected area for at least 10 minutes Seek advice from medical professional
	Eye Contact	SPEED IS ESSENTIAL - OBTAIN IMMEDIATE MEDICAL ATTENTION Immediately irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart Then take the person to hospital without delay
Self Protection for the First Aider	Eye Protection (safety glasses or face shield) and heavy duty gloves are required In case of inhalation, a face mask or respirator may be required	

<b>Case Material</b>	Inhalation	Material can burn in a fire with toxic smoke and decomposition products Upon inhalation of decomposition products, keep patient calm, remove to fresh air and seek advice from a medical professional. If a large quantity is inhaled, take the patient to hospital
	Ingestion	Wash out mouth with water and give plenty of water to drink. DO NOT INDUCE VOMITING. If the patient continues to feel unwell, seek advice from a medical professional
	Skin Contact	Areas affected by molten material should quickly be placed under cold running water and a sterile protective dressing applied
	Eye Contact	May cause irritation or injury due to mechanical action and traces of battery electrolyte. Immediately irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart Then take the person to hospital without delay
	Self Protection for the First Aider	Eye Protection (safety glasses or face shield) and heavy duty gloves are required In case of inhalation, a face mask or respirator may be required
<b>Separator Material</b>	Inhalation	Remove patient from exposure to fresh air. If irritation persists, seek advice from a medical professional
	Ingestion	Wash out mouth with water and give plenty of water to drink. DO NOT INDUCE VOMITING. If the patient continues to feel unwell, seek advice from a medical professional
	Skin Contact	Wash out with skin, wash immediately with plenty of soap and water. If irritation persists, seek advice from a medical professional
	Eye Contact	May cause irritation or injury due to mechanical action and traces of battery electrolyte. Immediately irrigate with eyewash solution or clean water for at least 10 minutes, holding the eyelids apart Then take the person to hospital without delay
	Self Protection for the First Aider	Eye Protection (safety glasses or face shield) and heavy duty gloves are required In case of inhalation, a face mask or respirator may be required

### 5. FIRE FIGHTING AND EXPLOSION HAZARD MEASURES

<b>VRLA / AGM / Gel</b>	Explosion Hazard	Batteries can emit hydrogen gas which is highly flammable and can form explosive mixtures in air. This can be ignited by a spark at any voltage, naked flames or other sources of ignition  Batteries in use will be part of an electrical circuit and must be isolated from the power source before attempting to put out a fire. Switch the power OFF before disconnecting any batteries from the power source
		
	Suitable Extinguisher Types	CO2, Foam, Dry Powder
	Unsuitable Extinguisher Types	Water extinguishers must never be used to put out an electrical fire
	Hazardous Combustion & Decomposition Products	Carbon Monoxide, Sulphur Dioxide, Sulphur trioxide, Lead fume and vapour, toxic fumes from decomposition of battery case materials
Advice for Fire Fighters	Full face visor or safety goggles Respiratory equipment or self contained breathing apparatus (SCBA) Full acid resistant protective clothing must be worn in fire fighting conditions	

