



Precise Solution for Portable Energy Systems





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ASPILSAN Energy was established in Kayseri Industrial Zone on May 21st, 1981. ASPILSAN is the first battery manufacturer and the only aircraft/helicopter battery manufacturer which started its activities on May 26th, 1984. Today, ASPILSAN has increased its product range over 300 types of batteries including batteries for portable, electronic, robotic, weaponry, energy storage systems as well as medical devices and handheld radios.

ASPILSAN Energy is an establishment of Turkish Armed Forces Foundation.

38
year

BATTERIES

ASPILSAN Energy designs and manufactures;

- Nickel-Cadmium (Ni-Cad),
- Nickel-Metal Hydride (Ni-MH),
- Lithium-Ion (Li-Ion) / Lithium-Polymer (Li-Po) based batteries.

All cells used in the batteries are qualified both by international IEC and military battery standards.

In addition; if requested, ASPILSAN may provide battery design and replacement services.

		BB-2590/U (6.4 Ah)	BB-2590/U (8.25 Ah)	BB-2590/U V2.0 (10.3 Ah)
Description		Rechargeable Li-Ion Battery	Rechargeable Li-Ion Battery	Rechargeable Li-Ion Battery
Nominal Voltage		2x14,4 V	2x14,4 V	2x14,4 V
Nominal Capacity		2x6,4 Ah (with 1,28A)	2X8,25Ah (1,62Ah-10V)	2x10,3Ah (1,62Ah-10V)
Charge Indicator		5 stage LCD (at 20% intervals)	5 stage LCD (at 20% intervals)	5 stage LCD (at 20% intervals)
Dimensions (mm)	Width	62±2	62±2	62±2
	Length	111±2	111±2	111±2
	Height	127±2	127±2	127±2
Weight (gr)		1380 Max.	1380 Max.	1380 Max.
Standard Discharge (at 20 °C±5 °C)		up to 4A-12.0V	1,62A	16,8V/1,65A-16,8V/4,9A 16,8V/2,040A
Maximum Discharge Current		up to 6A-12.0V	9,9A	9,9A/8A/10A
End of Discharge Voltage		12,0V (3,0/battery)	12,0V/10V	12V/10V
Operating Temperature	Charge	0 °C - +45 °C	0 °C - +45 °C	Between 0 °C - +45 °C
	Discharge	-20 °C - +60 °C	-20 °C - +60 °C	Between -20 °C - +60 °C
Storage Temperature	Recommended	<21°C - 2%	<21°C - 2%	<21°C - 2%
	Permitted	<60°C - 7%	<60°C - 7%	<60°C - 7%



RADIO BATTERIES

ASPILSAN designs and manufactures high quality fast-charging batteries mainly for ASELSAN handheld radios.

Type	Nominal Voltage (V)	Nominal Capacity (mAh)	Dimensions (mm)			Weight (gr)	Nato Stock No	Application
			Width	Length	Height			
4011-4015 Ni-MH 2000 mAh	7,2	2000	63,2	153,2	25,5	250±10	6140 27 005 8481	ASELSAN 4011-4014 Series Handheld Radios
4400 Ni-MH 2300 mAh 7,5V	7,2	2300	21,9	53,4	112,4	240	-	ASELSAN 4411-4711 Series Handheld Radios
4400 Li-ion 2000 mAh 7,5V	7,2	2000	19,7	53,35	112,1	139±10	-	ASELSAN 4411-4711 Series Handheld Radios
4400 Li-ion 3250 mAh 7,2V	7,2	3250	23,4	53,35	112,1	138±10	-	ASELSAN 4411-4711 Series Handheld Radios
BX-9651 SMART BATTERY	14,4	3700	51,6	68,1	88,6	477±5	-	ASELSAN Handheld Radios



