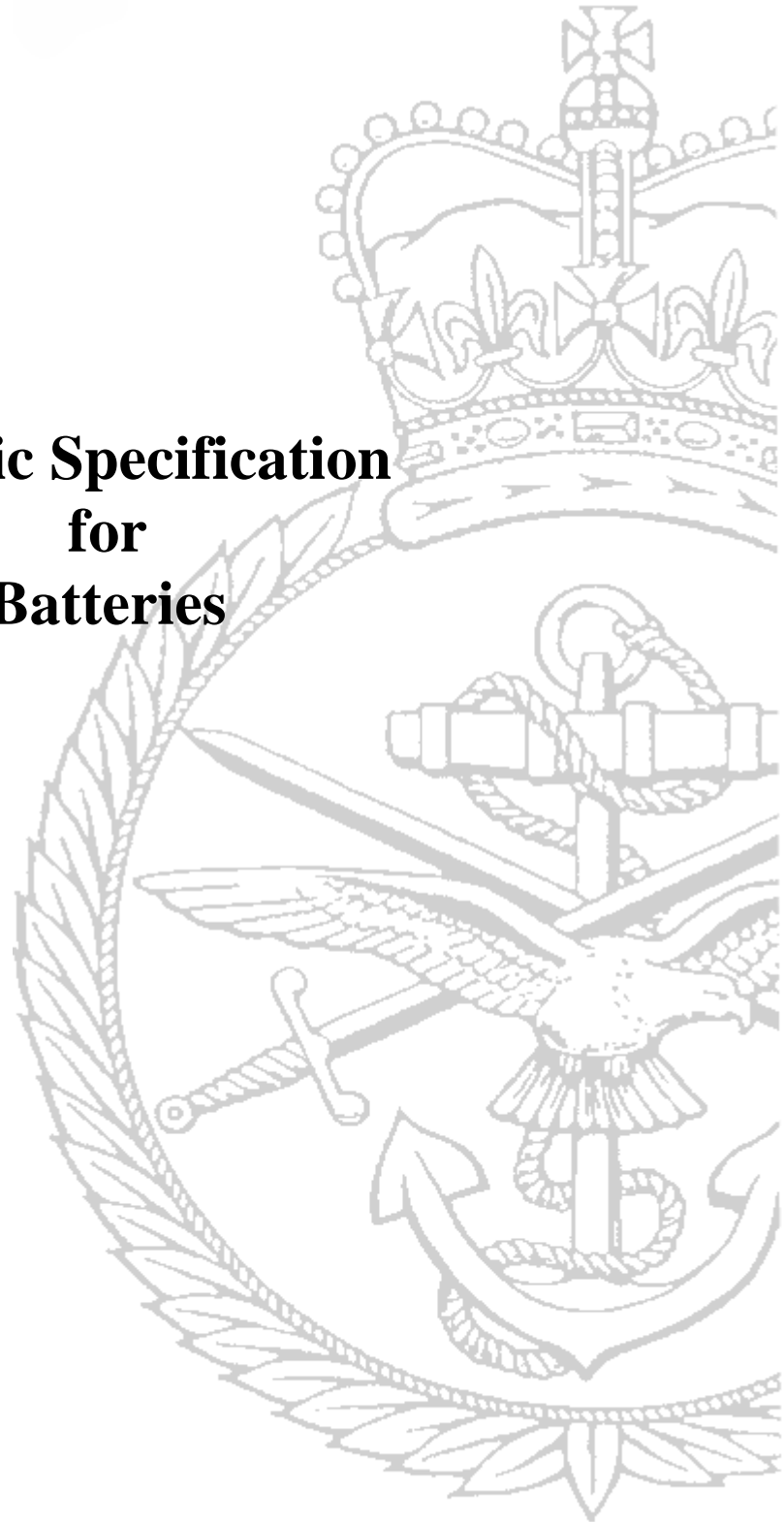




Ministry of Defence Defence Standard 61-21

Issue 2 Publication Date 22 August 2003

Generic Specification for Batteries



AMENDMENT RECORD

Amd No	Date	Text Affected	Signature and Date

REVISION NOTE

Issue 2 revises the requirements for:

Product Conformity Certification (PCC)

Packaging, Labelling and Transportation

HISTORICAL RECORD

This standard supersedes the following:

Interim Defence Standard (Def Stan) 61-3 Issue 5 dated 30th November 1992.

Defence Standard (Def Stan) 61-9 (Part 1)/Issue 4 dated 18th June 1993.

Defence Standard (Def Stan) 61-21 Issue 1 dated 26th May 2000.