### 6. ACCIDENTAL RELEASE MEASURES

<b>NOTE:</b>	<b>This information is only relevant if the battery has suffered damage and is broken</b>	
<b>Battery</b>	Damage	Non spillable batteries are designed to be safe to handle and not to leak battery electrolyte under normal conditions In case of accidental damage, protective gloves are required to pick up the battery to protect against unseen electrolyte leakage
	Thermal Runaway	Under extreme conditions of charging, equipment malfunctions and/or battery failure, high voltage and high temperature conditions may occur causing the evolution of Hydrogen Sulphide (H2S) gas, which is toxic. If detected by its odour of rotten eggs (at low concentration), switch off the charging equipment and evacuate all personnel from the area and ventilate well. Seek advice before attempting to re-start charging
<b>Plate Grids and Active Materials</b>	Personal Precautions	Eye Protection (safety glasses or face shield) and heavy duty gloves are required If the material is wet, a face mask or respirator is not required If the material is dry, a face mask or respirator is required
	Clean Up Methods	Large solid pieces may be picked up and bagged for recycling Never use a brush to sweep up debris - it may create lead dust in the air  Wet clean the spill area to remove all trace of debris. Battery debris and cleaning materials must be collected and placed in an inert sealed container (eg self seal plastic bag or bucket) for disposal. See also Section 13
	Environmental Precautions	Do not allow material to enter a watercourse. Exposed Lead materials must be placed in an inert sealed container (eg self sealed plastic bag or bucket) for disposal. See Also Section 13
<b>Battery Electrolyte</b>	Personal Precautions	Ensure suitable acid resistant PPE (including heavy duty gloves, safety glasses and respiratory protection) is worn during removal and clean up of spillages
	Clean Up Methods	SMALL SPILLAGES: Neutralise and absorb the spillages using soda ash, sodium bicarbonate, sodium carbonate or calcium carbonate powder.  Wet clean the spill area to remove all trace of debris. Battery debris and cleaning materials must be collected and placed in an inert sealed container (eg self seal plastic bag or bucket) for disposal. See also Section 13 LARGE SPILLAGES: Large amounts of electrolyte spillage are unlikely with VRLA, AGM or Gel batteries as the electrolyte is fully absorbed in the active materials and separator. Bund the spillage area using dry sand, earth, sawdust or other inert material.  Neutralise the electrolyte using soda ash, sodium bicarbonate, sodium carbonate or calcium carbonate powder  Wet clean the spill area to remove all trace of debris. Battery debris and cleaning materials must be collected and placed in an inert sealed container (eg self seal plastic bag or bucket) for disposal. See also Section 13
	Environmental Precautions	Battery electrolyte must not be allowed to enter any drains, sewage system or watercourse.
<b>Case Material</b>	Clean Up Methods	Assume battery case material is contaminated and proceed as for Plate Grids and Active Materials above
<b>Separator Material</b>	Clean Up Methods	Assume separator material is contaminated and proceed as for Plate Grids and Active Materials above

## 7. HANDLING AND STORAGE

Battery	Precautions for Safe Handling	<p>PPE: No specialist PPE is required except that for handling heavy weights                      Hygiene: There are no specialist requirements beyond good standard workplace practices                      Mechanical Lifting Aids: Will be required to move pallets of batteries and large single batteries                      Mechanical Handling Aids: Will be required to handle individual batteries over 25kg in weight</p> <p>General: DO NOT DROP BATTERIES. Dents and deformation of the outer case may be an indication of internal damage to the battery. Cracks will allow electrolyte to escape. DO NOT STORE BATTERIES LID TO LID SO THAT TERMINALS SHORT CIRCUIT.</p>
	Conditions for Safe Storage	<p>Store batteries in a cool well ventilated area with a solid impervious surface and adequate containment in the event of accidental acid spillage                      Store under a roof and protect against direct sunlight and adverse weather conditions, including rain, snow and other sources of water                      Storage of large quantities of batteries may require approval from local EPA and/or local water authorities                      Take special care in dry conditions to prevent electrostatic discharge.                      Protect against physical damage and exposure to organic solvents and other incompatible materials                      DO NOT STORE BATTERIES CLOSE TO HEAT SOURCES, NAKED FLAMES AND SPARKS</p> <p>Store batteries in their original packaging wherever possible. When batteries are removed from their original packaging, ensure that the new packaging protects the battery/ies from damage and the risk of short circuit from the terminals</p>
	End of Life	Ensure batteries are removed from equipment at the end of life and are collected for recycling by an approved contractor

## 8. EXPOSURE CONTROL / PERSONAL PROTECTION

Battery	Control Parameters	<p>There are no special control parameters for the handling, storage or installation of VRLA, AGM or Gel batteries                      Batteries can emit hydrogen gas which is highly flammable and can form explosive mixtures in air. Never install VRLA, AGM or Gel batteries in gas tight enclosures for storage, transport or useage.</p>
	Exposure Control	There are no special control parameters for the handling, storage or installation of VRLA, AGM or Gel batteries
	Personal Protection	<p>When there is no evidence of damage or visible traces of liquid (electrolyte) or solid deposits on the batteries, they may be handled safely without extra PPE                      Ensure electrical insulation equipment is used when installing batteries                      Remove ALL metallic objects from personnel when working with batteries (eg jewellery, pens, torches etc)</p> <p>Where there are signs of damage or liquid or solid deposits, rubber gloves and acid resistant clothing must be worn when handling the affected batteries and packaging to protect against the effects of any electrolyte that may be present                      If free electrolyte is suspected, then safety glasses must be worn and if large amounts are present, chemical goggles or face shield should be used</p>
	Precautionary Statement	WARNING: RISK OF FIRE OR BURNS. DO NOT DISASSEMBLE, HEAT ABOVE 50°C OR INCINERATE