VARIOUS BATTERIES

STINGER THT Ni-MH Battery

Area of Usage		STINGER Weapon System
Stock No		60050000151
Model No		BB 037
Nominal Voltage		2 x 20,4V – 1 X 40,8V
Normal Capacity		2000 mAh
Weight		1300gr (Approximate)
Normal Charge	Current and Duration	15 hours with 170 mA
Fast Charge	Current and Duration	2 hours with 1200 mA
Discharge 0.2C	Current and Duration	300 minutes with 400 mA
Discharge 1C	Current and Duration	54 minutes with 2000 mA
Charging Temperature Range		Between 0 °C and +45°C (Normal charge). Between 0 °C and +40°C (Fast charge.)
Operating Temperature Range		Between -10 °C and +65°C
Storage Temperature	Recommended	Between -20 °C and +35°C
	Permitted	Between -20 °C and +55°C
Cycle Life		up to 500 cycles (One cycle means completion of one charge cycle when device is discharged to an amount which equals 100% of battery capacity.
Maintenance		It only requires recharge at every 6 months.
Safety		Batteries are designed by considering safety purposes against heavy drops, vibrations as well as other mechanical loadings.



BB-2847/U

Description		Rechargeable Li-Ion Battery
Nominal Voltage		7,2V
Normal Capacity		8,25Ah/10,2 Ah
Charge Indicator		5 Staged (at 20% intervals)
Dimensions (mm)	Width	38,60±0,30
	Length	65,35±0,30
	Height	95,20±0,30
Weight (gr)		330±10
Standard Discharge (at 20 °C±5 °C)		8,4V/1,65A-8,4V/3,9A
Maximum Discharge Current		10A / 5A
Working Temperature	Charge	Between 0 °C - +45 °C / 10 °C - +45 °C
	Discharge	Between -30 °C - +60 °C / -20 °C - +65 °C
Storage Temperature	Recommended	<21°C
	Permitted	<60°C



VARIOUS BATTERIES

Type	Nominal Voltage (V)	Nominal Capacity (mAh)	Dimensions (mm)			Weight (gr)	Nato Stock No
			Width	Length	Height		
BB-4600	14,4	4000	64	235	73	2000 Max.	6140 27 000 4973
BT-6434	12	2800	37,8±0,5	73,8±0,5	42±0,5	163±2	6135 27 006 8338 6135 14 477 5440
15V 1600 mAh Mirabel	14,4	1600	65±1	146±1	55±1	1100	6140 27 017 0215
GS-21 Alkali	9	2300	55	88	15	170	6140 01 162 0943 6005 00 000 47
BA-5800/U	6	7200	35,51	-	128,5	220	6135 01 440 7774
BA-5374/U	6	1400	16,9	-	60,3	57	6135 00 073 8939 6135 01 455 9646

