



Ministry of Defence Defence Standard 61-21

Issue 1 Publication Date 31 December 2003



**General Specification
For
Batteries
Supplement 025
Specification for
Zinc Carbon or Zinc Chloride Battery
3V, NSN 6135-99-663-2942**

AMENDMENT RECORD

Amd No	Date	Text Affected	Signature and Date

REVISION NOTE

The content of this supplement has been aligned with the Defence Standard for batteries, Def Stan 61-21.

HISTORICAL RECORD

This supplement superseded Bat Spec 420 Issue 1 dated 3rd May 1996.

CONTENT

Description	Page
Content	1
Preface	3
Main Text	4
SECTION 1 GENERAL REQUIREMENTS	
0 Introduction	4
1 Scope	4
2 Warning	4
3 Related Documents	5
4 Definitions	5
5 Abbreviations	5
SECTION 2 ELECTRICAL CHARACTERISTICS	
6 Electrochemical System	6
7 Nominal and Off-load Voltage	6
8 On-load Voltage	6
SECTION 3 PHYSICAL CHARACTERISTICS	
9 Dimensions	7
10 Mass	7
11 Construction, Terminal and Marking	7
SECTION 4 PERFORMANCE REQUIREMENTS	
12 Discharge Requirements	8
13 Storage Requirements	8
SECTION 5 PRODUCT CONFORMITY CERTIFICATION	
14 General Requirements	9

CONTENT

Description	Page
SECTION 6 MARKING REQUIREMENTS	
15 General Requirements	10
SECTION 7 PACKAGING REQUIREMENTS	
16 General Requirements	11
Table 1 Discharge Duration Requirements	8
Figure 1 Outline Drawing	12

PREFACE

Standards for Defence

Specification for

Zinc-Carbon or Zinc-Chloride Battery

3V, NSN 6135-99-663-2942

- a.** This supplement shall be read in conjunction with Def Stan 61-21.
- b.** This supplement provides a definitive specification for the electrical, physical, performance and nomenclature requirements for a 3V Zinc-Carbon or Zinc-Chloride Battery (BS EN 60086-1 Electrochemical system Manganese Dioxide-Ammonium Chloride, Zinc Chloride-Zinc).
- c.** This supplement 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 Standardisation (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

Specification for

Zinc-Carbon or Zinc-Chloride Battery

3V, NSN 6135-99-663-2942

SECTION 1 GENERAL REQUIREMENTS

0 INTRODUCTION

It is Ministry of Defence (MOD) policy to purchase batteries against performance specifications whenever possible. Defence Standard 61-21 and its series of supplements has been generated to address the current requirements for batteries. This supplement is applicable when invoked directly by a MOD invitation to tender, contract, or when referred to by other MOD battery specifications.

1 SCOPE

This supplement provides a definitive specification for the electrical, physical, performance and nomenclature requirements for a 3V Zinc-Carbon or Zinc-Chloride Battery, NSN 6135-99-663-2942, containing two BS EN 60086-2 type R20 cells. This supplement does not invoke Product Conformity Certification.

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 For the purposes of this supplement all related documents are listed in Defence Standard 61-21.

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.

4 DEFINITIONS

Def Stan 61-21 definitions shall apply.

5 ABBREVIATIONS

Def Stan 61-21 abbreviations shall apply.

SECTION 2 ELECTRICAL CHARACTERISTICS

6 ELECTROCHEMICAL SYSTEM

The electrochemical system shall be defined by BS EN 60086-1: system designation 2R20.

7 NOMINAL AND OFF-LOAD VOLTAGE

The off-load voltage shall not be more than 15% above the nominal voltage of 3.0V.

8 ON-LOAD VOLTAGE

N/A

SECTION 3 PHYSICAL CHARACTERISTICS

9 DIMENSIONS

The dimensions of the battery will be in accordance with **figure 1**.

10 MASS

The nominal mass of the battery shall be 315g.

11 CONSTRUCTION , TERMINALS AND MARKING

A rectangular battery containing two R20 cells connected in series.

Connection is through insulated M4 screw terminals in accordance with BS EN 60086-1.

Battery markings shall include the following details:

Manufacture's name or initials

Voltage

Chemical System

Date of manufacture

Nato Stock Number

Terminal Polarity

SECTION 4 PERFORMANCE REQUIREMENTS

12 DISCHARGE REQUIREMENTS

Prior to undertaking a discharge test, the batteries shall be pre-conditioned at the test temperature for a minimum of 24 hours. The number of samples for each test shall be in accordance with the suppliers quality procedures.

When subjected to a continuous discharge load of 300 Ohms continuous to an end-point of 1.7V, the batteries shall be capable of meeting the duration requirements given in **Table 1**.

Table 1 Discharge Duration Requirements		
Pre-Discharge Test	Supplement Clause Reference	Minimum Discharge Duration (Hours)
		Discharge Temperature
		+20 ± 2°C
Immediate Discharge	12	780
52 Weeks Temperate Storage	13.2	740

13 STORAGE REQUIREMENTS

13.1 Examination During Storage

At the start, and on completion of each storage test, the off-load voltage test (clause 7) shall be carried out, and the batteries examined. Any battery showing signs of leakage, corrosion or distortion shall be deemed to have failed.

