



SPECIFICATION FOR VT D 70

<h3>CONTENTS</h3>

1/ SCOPE

2/ GENERAL ELECTRICAL CHARACTERISTICS

3/ GENERAL MECHANICAL CELL SPECIFICATION

4/ CAPACITY

5/ CHARGE RECOMMENDATIONS

6/ CYCLE LIFE

7/ CELL AND BATTERY MANAGEMENT

8/ SPECIFICATION APPROVALS



SPECIFICATION FOR VT D 70

1/ SCOPE

This specification applies to a Nickel-Cadmium cylindrical rechargeable single cell which SAFT designate as VTD 70. This cell belongs to the SAFT High temperature Ni-Cd cell series and has been designed for permanent charge applications at very high temperature (up to 55°C) .

2/ GENERAL ELECTRICAL CHARACTERISTICS

All the figures listed in the following tables are based on fresh single cells.
Tests carried out in accordance with International standard document IEC 61951-1 .



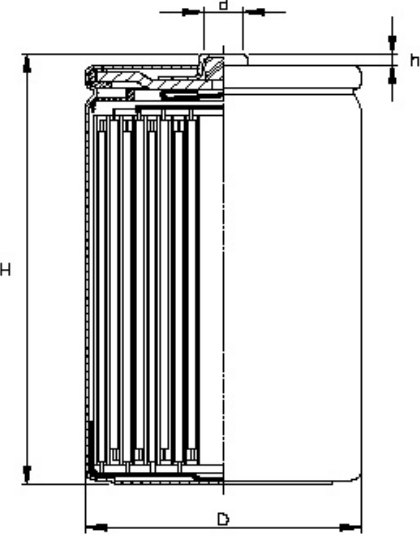
SPECIFICATION FOR VT D 70

ITEM	SPECIFICATION	UNITS	NOTES
MAIN CHARACTERISTICS			
SAFT cell designation	VT D 70		
IEC cell designation	KRMT 33/62		
Nominal voltage	1.2	Volt	IEC 61951-1
Rated IEC capacity	4000	mAh	As per § 1.3.3 and § 4.2.1
Typical impedance	6	mOhm	At 1000 Hz
CHARGE CURRENT			
Standard	400	mA	See §5
Permanent	200	mA	
Trickle*	100-200	mA	* After a full charge
CHARGE DURATION			
Standard	16	hours	See § 5
DISCHARGE CURRENT			
Maximum continuous current	14	A	
Max peak (<1s)	150	A	Max end of discharge voltage 0.65V/cell
Charge Retention 28 days at. 20°C+/-2°C	>65	%	Storage in full charge state discharged atC/5
TEMPERATURE RANGE			
In permanent/standard charge	15 to 55	°C	
	0 to 15 & 55 to 70	°C	Short duration < 1 month
In discharge	-20 to 70	°C	
In storage			See § 7
Recommended	5/25	°C	
Low limit range	-40 to +5	°C	
High limit range	25 to + 70		Shorter than 1 month
TYPICAL WEIGHT			
	128	g	



SPECIFICATION FOR VT D 70

3/ GENERAL MECHANICAL CELL SPECIFICATION

BARE CELL DRAWING	BARE CELL DIMENSIONS (mm)
 <p>The drawing is a technical cross-section of a cylindrical cell. It shows a central core with several vertical elements. Dimension lines indicate: 'H' for the total height, 'D' for the outer diameter, 'd' for the diameter of a flat top surface, and 'h' for the height of a small protrusion on the top edge.</p>	<p>Diameter: $D = 32.15 \pm 0.10$</p> <p>Height: $H = 59.9 \pm 0.4$</p> <p>Positive contact</p> <p>Flat area diameter: $d = 5.6$</p> <p>Overstep: $h = 3.1 \pm 0.4$</p>



SPECIFICATION FOR VT D 70

4/ CAPACITY

IEC Capacity is defined as required in IEC 61951-1 (§4.1;4.2;6.1)

- Temperature : +20° +/- 5°C
- Charge current : 400 mA constant current (C/10)
- Charge duration : 16 hours
- Period of rest : 1 hour
- Discharge current : 800 mA constant current (C/5)

Minimum capacity : 4000 mAh

5 cycles are allowed to get the specified value.

5/ CHARGE RECOMMENDATIONS

Standard charge:

With standard charge rate (C/10) a timer is recommended to stop the charge.

Permanent charge:

The VTD 70 cell is designed to be permanently charged between +15°C to +55°C with above mentioned constant current (0.05C). Charging at the occasional temperature range of 0 to 15°C and 15°C to 70°C is accepted for short duration only (< 1 month). For a usage at temperatures lower than 0°C it is mandatory to limit the charge voltage at 1.65V per cell. In case of pulsed charge at rate <50Hz, it is mandatory to avoid rest period >1s.

Trickle charge

A trickle charge in the range of C/40 to C/20 can be used to maintain the cell or battery pack in a fully charged state.



SPECIFICATION FOR VT D 70

6/ CYCLE LIFE

Cycle Life duration of a VTD 70 cell or battery pack depends mainly on the cell or battery pack temperature and overcharged capacity. Minimum life duration of a VTD 70 cell/battery is 4 years with the average operating condition of:

Temperature:	up to +55° +/- 2°C
Permanent Charge current:	200 mA constant current (C/20)
Discharge:	1-2 per month (at C rate. Maximum))

The VTD 70 cell is designed to comply with the normative permanent charge endurance test described in the IEC 61951-1 standard.

This performance is mandatory for use in Emergency Lighting Units to comply with the IEC 60598 2.22.

7/ CELL AND BATTERY MANAGEMENT

- Overcharge :

As it has been designed to be permanently overcharged, the VTD 70 accepts occasional overcharge up to C/10 (400 mA) without damage.

- Over discharge :

A deep discharge or "over discharge" damages the cell performance so it is recommended to turn the switch off at the end of discharge and to avoid to let the cell or battery pack connected to the equipment for a long period (> 1 month). In addition, during the beginning of the first charge following over discharge, the voltage can exceed the maximum allowed value.



SPECIFICATION FOR VT D 70

- Storage :

- Normal conditions:

SAFT recommends to store the cell or battery pack within a temperature range of +5° to +25°C in a 65 ± 5% relative humidity atmosphere.

- Long term storage (up 6 months):

After long term storage in open circuit, up to 5 IEC cycles are allowed to recover the initial performance of a VTD 70 (see section 4).

- Service life :

When a cell or battery pack is used under normal conditions as described above, the VTD 70 cell or battery pack will last 4 years. Failure in charging, discharging, storage or temperature range can reduce the service life and damage the cell performances.

- Battery assembly :

Consult SAFT for advice in battery assembly.



SPECIFICATION FOR VT D 70

8/ SPECIFICATION APPROVALS

PRODUCT MANAGER: F.Auriol

TECHNICAL DIRECTOR: C.Chanson

PROJECT MANAGER: S.Senyarich

QUALITY DIRECTOR: J.Seganti