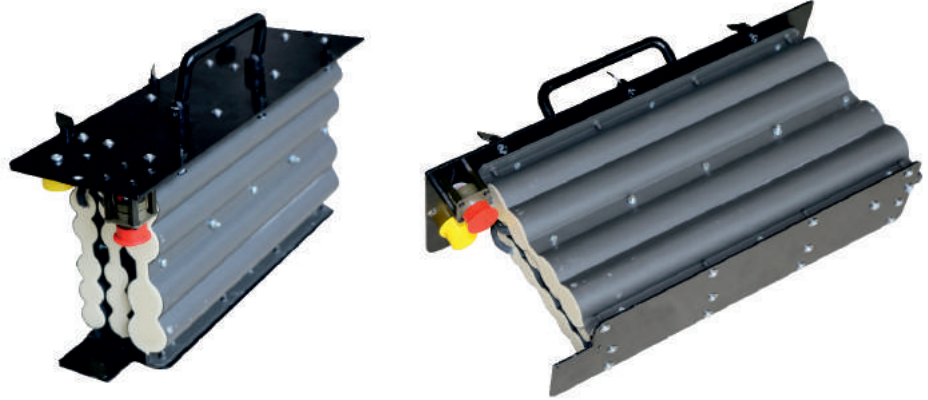


MINI-TWS (THERMAL WEAPON SIGHT) BATTERY



Product Name	Mini-TWS Battery	Mini-TWS Battery V3.0	Mini-TWS Battery V2.0
Model No	BBL-014A	BBL-014C	BBL-014
Stock No	60050000097	60050000146	60050000091
Nominal Voltage	7,4V	7,4V	7,4V
Nominal Capacity (between the range of 0 C and +40 C temperature discharge with 0,2 CA)	3250 mAh	2Ah	1620 mAh
Dimensions	39,5X71X21,3 ± 1mm	39,5X53,5X21,3 ±1mm	39,5X53,5X21,3 ± 1mm
Weight	110 ± 5gr (approximate)	80 ± 5gr (approximate)	80 ± 5gr (approximate)
Standard Charge (at 20 C ±5 C)	Until charging current decreases to 65mA with 8,4V / 1,625 A (Max.4 Hours)	Until charging current decreases to 39mA with 8,4V / 1,358 A (Max. 3 Hours)	Until charging current decreases to 32mA with 8,4V / 1620 A (Max. 3 Hours)
Maximum Discharge Current	1,625 A	0,2 A	1,62 A
End of Discharge Voltage	5V	5V	5,5V
	at 20°C ± 5°C	at 25°C	at 20°C + 5°C
Cycle Life	Charge	Until charging current decreases to 65mA with 8,4V / 1,625 A	Until charging current decreases to 32 mA with 8,4V / 1620 A
	Discharge	up to 5V with 1,625 A	up to 5V with 2 A
		Until the capacity decreases to 1,6 Ah value (80%) Minimum 300 cycles	Until the capacity decreases to 1,296 Ah value (80%) Minimum 300 cycles
Body Material and Colour	ABS Black	ABS Black	ABS Black
Output Terminal	Hotwiring	Hotwiring	Hotwiring
Range of Working Temperature	Charge	0 °C and + 40 °C	0 °C and + 40 °C
	Discharge	-20 °C and + 60 °C	Between -20 °C - +60 °C
Storage Temperature	-20 °C and +50 °C (1 Year)		
Protection	Battery is protected against overcharging, over discharging, over current and short circuit.		
Quality	There will not be any breakage, scratch, crack, stain etc. on the battery.		
Labeling	Manufacturer Name, Battery Type, Nominal Voltage, Nominal Current, Serial No, Charge No, Charging Instructions, Date of Production, Caution and Warning Information		

BB 287/U (TOW BATTERY)



Product Name		TOW Battery
Type		BB 287/U
Area of Usage		Tow Anti-tank Weapon
Stock No		60050000124
Nominal Voltage		24 V - 2 x 50,4 V
Capacity	Nominal	4 Ah - 1,2Ah
	Typical	4,6 Ah - 1,5 Ah
Weight		9,5 ± 0,3 kg
Charge	Current	400mA - 120mA
	Duration	1,5 Hour - 8 Hours
Discharge (with 0.2 CA)	Current	With 800 mA - 240 mA
	Duration	30 Min. - 380 Min.
Discharge (with 1C A)	Current	With 4000mA - 1200mA
	Duration	60 Min. - 77 Min.
Charging Temperature Range		- 20°C and + 50°C
Operating Temperature Range		- 40°C and + 55°C
Storage Temperature Range	Recommended	0°C and + 30°C
	Permitted	- 45°C and + 50°C
Storage		10 years in an environment where the temperature is 20 ±5 °C and relative humidity is 50%.
Labeling		Date of Production, NSN, P/N, Manufacturer Name
Cycle Life		1000 cycles in the following conditions Charge at 0,1C A Discharge at 0,2C A
Maintenance		No maintenance required.
Safety		Batteries are designed by considering safety purposes against heavy drops, vibrations as well as other mechanical loadings.
Impermeability		Battery is impermeable due to the design of itself and the cells' structure.



CUSTOM-MADE BATTERIES

As ASPILSAN Energy, we manufacture batteries at the customers' request. We design and manufacture various chemistry based batteries at different capacities.



