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No.: GJW2012-3886

检验报告

TEST REPORT

NAME OF SAMPLE: GEL BATTERY

CLIENT: Shenzhen CSPOWER Battery Tech Co., Ltd.

CLASSIFICATION OF TEST: Commission Test

Vkan Certification & Testing Co., Ltd.
(CVC - former GTIHEA)



检 验 报 告

TEST REPORT

No.: GJW2012-3886

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Name of product: GEL BATTERY	Trade mark: -
Type/Model by: CG12-250 12V 250Ah CG12-200 12V 200Ah CG12-150 12V 150Ah CG12-100 12V 100Ah	Sample status: The samples' status is good.
Manufacturer by: Shenzhen CSPOWER Battery Tech Co., Ltd.	Commissioned by: Shenzhen CSPOWER Battery Tech Co., Ltd.
Manufacturer address: Duichuan Industry Park, Yanghe Town, Gaoming, Foshan city, Guangdong, China	Commissioner address: Floor 3, Building B, Huafeng Technology park, Baoan, Shenzhen City, P.R.China
Quantity of sample: 6pcs	Sampled by: —
Sample identification: 12V250AH 1#~3# 12V200AH 4# 12V150AH 5# 12V100AH 6#	Sampling at (place): —
Means of receiving: Submitted by Manufacturer	Means of sampling: —
Classification of test: Commission Test	Sampling date: —
Receiving date: 2012-11-20	Completing date: 2013-01-29
Tested according to: IEC 60896-21:2004, IEC 60896-22:2004	Test item: 12 items
<p>Test conclusion:</p> <p>The GEL BATTERIES submitted by Shenzhen CSPOWER Battery tech Co., Ltd. are tested according to IEC 60896-21:2004 Stationary lead-acid batteries - valve regulated types-methods of test and IEC 60896-22:2004 Stationary lead-acid batteries - valve regulated types-requirements.</p> <p>The test results of the High current tolerance, Internal ignition from external spark sources, Protection against ground short propensity, Content and durability of required markings, Material identification, Valve operation, Flammability rating of materials and Stability against mechanical abuse of units during installation comply with IEC 60896-21:2004 and IEC 60896-22:2004.</p> <p>The test values of the Gas emission, Short circuit current and d.c. internal resistance and Discharge capacity are stated in the report.</p>	



Huang Kun

Zhang Siyao

Approved by:

Reviewed by:

Tested by:

Description and illustration of the sample:

The samples' status is good.

Description of the sampling procedure:

/

Description of the deviation from the standard, if any:

/

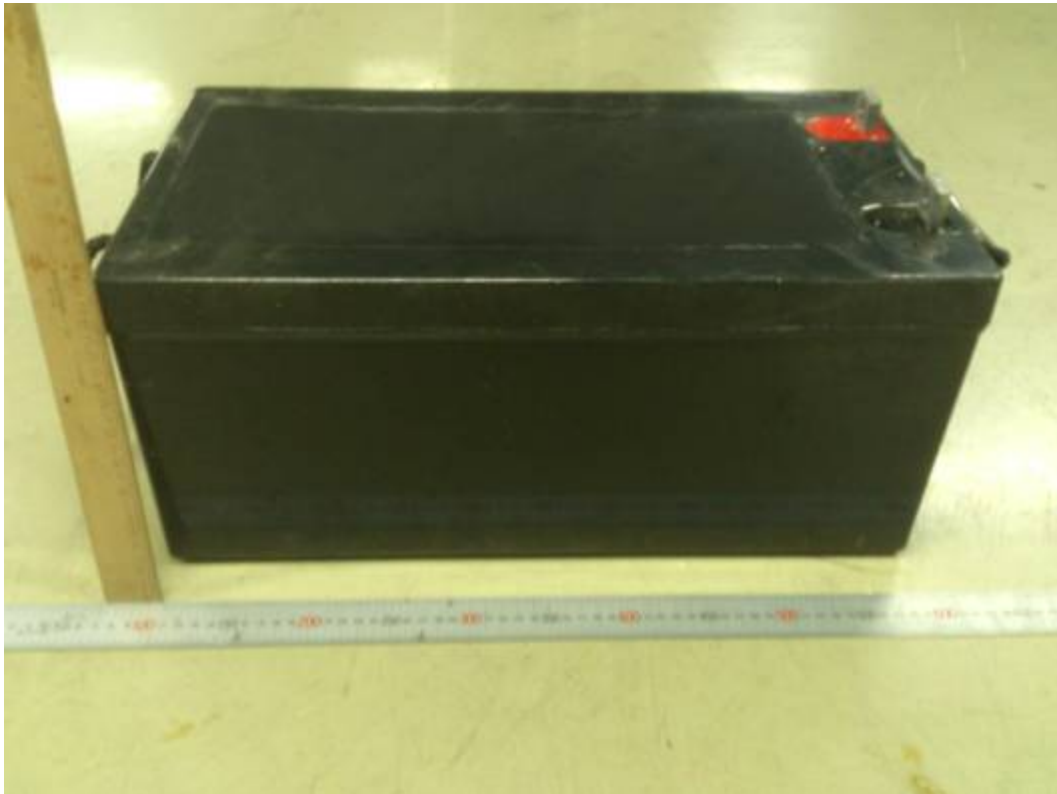
Remarks:

Throughout this report a comma is used as the decimal separator.

Type	Items
12V250AH	High current tolerance, Internal ignition from external spark sources, Protection against ground short propensity, Content and durability of required markings, Material identification, Valve operation, Flammability rating of materials, Stability against mechanical abuse of units during installation, Gas emission, Short circuit current and d.c. internal resistance, Discharge capacity
12V200AH 12V150AH 12V100AH	Discharge capacity

Photos and markings

12V250AH (12V , 250Ah)



Photos and markings

12V200AH (12V , 200Ah)



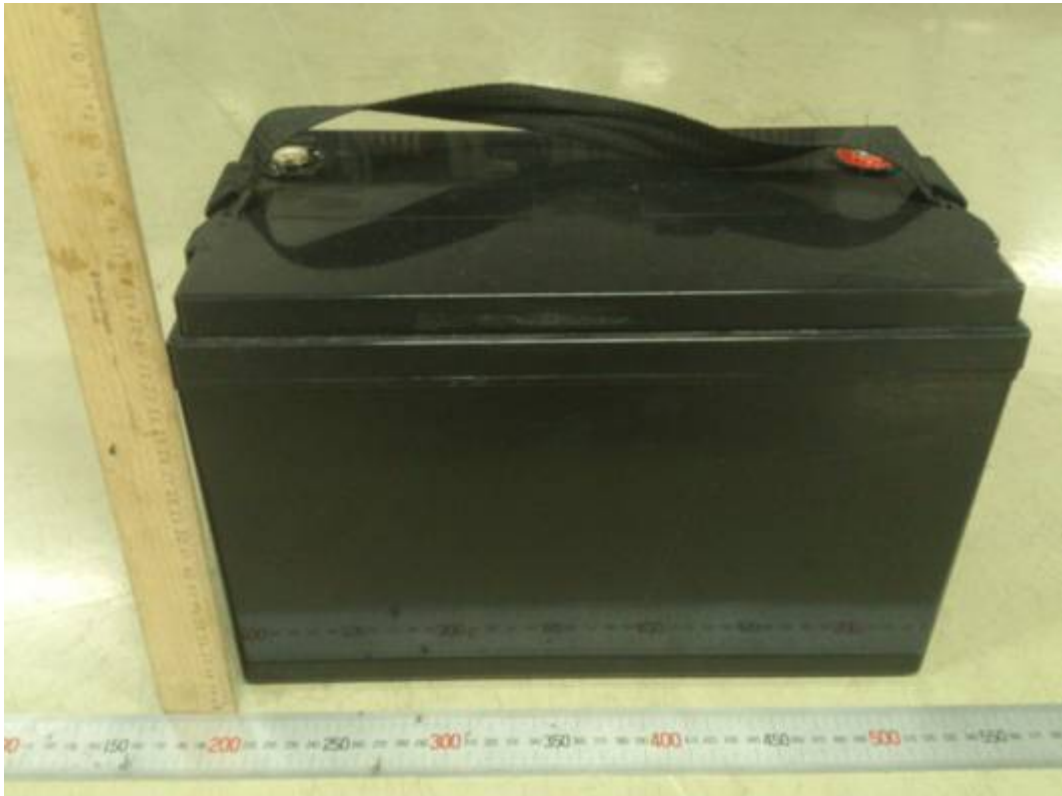
Photos and markings

12V150AH (12V , 150Ah)