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Battery	<p>The main components are listed in Section 2, above.                      The undamaged product is a manufactured article in an inert ABS or PP case which will burn if subjected to high temperatures or sources of ignition. Some battery types are made with Flame Retardant ABS or PP cases.</p>
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The information below refers to the physical and chemical properties of the battery components and substances. This information is for reference only

	Appearance		Safety Related Data	
<b>Plate Grids and Active Materials</b>	Form Colour Odour	Solid Grey or Brown Odourless	Solidification Point Boiling Point Solubility in Water Solubility in acid or alkiline solutions Density (at 20°C) Vapour Pressure (at 20°C)	327°C 1740°C Very Low (0.15mg/l) Yes, dependent on the strength of solution 11.35g/cm3 Undetectable
<b>Battery Electrolyte</b>	Form Colour Odour	Liquid Colourless Odourless	Solidification Point Boiling Point Solubility in Water Density (at 20°C) Vapour Pressure (at 20°C)	-35 to -60°C Approx 108 to 114°C Complete Variable up to 1.35g/cm3 10-20mmHg
<b>Case Material</b>	Form Colour Odour	Solid Various, usually Grey or Black Odourless	Softening (Vicat) Point Flash Point Solubility in Water Solubility in acid or alkiline solutions Density (at 20°C) Vapour Pressure (at 20°C)	>100°C (DIN 53460) >330°C Insoluble Soluble in polar solvents, aromatic solvents, chlorinated hydrocarbons 1.07 - 1.4 g/cm3 (DIN53479) Undetectable
<b>Separator Material</b>	Form Colour Odour	Solid or Fibrous Various, usually White or Grey Odourless	Solidification Point Boiling Point Solubility in Water Density (at 20°C) Vapour Pressure (at 20°C)	820°C >2500°C Insoluble 2.23g/cm3 Undetectable



## 10. STABILITY AND REACTIVITY

Battery	Stability	Within the operational range of -20°C to +50°C the undamaged product is stable
<b>Plate Grids and Active Materials</b>	Materials and Conditions to Avoid	Powdered Lead reacts violently with fused ammonium nitrate and sodium acetylide. Reacts violently when in contact with chlorine trifluoride
<b>Battery Electrolyte</b>	Possibility of Hazardous Reactions	<p>Dilution of the higher concentrated grades with water may liberate excessive heat                      Highly reactive with metals and organic materials                      On contact with metals may generate hydrogen which forms explosive mixtures with air                      Destroys organic materials such as cardboard, wood, textiles, etc                      Vigorous reaction with sodium hydroxide and alkalis</p>
	Hazardous Decomposition Products	Sulphur Oxides
<b>Case Material</b>	Materials and Conditions to Avoid	<p>To avoid thermal decomposition - do not overheat                      Starts to decompose at temperatures &gt;275°C                      Powerful Oxidising Agents</p>
	Hazardous Decomposition Products	Monomers, other degradation products, traces of hydrogen cyanide
<b>Separator Material</b>	Stability	Stable Material
	Materials and Conditions to Avoid	Incompatible with Hydrofluoric acid and concentrated sodium hydroxide
	Hazardous Decomposition Products	No hazardous polymerisation expected

## 11. TOXICOLOGICAL INFORMATION

<b>Battery</b>		This information does not apply to the undamaged VRLA, AGM or Gel battery. It is of relevance if the battery is broken and the components released to the environment. Exposure Limits may vary according to National law and regulations
<b>Plate Grids: Metallic Lead Lead Alloys</b>	Acute Toxicity 	Toxic by inhalation or ingestion Chronic Poison Lead is a poison that affects virtually every system in the body Symptoms include fatigue, headaches, constipation, aching bones and muscles, gastrointestinal tract disturbances and reduced appetite  Blood Lead levels of 80µg/dl and above have been associated with both acute and chronic effects of Lead poisoning
<b>Active Materials Lead Dioxide</b>	Acute Toxicity 	Toxic by inhalation or ingestion Chronic Poison  Chronic exposure to Lead Compounds may lead to a build up of lead in the body, giving rise to a variety of health problems including anaemia, kidney and liver damage, impaired eyesight, memory loss and CNS2 damage
<b>Battery Electrolyte</b>	Corrosive 	Corrosive: the more concentrated solutions can cause serious burns to the mouth, eyes and skin.  Harmful by ingestion and skin contact  Inhalation: Mist is a severe irritant to the respiratory tract. Fluid build up on the lung (pulmonary oedema) may occur up  Ingestion: Will immediately cause severe corrosion of and damage to the gastrointestinal tract  Skin Contact: Causes severe chemical burns  Eye Contact: Risk of serious damage to eyes. Causes severe burns. May cause prolonged or permanent damage or even total loss of sight. Mist will cause irritation
<b>Case Material</b>		According to available information, the product is not harmful to health provided it is correctly handled and processed according to given recommendations
<b>Separator Material</b>		Based on animal implantation and epidemiologic studies, glass microfibres are thought to have some limited carcinogenic potential and as such are treated as Group 2B materials (IARC, US). The material should be treated as a category 3 carcinogen (Europe). limited evidence of carcinogenic effect