ASPILSAN MANGA-EDS* AND MULTI CHARGER



AE1 Multi Battery Charging Adaptor

Description		Multi Battery Charging Adaptor
Stock No		2 x 28,8 V
Input Voltage		20VDC- 33,6VDC
Output Voltage		Adaptor Output: 15VDCx3 USB Output: 5VDCx1
Maximum Output Current		Adaptor Output: 3 A USB Output: 2 A
Dimensions	Width	52,8 ± 1 mm
	Length	68,5 ± 1 mm
	Height	27 ± 1 mm
	Weight	135gr (Approximatly, with multiplexer connector)
Operating Temperature		-20 °C and +60 °C
Storage Temperature		-20 °C and +60 °C

*EDS : Energy Storage System



CHARGERS

ASPILSAN Energy manufactures various chargers for its own battery products. Also ASPILSAN may answer unique charger requests.



Type	Input Voltage	Output Voltage	Dimensions (mm)			Weight (gr)
			Width	Length	Height	
BB-2590 CH-EN 2X16,8V / 1,7A Charger	220±20V AC 50Hz	2x16,8VDC	80±1	134±1	45±1	540
BB-2847 Battery Charger	220±20V AC 50Hz	8,4 VDC	67	108	48,2	225
BB-2847 Battery Charger (Dual)	220±20V AC 50Hz 24 – 48 VDC	2X8,4VDC	80±1	135±1	44±1	580
BB-2800 Battery Charger	220±20V AC 50Hz	8,4VDC	67	107	36,5	259
Mini Thermal Binoculars(NVD) Battery Charger (Single)	220±20V AC 50Hz	8,4VDC	67,4±1	107,5±1	92,50±1	310
Mini Thermal Binoculars(NVD) Battery Charger (Dual)	220±20V AC 50Hz	2x8,4VDC	70,7±1	107,6±1	113,5±1	470

ENERGY STORAGE SYSTEM

Nowadays, storing energy is indispensable due to the reasons such as supply reliability, stability of systems, usage of energy sources more efficiently, minimizing costs and issues of distributing energy and etc. ASPILSAN EDS systems regulate electricity due to the desired levels and work very silent at outdoor applications. ASPILSAN EDS systems are safer compared to generators at target applications because they behave as a USP (operates on grid and off grid). We manufacture EDS systems starting from 3,5 kWh up to the 1 MWh at various containers.



ŞEHİT(MARTRY)
HÜBEYİB TURAN
BASE ZONE DAKYANUS



ASPILSAN EDS75e

Type	Energy Storage System
Energy Storage Capacity	76 kWh
Cabin	10" Container
Weight	3850kg (Approximatly)
Discharge	Minimum : 60 min Nominal : 120 min.
Charge	Minimum : 60 min Nominal : 60 min.
Charge/Discharge Efficiency	≥95%
Battery Management System	Real-time control Balance for maximum capacity usage Algorithms for long battery life Available capacity/power estimation
Input Voltage	380 VAC (3Phases+Neutral+Earthing)
Input Voltage Tolerance	±20%
Input Frequency	50/60 Hz
Input Frequency Tolerance	0.05
Input Power Factor	0,98-0,99
Total Harmonic Noise-Current (THDI)	<5%
Output Voltage	380 VAC (3Phases+Neutral+Earthing)
Output Voltage Regulation	<±1%
Output Frequency	50/60Hz
Output Frequency Range	Online Mode synchronized with the network ±2%; lone working ±0,01Hz
Full Load Efficiency	95%
Total Harmonic Noise Voltage (THDI)	<3% Linear Load <5% Pulsed Load
Short Circuit	Electronically Protected
Safety	Electronically controlled conditioning inside the cabin Automatic and manual fuse protection Fire extinction system DC bus bar mechanic selector
Various Types of EDS Available	3,5 kWh (5 kVA), 135 x 60 x 30 cm, 110-120 kg (Portable EDS) 7 kWh (5 kVA), 180 x 60 x 30 cm, 170-180 kg (Portable EDS) 10,5 kWh (5 kVA), 135 x 120 x 30 cm, 240-250 kg (Portable EDS) 12 kWh (12 kVA), 100 x 150 x 30 cm, 180-200 kg (EDS for buildings) 12 kWh (12 kVA), 100 x 60 x 80 cm, 180-200 kg (EDS for buildings) 17 kWh (12 kVA), 135 x 75 x 80 cm, 330-350 kg (EDS for buildings) 150 kWh 10", 3x2,5x2,6m, 75-3.450 kg (External Type EDS) 500 kWh 20", 6x2,5x2,6m, 15.350 kg (External Type EDS) 1 MWh 40", 12,2x2,5x2,6m, 29.700 kg (External Type EDS)