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PREFACE

Standards for Defence

Generic Specification

For

Batteries

- a.** This standard provides the generic requirements for batteries for Ministry of Defence use.
- b.** This standard has been produced on behalf of the Defence Materiel Standardization Committee (DMSC), by the Defence Battery Standardization Committee (DBSC), for use where there is no suitable National or other standard which is acceptable to the Ministry of Defence.
- c.** This standard has been agreed by the authorities concerned with its use and is intended to be used whenever relevant in all future designs, contracts, orders etc. and whenever practicable by amendment to those already in existence. If any difficulty arises which prevents application of this Defence Standard and its associated supplements, the UK Defence Standardization (DStan) shall be informed so that a remedy may be sought.
- d.** Any enquiries regarding this standard in relation to an invitation to tender or a contract in which it is incorporated are to be addressed to the responsible technical or supervising authority named in the invitation to tender or contract.
- e.** Compliance with this Defence Standard shall not in itself relieve any person from any legal obligations imposed upon them.
- f.** This standard has been devised solely for the use of the Ministry of Defence (MOD) and its contractors in the execution of contracts for the MOD. To the extent permitted by law, the MOD hereby excludes all liability whatsoever and howsoever arising (including, but without limitation, liability resulting from negligence) for any loss or damage however caused when the standard is used for any other purpose.

TEXT

Standards for Defence

Generic Specification

For

Batteries

SECTION 1 GENERAL REQUIREMENTS

0 INTRODUCTION

It is Ministry of Defence (MOD) policy to purchase batteries against performance specifications whenever possible. This Defence Standard has been generated to address the current requirements for batteries. This standard is applicable when invoked directly by an MOD invitation to tender, contract, or when referred to by other MOD battery specifications.

1 SCOPE

This standard specifies the MOD requirements for batteries. This generic document combines with a series of supplements that contain the specific requirements relating to individual battery types. The requirements of these individual battery supplements shall take precedence over those of this standard where conflict arises. The procedure for the generation of a new battery supplement is defined in **Def Stan 61-17** (The Requirements for the Selection of Batteries for Service Equipment).

2 WARNING

The Ministry of Defence (MOD), like its contractors, is subject to both United Kingdom and European laws regarding Health and Safety at Work, without exemption. All Defence Standards either directly or indirectly invoke the use of processes and procedures that could be injurious to health if adequate precautions are not taken. Defence Standards or their use in no way absolves users from complying with statutory and legal requirements relating to Health and Safety at Work.

SECTION 1 GENERAL REQUIREMENTS

3 RELATED DOCUMENTS

3.1 The publications shown below are referred to in the text of this standard and its associated supplements. Publications are grouped and listed in alpha numeric order. These documents are subject to frequent change and or amendments.

Designation	Title
BS EN 45014	General criteria for supplier's declaration of conformity
BS EN 60068: (series)	Environmental testing
BS EN 60086: (series)	Primary batteries
BS EN 60095: (series)	Lead-acid starter batteries
BS EN 60285	Alkaline secondary cells and batteries
BS EN 60622	Sealed nickel cadmium prismatic single cells
BS EN 60896: (series)	Stationary lead-acid batteries
BS EN 60952: (series)	Aircraft batteries
BS EN 61056: (series)	Portable lead-acid cells and batteries
BS 2G 239	Primary active lithium batteries for use in aircraft
Def Stan 00-00(Part 2)	Presentation and Management of Defence Standards
Def Stan 05-90 (series)	Quality System Requirements
Def Stan 61-17	The Requirements for the Selection of Batteries for Service Equipment
Def Stan 81-41	Packaging of Defence Materiel
Def Stan 81-111	Packaging of Secondary Batteries
JSP 335	Dangerous Air Cargo Regulations
D.E.T.R	www.detr.gov.uk Eland House Bressendon Place London SW1E 5DU
D.T.I	www.dti.gov.uk Enquiry Unit 1 Victoria Street London SW1H 0ET
H.S.E	www.hse.gov.uk HSE Infoline Caerphilly Business Park Caerphilly CF83 3GG

3.2 Reference in this standard to any related document means in any invitation to tender or contract the edition and all amendments current at the date of such tender or contract unless a specific edition is indicated.

3.3 In consideration of **3.2** above, users shall be fully aware of the issue and amendment status of all related documents, particularly when forming part of an invitation to tender or contract. Responsibility for the correct application of standards rests with users.

3.4 DStan can advise regarding where related documents are obtained from. Requests for such information can be made to the DStan Helpdesk. How to contact the helpdesk is shown on the outside rear cover of Def Stans.