## 12. ECOLOGICAL INFORMATION

<b>Battery</b>		This information does not apply to the undamaged VRLA, AGM or Gel battery. It is of relevance if the battery is broken and the components released to the environment.
<b>Plate Grids and Active Materials</b>	Metallic Lead, Lead Alloys and Lead Dioxide  Ecotoxicity   Effect in the Aquatic Environment	Chemical and physical treatment is required for the elimination of Lead from water. Waste water containing Lead must not be disposed of in an untreated condition  The General Classification for Lead Compounds (R50/53) does not apply to Battery Lead Oxide Tests in 2001 and 2005 concluded that Battery Lead Oxide is not toxic for the environment, neither R50 nor R50/53 nor R51/53 applies to battery Lead Oxide Risk Phrase R52/53 (Harmful to aquatic organisms, may cause long term effects in the aquatic environment) applies to Battery Lead Oxide applies to Battery Lead Oxide Toxicity for Fish: 96 h LC 50 > 100 mg/l Toxicity for Daphnia: 48 h LC 50 > 100 mg/l Toxicity for Algae: 72 h LC 50 > 10 mg/l
<b>Battery Electrolyte</b>	Ecotoxicity   Persistence and Degradation	In order to avoid damage to the sewerage system the acid has to be neutralised by means of soda ash, sodium bicarbonate or sodium carbonate before disposal  Ecological damage is possible by change of pH. Electrolyte solution reacts with water and organic substances, causing damage to flora and fauna  Electrolyte solution may also contain components of lead than can be toxic to aquatic environments  Remains indefinitely in the environment as sulphate.
<b>Case Material</b>	Elimination Information Behaviour and Environmental Fate	No data available: Insoluble in water  Owing to the consistency of the product and its insolubility in water it will apparently not be bio-available
<b>Separator Material</b>		No data available: Insoluble in water Not thought to pose any environmental risk

## 13. DISPOSAL INFORMATION


<b>Battery</b>	Europe	Spent VRLA, AGM or Gel batteries are subject to the requirements of the Batteries Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators. Spent batteries MUST be sent for recycling through an authorised contractor at end-of-life The WEEE Directive 2002/96/EC (Waste Electrical and Electronic Equipment) applies. Spent batteries MUST be removed from electrical and electronic equipment at end-of-life.
	Worldwide	VRLA, AGM and Gel batteries contain inorganic Lead compounds and sulphuric acid which are damaging to the environment Spent batteries must be disposed of in an environmentally friendly manner in accordance with local national laws and regulations
		VRLA, AGM and Gel batteries must not be dismantled, burnt or incinerated as a means of disposal End of Life batteries may still be electrically "live" and contain electrical energy. The same care and attention to safe handling should be taken as when handling new batteries Particular care must be taken to avoid short circuiting the battery terminals
<b>Plate Grids and Active Materials</b>	Europe Worldwide	Metallic Lead and active materials (Lead oxides) must be recycled. Disposal must be carried out in accordance with the European Hazardous Waste Directive 2008/98/EC
	<b>Battery Electrolyte</b>	Disposal must be carried out in accordance with the European Hazardous Waste Directive 2008/98/EC on the protection of the environment through criminal law  Disposal should be carried out in accordance with local, state or national law  Battery electrolyte is dilute sulphuric acid, the strength of which depends on the state of charge of the batteries. It must be neutralised before disposal. See SECTION 6 for clean-up and disposal advice
<b>Case Material</b>		Do not dispose of this product into sewers, any ocean or watercourse in order to prevent marine animals and birds from ingesting Recycling is encouraged Disposal by controlled incineration or source landfill in accordance with local national laws and regulations may be acceptable
<b>Separator Material</b>		Constitutes a special waste by virtue of hazardous substance content. Dispose of via landfill site  Disposal by controlled source landfill in accordance with local national laws and regulations may be acceptable