No Cut-off Anymore

with our Energy Storage Systems



NI-CAD AIRCRAFT BATTERY CELLS

ASPILSAN Energy Ni-Cad aircraft batteries meet the quality requirements stipulated in relevant standards and military technical specifications.



Type	FP8H1C	FP12H1C	FP15H1C	FP17H1C	FP22H1C	FP25H1C	FP27H1C	FP40H1C	
Nato Stock Code (NSN)	6140 27 005 8070	6140 27 005 8069	6140 27 005 8068	6140 27 007 9953	-	6140 27 005 8067	6140 27 005 8066	6140 27 005 8065	
Nominal Voltage (V)	1,2	1,2	1,2	1,2	1,2	1,2	1,2	1,2	
Nominal Capacity (5hr) (Ah)	8	12	15	17	22	25	27	40	
Capacity (1hr) (Ah)	8	12	15	17	22	25	27	40	
instantaneous power of 20 Cells (kW)	5,2	9,2	11,5	11,8	14	15,7	18,8	22,5	
Charge	With 1CA current until the voltage of cell reaches 1,55V then 2 hours with 0,2CA current or 7 hours with 0,2CA current								
End of Charge Voltage	1,58V	1,58V	1,58V	1,58V	1,58V	1,58V	1,58V	1,58V	
Electrolyte	At 1,28kg/l density Potassium Hydroxide (KOH)								
Output Terminal	Bolt-Nut M (/Bot-Nut M8 M10)								
Dimensions (mm)	Width	27	27	28	28,5	27	27	35,5	35
	Length	60	59	59	80	80	80,1	80	79,1
	Height	108	144,5	171,5	143,5	164,5	208,5	180	239
Weight (gr)	400	480	650	690	860	1100	1200	1550	
Applications	SIKORSKY	F16	F4, RF-5	F16	-	SF-260D	MI17	CASA CN 235, C160	
	BLOCK HAWK	BLOCK30	T-38 – AB206	BLOCK 40/50	-	CASA C-212	MI-8	C-130, G-LV, CIT-7, B-212	
	UH60-S70	-	CESSNA 210/310	-	-	-	-	T37, UH-1H, COUGAR	
	-	-	-	-	-	-	-	AS-532 MA-32A	



NI-CAD AIRCRAFT BATTERIES

Complete batteries are composed of 20 single cells connected in a serial way. These batteries vary between 7 Ah to 40 Ah with a 24V output voltage.