SECTION 1 GENERAL REQUIREMENTS

4 DEFINITIONS

For the purpose of this standard and its associated supplements the following definitions apply:

4.1 Generic Standard

Defined as a standard that combines the general requirements and procedures applicable to a number of battery types.

4.2 Supplement

Defined as a supplement to the generic standard for an individual battery type, that invokes or tailors, the relevant sections from the standard as required.

4.3 Mandatory Clauses in Defence Standards

Defined as clauses that use the word “shall”. Optional or non-mandatory clauses use the word “should”.

4.4 Authority

Defined as the responsible technical or supervising authority named in the invitation to tender or contract.

4.5 Standard Sponsor

Defined as the MOD Sponsor for the preparation of a Defence Standard.

4.6 Shelf Life

As a minimum, cells and batteries are only required to provide the specified performance if used within the temperate storage period stated in the relevant supplement.

SECTION 1 GENERAL REQUIREMENTS

5 ABBREVIATIONS

Designation	Title
AP	Allied Publication (NATO)
BS	British Standard
BS EN	European Standard
BSI	British Standards Institute
Def Stan	Defence Standard
DBSC	Defence Battery Standardization Committee
DMSC	Defence Material Standardization Committee
DPA	Defence Procurement Agency
DStan	UK Defence Standardization
IATA	International Air Transport Association
ICAO	International Civil Aeronautics Organization
IEC	International Electrotechnical Committee
ISO	International Standards Organisation
JSP	Joint Services Publication
MOD	Ministry of Defence
PCC	Product Conformity Certification
PM/ESM	Project Manager/Equipment Support Manager
UN	United Nations

SECTION 2 PRODUCT CONFORMITY CERTIFICATION

6 APPLICABILITY

6.1 The incorporation of Product Conformity Certification (PCC) in a standard or supplement is in accordance with the procedure defined in Def Stan 00-00(Part 2).

6.2 The PCC process (section 2 of this standard) is only applicable when the individual battery supplement or contractual conditions specify its use.

6.3 PCC can be excluded by contract action if the risk assessment identifies that there is no requirement. (This should be undertaken in consultation with the stated technical authority).

7 RESPONSIBILITIES

It is the responsibility of the contractor to provide the necessary certification.

8 PROCEDURE

The procedures that shall be adopted for the PCC process are defined in BS EN 45014.

9 DECLARATION OF CONFORMITY

9.1 The declaration of conformity by a contractor shall be in accordance with clause **8**. The contractor shall submit to the authority, evidence to demonstrate compliance with the requirements of the Defence Standard supplement

9.2 The contractor shall include the following additional information on the declaration of conformity:

- a.** The contract reference.
- b.** The contractor's accreditation certificate number.
- c.** Any deviations from the test procedures defined in the supplement.
- d.** Any instances of failure to meet the requirements defined in the supplement.
- e.** Interim or Full status (detailed in clause **10**).
- f.** Reference to the conformance test report.
- g.** Reference to the names and addresses of the test laboratories involved.
- h.** Reference to the manufacturing data package (build standard) for materials, piece parts and processes used in the battery construction.

SECTION 2 PRODUCT CONFORMITY CERTIFICATION

10 INTERIM AND FULL CERTIFICATION

Due to the protracted timescale of certain battery storage tests, some battery supplements allow interim certification. This may enable the contractor to commence product delivery in advance of full certification. Under these circumstances, the supplement details the minimum test regime necessary to provide sufficient product confidence until full certification is provided.

11 MODIFICATION OF CERTIFIED PRODUCTS

11.1 Changes to the product that have not been accepted by the Authority shall invalidate the PCC. This shall include, but not be limited to, changes in materials, component specifications, manufacturing processes and sites of manufacture.

The contractor shall address the impact of the change against all aspects of the specification and submit a report to the Authority including the proposed level of retest. The authority shall assess the significance of the change and may require additional tests detailed in the supplement when considered necessary.

Formal acceptance of the proposal shall be required from the Authority which, on the successful completion, shall be referenced on the conformance certificate.

12 CERTIFICATION DURATION

The maximum duration of a Product Conformance Certificate shall be the duration of the contract for which it was provided.

13 DISCLOSURE OF NON COMPLIANCE

Any indication of a shortfall in performance against the specified requirements shall be promptly identified to the authority.

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SECTION 3 QUALITY REQUIREMENTS

14 QUALITY SYSTEM REQUIREMENTS

The contractors quality system shall be in accordance with the 05-90 series of Def Stans for all products supplied against the requirements of this standard.