13.2 Temperate Storage

Batteries shall be stored in an ambient temperature of $20 \pm 5^{\circ}\text{C}$ and a relative humidity between 45% and 75% for the specified duration.

SECTION 5 PRODUCT CONFORMITY CERTIFICATION

14 GENERAL REQUIREMENTS

The Product Conformity Certification requirements defined in Section 2 of Def Stan 61-21 are not applicable to this supplement.

SECTION 6 MARKING REQUIREMENTS

15 GENERAL REQUIREMENTS

Commercial product markings are acceptable provided they are in accordance with clause 11.

SECTION 7 PACKAGING AND LABELLING REQUIREMENTS

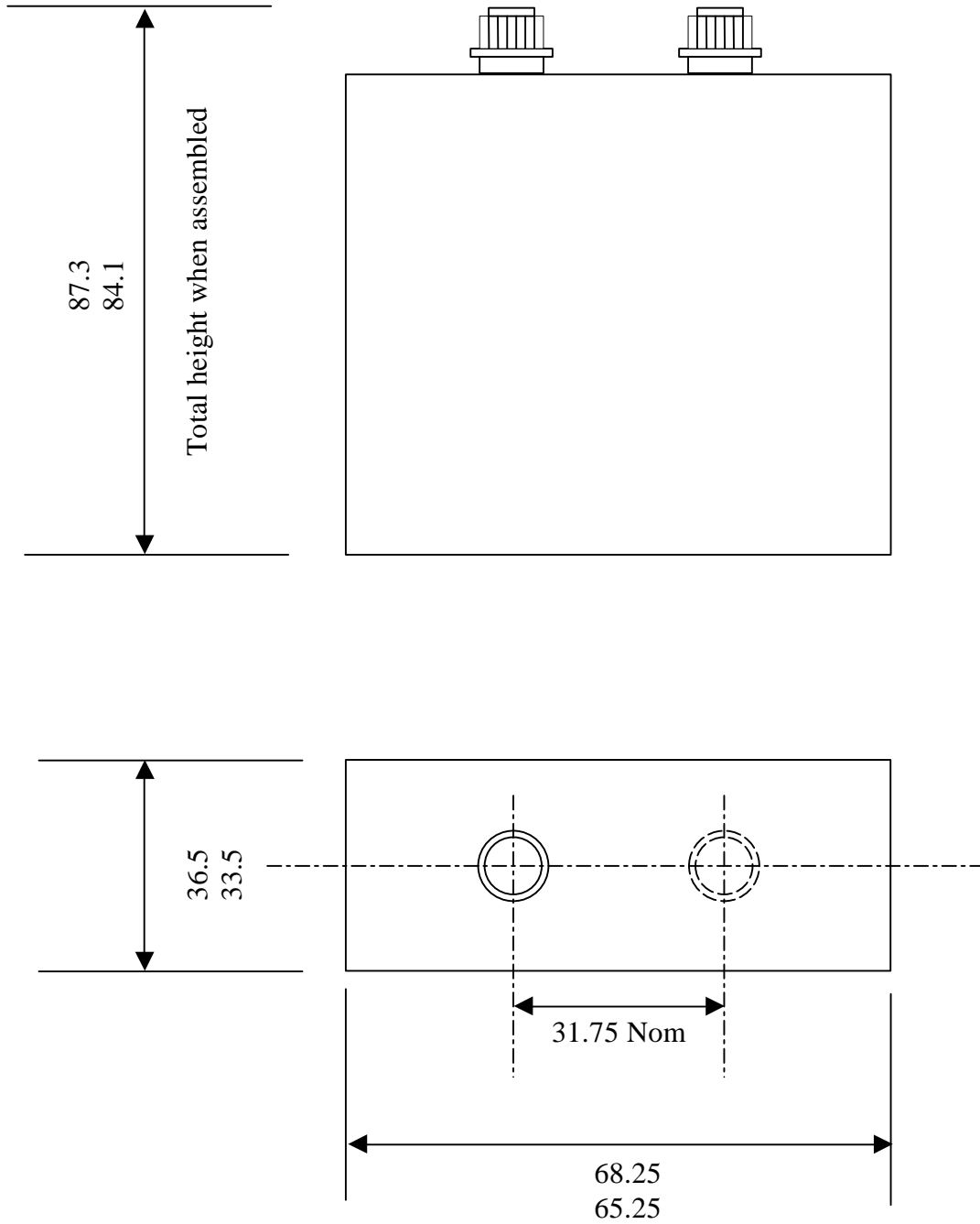
16 GENERAL REQUIREMENTS

In addition to the packaging requirements stated in the contract, all levels of packaging shall include:

- a. The battery NATO Stock number.
- b. The date of manufacture.
- c. The battery shelf life in the format “NOT TO BE STORED BEYOND *MM,YY*” which shall be 18 months from the date of cell/battery manufacture.

The product shall be packed to enable transportation by all modes (land, sea and air).

Figure 1



Notes:

- 1 Drawing not to scale
- 2 All dimensions are in mm
- 3 NSN 6135 -99-663-2942

Inside Rear Cover

© Crown Copyright 2003
Copying Only as Agreed with DStan

Defence Standards are Published by and Obtainable from:

Defence Procurement Agency
An Executive Agency of The Ministry of Defence
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/61/21/25.

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.