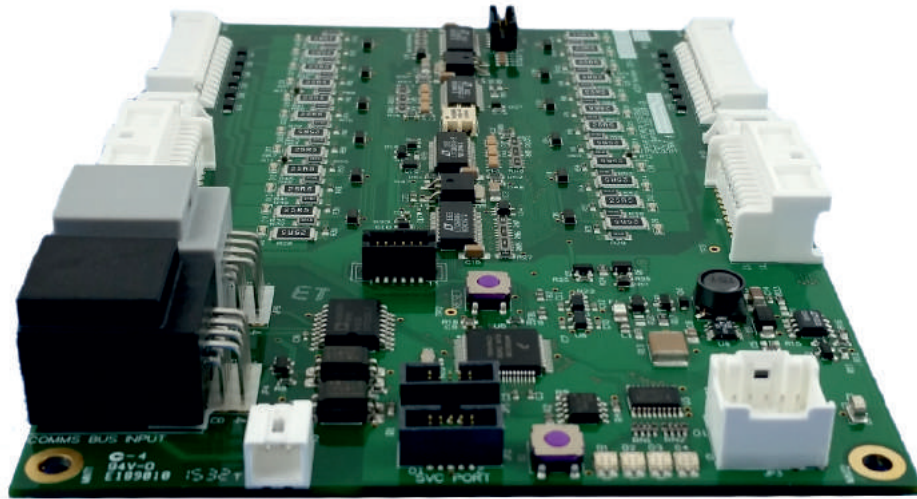


Storage Battery Type	Standards	Nato Stock No (NSN)	Cell Type	Nominal Voltage (V)	Nominal Capacity (Ah)	Instantaneous Power (kW)	Dimensions			Weight (kg)	Output Terminal	Application
							Width (mm)	Length (mm)	Height (mm)			
F20/8H1CT4		6140 27 005 8064	FP8H1C	24	7	5,2	142	318,5	123,5	10,5	MS18093 MS3509	SIKORSKY UH-60/S-70
F20/12H1CT		-	FP12H1C	24	12	9,2	211	230	162	13	SPECIAL	F-16 BLOCK30
F20/15H1C		6140 27 005 8062	FP15H1C	24	15	11,5	198	195	196	16,3	MS18093 MS 3509	F4,RF5,CESSNA 210 AB-206
F20/15H1C-2		6140 27 005 8063	FP15H1C	24	15	11,5	209	270	146	16,3		
F20/15H1CT-2	IEC952-1	-	FP15H1C	24	15	11,5	209	270	146	16,3		
F20/17H1C	IEC952-2	-	FP17H1C	24	17	11,8	198	195	196	16,7		
F20/17H1C-2	MIL-B-26220/D		FP17H1C	24	17	11,8	209	270	146	16,3		
F20/17H1CT-2	BS3G205V		FP17H1C	24	17	11,8	209	270	146	16,7		
F20/17H1C	G95238T2	-	FP17H1C	24	17	11,8	209	270	146	16,7		
F20/25H1CTF	TS EN 2570	-	FP17H1C	24	17	11,8	227	264	162	19	SPECIAL	F16 BLOCK 40/50
F20/27H1CM	TS7300 AS										MS 18093 MS 3509	SF-260D, CASA C-212
F19/40H1C	8033A	6140 27 005 8061	FP25H1C	24	25	15,7	197	254	224	24,5	SPECIAL	MI-8, MI-17
F20/40H1C	AMS24496-2	6140 27 005 8060	FP27H1C	24	27	18,8	169	480	236	29	MS 18093 MS3509	C-130 HERCULES
F20/40H1CTF	MS24497-2	6140 27 007 0699	FP40H1C	22,8	40	21,3	247	253	262	35		C160 TRANSAL, UH-1H, G-IV, CIT-7, B-212, T-37, MA-32A, CESSNA CHALLENGER
F20/40H1CE1WT (H)	MS24498-2	6140 27 005 3805	FP40H1C	24	40	22,5	247	253	262	36,5		CASA CN-235
		-	FP40H1C	24	40	22,5	210	420	267	38	BAC 102	COUGAR AS-532



ENGINEERING SERVICES

- Battery Management Systems
- Protection Circuits
- BDK Array



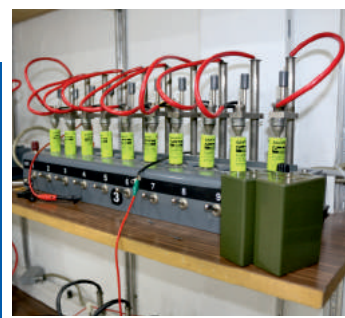
TESTING SERVICES

- Electrical Capacity Test
- Low and High Temperature Capacity Test
- Measuring Internal Resistance
- Life Test
- Vibration Test