Photos and markings

12V100AH (12V , 100Ah)



Pages

IEC 60896-21:2004 IEC 60896-22:2004			
Cl.	Requirement – Test	Result	Verdict

6	Safe operation requirements					
6.1	Gas emission					
	The test methods are according to clause 6.1.1 to 6.1.14 which are stated in the standard IEC 60896-21	No.	12V250AH		state data	
	Requirement and application: At the rated float charge voltage; state data for all applications: ml gas per cell, h and Ah at 20°C; Requirement and application: at 2,40Vpc overcharge voltage conditions; state data for all applications: ml gas per cell, h and Ah at 20°C;	Uflo(V)=2.275 ml / (Ah · h · cell)	1#			
			The 1 st	The 2 nd		The 3 rd
			0,028	0,027		0,026
		at 2,40Vpc overcharge ml / (Ah · h · cell)	0,27			
6.2	High current tolerance			P		
	The test methods are according to clause 6.2.1 to 6.2.6 which are stated in the standard IEC 60896-21	12V250AH: The discharge current is 750A (which is specified by the manufacturer). after 30s of high current flow the samples showed no incipient melting or of no loss of electrical continuity		P		
	Requirement and application: Measure unit voltage, inspect and document the status of the top-lead and terminals of each unit after 30s current flow; Pass for all applications: Show evidence of no incipient melting or of no loss of electrical continuity after 30s of high current flow (value to be stated). After the completion of the specified discharge duration, the test shall stand for 5minutes in open circuit and their voltage measured and reported.	No.	1#		2#	3#
		(Voltage after the test)	12,05		12,02	12,03
6.3	Short circuit current and d.c. internal resistance					
	The test methods are according to clause 6.3.1 to 6.3.6 which are stated in the standard IEC 60896-21	12V250AH:		state data		
	Define prospective short-circuit value I _{sc} and internal resistance R _i of all units of a type range	No.	1#		2#	3#
		Short-circuit: (A)	5034		5030	5036
		Resistance: (Ω)	0,0025	0,0028	0,0026	
6.4	Protection against internal ignition from external spark sources					
	The test methods are according to clause 6.4.1 to 6.4.6 which are stated in the standard IEC 60896-21	12V250AH: 1#, 2#, 3#		P		

Pages

IEC 60896-21:2004 IEC 60896-22:2004			
Cl.	Requirement – Test	Result	Verdict
	Requirement and application: induce sparks near representative valve/barrier assemblies during emission Pass for all application: no evidence of rapid combustion or explosion beyond valve/barrier assemblies	No evidence of rapid combustion, no explosion beyond valve/barrier assemblies.	P
6.5	Protection against ground short propensity		P
	The test methods are according to clause 6.5.1 to 6.5.9 which are stated in the standard IEC 60896-21	12V250AH: 1#, 2#, 3#	
	Requirement and application: Operate units in different orientations and apply d.c. gradient; Pass for all applications: No evidence of ground short and leakage phenomena;	No evidence of ground short, no leakage.	
6.6	Content and durability of required markings		P
	The test shall consist of visual verification of a) the presence and b) the legibility of all the required markings before and after exposure to selected chemicals The test methods are according to clause 6.6.1 to 6.6.4 which are stated in the standard IEC 60896-21 including test with water and aliphatic solvent, test with neutralizing solutions and test with electrolyte	12V250AH: 1#, 2#, 3# The markings are readable after rubbed 15s with water, petroleum, solution of sodium carbonate, and 40% in weight of H ₂ SO ₄ in water respectively.	
	Requirement and application: 1. Information shall remain readable after exposure to chemicals and remain in place 2 Requested information to be present	The requested information is present.	
6.7	Material identification		P
	The test methods are according to clause 6.7.1 to 6.7.4 which are stated in the standard IEC 60896-21	12V250AH: 1#, 2#, 3#	
	Requirement and application: Inspect case and/or cover for ISO 1043-1 materials symbols. Expose to chemicals. Pass for all applications: ISO symbols present on the outside of the cover or/and case. Symbols shall remain readable after exposure to chemicals and remain in place	The cover and case is ABS material.	