SECTION 4 PACKAGING, LABELLING AND TRANSPORTATION

15 PACKAGING, LABELLING AND TRANSPORTATION

15.1 For transportation considerations, many cell and battery types are designated by the UN as Dangerous Goods, within the Recommendations on the Transport of Dangerous Goods Model Regulations. Consequently some products require assessment and testing to demonstrate compliance with constructional and performance requirements. All supplied products shall comply with the relevant constructional, performance, packaging and labelling requirements of the civil dangerous goods transport regulations governing land, sea and air modes of transport. Except where specified in the contract or excluded in the regulations, this shall include requirements for carriage on mixed passenger and cargo aircraft.

The specific battery supplement or contract shall specify the packaging levels that require marking and any additional information required as part of the product or package labelling.

16 MILITARY AIR TRANSPORT REQUIREMENTS

If clearance for air military air transport is required in accordance with JSP 335, then this shall be specified in the relevant supplement or contract.

SECTION 6 DISPOSAL OF WASTE BATTERIES

17 GUIDANCE FOR DISPOSAL

Guidance can be obtained from the Defence Battery Standardization Committee (DBSC) via the DStan Helpdesk.

SECTION 7 DEFINITION OF COMMON BATTERY TERMS

Table 1 Definition of Common Battery Terms	
Term	Definition
Cell	Basic electrochemical unit to provide electrical energy by the conversion of chemical energy.
Battery	One or more electrochemical cells interconnected to provide the required voltage and current characteristics.
Battery-Primary	A battery which is not intended to be recharged and should be discarded when it has delivered its electrical energy.
Battery-Secondary	A battery which after discharge may be recovered to a serviceable state by charging.
End point voltage	The on-load voltage at which discharge is normally terminated. End-point voltage may vary according to the rate of discharge.
Capacity	The quantity of electrical charge that a battery can deliver (at a specific rate) to a specific end point. Capacity is normally expressed in Ampere Hours (Ah).
Discharge rate	The specified rate at which the battery is discharged. (Note: The achieved capacity will vary depending on the rate of discharge.)
Charge Rate	The rate at which a battery is charged for a specific time. After which the battery should be restored to optimum capacity.
Shelf / Storage life	The Shelf / Storage life of a battery is defined as the maximum time from the date of manufacture for which the battery can be stored (under specific conditions of temperature and humidity) and still provide the assured minimum performance.
Self Discharge	The rate at which a battery will discharge without any external current or load being applied.
Electrolyte	The conducting medium between the plates of a battery.
Battery-Dry	Technically, sealed, non vented systems that do not contain liquid electrolytes. In practice, however, most small cylindrical cells (even those with liquid electrolytes) are classified as dry.
Battery-Wet	Batteries whose plates are immersed in a fluid electrolyte (either acid or alkali). In some instances, the electrolyte is incorporated in a thixotropic gel. Note: Some wet batteries are supplied without electrolyte, (which is added during commissioning).
Maintenance Free	A secondary battery, which does not require periodic 'topping up' to maintain electrolyte volume.
Recombination	A secondary battery, where evolved gasses are subsequently recombined within the battery
Vented	A normal sealed battery that allows the controlled escape of gasses to relieve excess pressure.
Nickel Metal Hydride	A secondary battery system, that uses nickel for its positive electrolyte and hydrogen absorbed in metallic alloy for the negative electrode.
Lithium Ion	A secondary battery system that utilises lithium containing compounds but does not contain metallic lithium.

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UK Defence Standardization
Kentigern House
65 Brown Street
GLASGOW G2 8EX

DStan Helpdesk

Tel 0141 224 2531/2
Fax 0141 224 2503
Internet e-mail enquiries@dstan.mod.uk

File Reference

The DStan file reference relating to work on this standard is D/DStan/61/21.

Contract Requirements

When Defence Standards are incorporated into contracts users are responsible for their correct application and for complying with contractual and statutory requirements. Compliance with a Defence Standard does not in itself confer immunity from legal obligations.

Revision of Defence Standards

Defence Standards are revised as necessary by up issue or amendment. It is important that users of Defence Standards should ascertain that they are in possession of the latest issue or amendment. Information on all Defence Standards is contained in Def Stan 00-00 Standards for Defence Part 3 , Index of Standards for Defence Procurement Section 4 'Index of Defence Standards and Defence Specifications' published annually and supplemented regularly by Standards in Defence News (SID News). Any person who, when making use of a Defence Standard encounters an inaccuracy or ambiguity is requested to notify the Directorate of Standardization (DStan) without delay in order that the matter may be investigated and appropriate action taken.