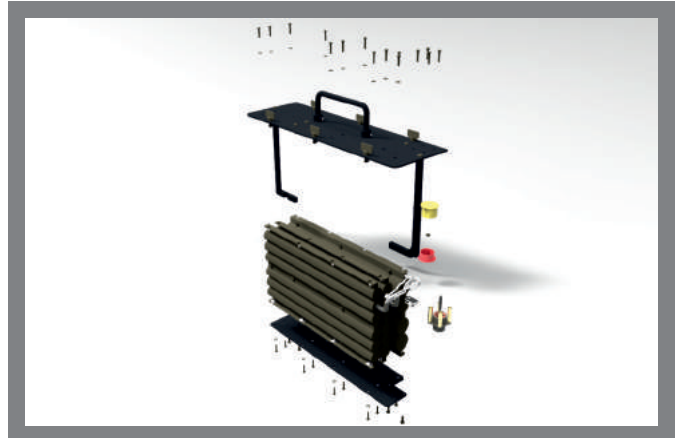
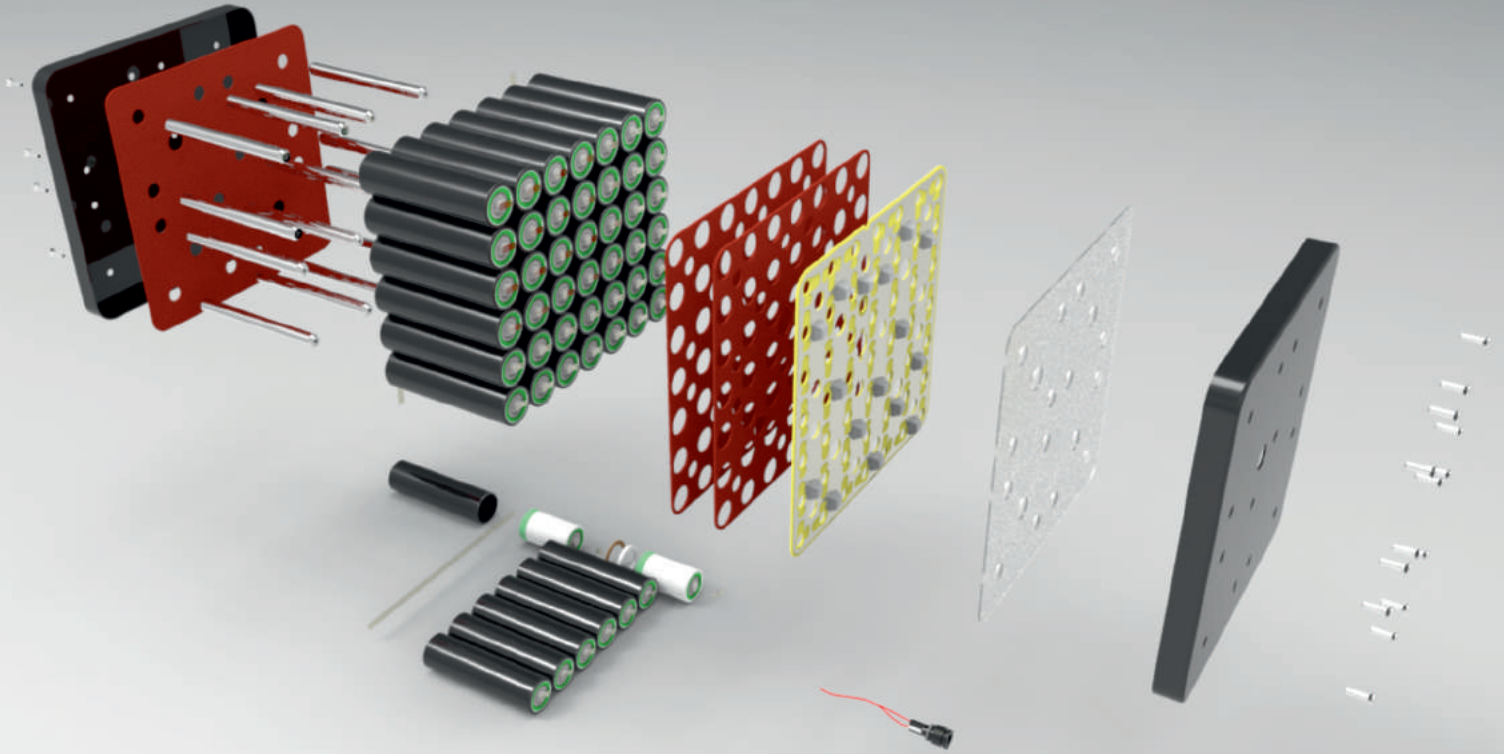