## 14. TRANSPORT INFORMATION

Battery	Land Transport	<b>Land Transport: ADR / RID</b> UN No Classification Proper Shipping Name Packing Group ADR Tunnel Code ADR / RID	UN2800 Class 8 BATTERIES, WET, NON SPILLABLE electric storage Not Assigned E New and spent batteries are exempt from all ADR / RID (special provision 598)
	Sea Transport	<b>Sea Transport: IMDG Code</b> UN No Classification Proper Shipping Name EmS	UN2800 Class 8 BATTERIES, WET, NON SPILLABLE electric storage F-A, S-B Non spillable batteries meet the requirements of Special Provision 238; they are exempt from all IMDG codes and are not subject to special regulation for sea transport
	Air Transport	<b>Air Transport: IATA-DGR</b> UN No Classification Proper Shipping Name Special Provision A48 Special Provision A67  Special Provision A164:	UN2800 Class 8 BATTERIES, WET, NON SPILLABLE electric storage Packaging Test not considered necessary Shield's VRLA, AGM and Gel batteries meet the requirements of Packing Instruction 872 The battery has been prepared for transport so as to prevent: 1. A short circuit of the battery's terminals by packaging in a strong and sturdy carton, AND/OR 2. The battery has been fitted with an insulating cover (made from ABS) which prevents contact with the terminals 3. Unintentional activation is thus prevented The words "NOT RESTRICTED" and the Special provision Number (SP) must be indicated on all shipping documents The battery has been prepared for transport so as to prevent: 1. A short circuit of the battery's terminals by packaging in a strong and sturdy carton, AND/OR 2. The battery has been fitted with an insulating cover (made from ABS) which prevents contact with the terminals 3. Unintentional activation is thus prevented
	All modes of Transport		<b>DO NOT PLACE VRLA, AGM or GEL BATTERIES INSIDE SEALED OR GAS TIGHT ENCLOSURES</b>  VRLA, AGM and Gel batteries can emit hydrogen gas which is highly flammable and can form explosive mixtures in air. This can be ignited by a spark at any voltage, naked flames or sources of ignition

## 15. REGULATORY INFORMATION

Batteries supplied by Shield Batteries Ltd are subject to The Batteries and Accumulators (containing Dangerous Substances) Regulations 1994 and are marked in accordance with the requirements of Regulation 4.

Battery	Required Marking		Crossed out wheely-bin indicating "SEPARATE COLLECTION" FOR ALL BATTERIES AND ACCUMULATORS. Not to be disposed of with general domestic, commercial or industrial waste  The Pb symbol indicates the heavy metal content of the battery and enables a lead acid battery to be sorted for recycling.  Ref: The Batteries Directive 2006/66/EC
			The International Recycling Symbol, required by law in many countries world-wide to facilitate the identification of secondary batteries and accumulators for recycling  Ref: IEC 61429:1995, Marking of Secondary Cells and Batteries with the International Recycling Symbol ISO7000-1135
	EC Directives		Directive 2006/66/EC, on batteries and accumulators, Paragraph (Recital) 29 states: "Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment does not apply to batteries and accumulators used in electrical and electronic equipment"

## 16. OTHER INFORMATION

Battery	General Information		Never install batteries in a gas tight enclosure as gasses may be generated during use  Never short circuit battery terminals as sparks and arcs can injure personnel and are a fire hazard
	Abbreviations	Pb Ba Ca Sn PbO2 H2SO4 VRLA AGM	The Chemical Symbol for Lead The Chemical Symbol for Barium The Chemical Symbol for Calcium The Chemical Symbol for Tin The chemical formula for Lead Dioxide The chemical formula for Sulphuric Acid Valve Regulated Lead Acid battery Absorbed Glass Mat battery
	Risk Phases	R21 R22 R23 R24 R25 R35 R36 R37 R38 R49 R52 R53	Harmful in contact with skin Harmful if swallowed Toxic by inhalation Toxic in contact with skin Toxic if swallowed Causes severe burns Irritating to eyes Irritating to respiratory system Irritating to skin May cause cancer by inhalation Harmful to aquatic organisms May cause long term adverse effects in the aquatic environment
	Training Advice		See Section 7 for general advice