CELL / BATTERY

TS EN 61951-1	Secondary Cells and batteries - Portable, leak-proof, rechargeable single cell containing alkaline or other non-acid electrolytes Part 1: Nickel - Cadmium	
	Article 7.1.	Charging test for the purposes of the experiment
	Article 7.2.1.	20°C Discharge Performance
	Article 7.2.2.	-18°C Discharge Performance
	Article 7.2.3.	Discharge performance for fast charging cells
	Article 7.3.	Charging (capacity) permanence
	Article 7.4.	Durability
	Article 7.4.1.	Resistance to cycles
Article 7.4.2.2.	Permanent charging durability for L, M,H or X cylindrical cells L, M or H button shaped cells	
TS EN 61951-2	Secondary Cells and batteries - Portable, leak-proof, rechargeable single cell containing alkaline or other non-acid electrolytes Part 2: Nickel - hydride	
	Article 7.1.	Charging test for the purposes of the experiment
	Article 7.2.1.	20°C Discharge Performance
	Article 7.2.2.	-0°C Discharge Performance
	Article 7.2.3.	Discharge performance for fast charging cells
	Article 7.3.	Charging (capacity) permanence
	Article 7.4.	Durability
	Article 7.4.1.	Resistance to cycles
	Article 7.4.2.2.	Permanent charging durability for L, M,H or X cylindrical cells L, M or H button shaped cells
	Article 7.4.2.3	Permanent charging durability for LT, MT or HT X cylindrical cells
	Article 7.4.2.4	Permanent charging durability for LU, MU or HU X cylindrical cells
	Article 7.6.	Overcharge
	Article 7.7.	Operation of security device
	Article 7.8.	Storing
	Article 7.9.	Charging acceptance at + 55 °C LT, MT or MT cylindrical cells
Article 7.10.	Internal Resistance	
Article 8	Mechanical Experiments	
TS EN 61960	Secondary Cells and Batteries - Secondary lithium batteries and cells containing alkaline or other non-acid electrolytes for portable applications	
	Article 7	Electrical tests
	Article 7.1.1	Test-purpose charging procedure
	Article 7.2.	Discharge performance
	Article 7.2.1.	Discharge Performance at 20°C
	Article 7.2.2	Discharge Performance at -20°C
	Article 7.3.	Charging (capacity) permanence
	Article 7.4.	Recovery charging after long storing period
Article 7.5.	Resistance to cycles	
Article 7.6.	Battery Internal Resistance	



DESIGN SERVICES (3D)



FOR A CLEANER WORLD, PLEASE RECYCLE WASTE BATTERIES



WARNING

- 1- If an abnormal situation such as smell, discoloration, deformation or overheating is encountered, unplug the battery and do not use it.
- 2- If electrolyte (chemical liquid) contacts with the eye, wash your eyes with plenty of clean water immediately and see a doctor on time.
- 3- Do not leave the battery on microwave oven or pressured household appliances. It may cause overheating, blasting or explosion.
- 4- If it doesn't reach full charge, stop charging process.
- 5- If there is electrolyte leakage or smell, put the battery away from fire or spark sources.

CAUTION

- 1- Do not open or disassemble the battery. There is a protective circuit for safety in the battery. If this circuit is damaged, it may cause overheating, blasting or explosion and/or the battery can get damaged.
- 2- Do not contact metal pieces with positive and negative terminals. If there is a short circuit, the battery may overheat, blast and/or get damaged.
- 3- Do not throw the battery into the fire.
- 4- Do not contact the battery with water.
- 5- Do not solder the battery directly.
- 6- Do not link positive and negative poles reversely.
- 7- Do not charge with higher current than it is specified. Charging with not original products may cause failure and/or burnings.
- 8- Do not use the batteries in the areas that are not allowed.
- 9- Do not damage battery with any kind of tools, do not hammer or dispose to the environment.



ASPILSAN Energy is an establishment of Turkish Armed Forces Foundation.

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