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IEC 60896-21:2004 IEC 60896-22:2004			
Cl.	Requirement – Test	Result	Verdict
6.8	Valve operation		P
	The test methods are according to clause 6.8.1 to 6.8.3 which are stated in the standard IEC 60896-21	12V250AH: 1#, 2#, 3# open valve pressure is: 20kpa close valve pressure is: 9kpa	
	Requirement and application: Overcharge units and detect gas flow from the valve; Pass for all applications: Gas release detected before and after stress temperature impact test.	Gas release is detected before and after stress temperature impact test.	
6.9	Flammability rating of materials		State data
	The test methods are according to clause 6.9.1 to 6.9.4 which are stated in the standard IEC 60896-21	12V250AH: 1#, 2#, 3#	
	Requirement and application Determine flammability rating of case and cover material; State data for all applications: State the flammability rating level for samples of thickness equivalent to that of case and cover.	Flammability rating level :V0	
6.10	Intercell connector performance		N/A
	The test methods are according to clause 6.10.1 to 6.10.2 which are stated in the standard IEC 60896-21	This test item is not applicable for the samples	
	Requirement and application: Measure and report maximum intercell connector temperature reached; State data for all applications: State maximum temperature reached.		
6.11	Discharge capacity		P
	The test methods are according to clause 6.11.1 to 6.11.12 which are stated in the standard IEC 60896-21	See appended table A	
	Requirement and application: Determine actual capacity C_a ; C_a to be at least \times % of C_{rt} with all units at all rates shown below ; 10h \ 8h \ 3h \ 1h \ 0,25\ 1,80Vpc\1,75Vpc\ 1,70Vpc\ 1.60Vpc 1.60Vpc\ $C_a \geq 95\% C_{rt}$		

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IEC 60896-21:2004 IEC 60896-22:2004			
Cl.	Requirement – Test	Result	Verdict
6.12	Charge retention during storage		
	The test methods are according to clause 6.12.1 to 6.12.7 which are stated in the standard IEC 60896-21		
	Requirement and application: Determine charge retention factor C_{rf} after 6 months of storage; Comply for all applications: $C_{rf} \geq 70\%$		
6.13	Float service with daily discharges		
	The test methods are according to clause 6.13.1 to 6.13.5 which are stated in the standard IEC 60896-21		
	Requirement and application: see table 9 and Table 17 in the standard IEC 60896-22		
6.14	Recharge behavior		
	The test methods are according to clause 6.14.1 to 6.14.12 which are stated in the standard IEC 60896-21		
	Requirement and application: Rbf24h 24h Recharge behavior factor $\geq 90\%$ Rbf168h 168h Recharge behavior factor $\geq 98\%$		
6.15	Service life at an operating temperature of 40 °C		
	The test methods are according to clause 6.15.1 to 6.15.5 which are stated in the standard IEC 60896-21		
	Requirement and application: Brief duration exposure time: ≥ 500 days; Medium duration exposure time: ≥ 750 days; Long duration exposure time: ≥ 1100 days Very long duration exposure time: ≥ 1700 days.		
6.16	Impact of a stress temperature of 55 °C or 60 °C		
	The test methods are according to clause 6.16.1 to 6.16.8 which are stated in the standard IEC 60896-21		

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IEC 60896-21:2004 IEC 60896-22:2004			
Cl.	Requirement – Test	Result	Verdict
	Requirement and application: At 60°C Capacity monitored with 3h rate discharge test: Brief duration exposure time ≥ 150 days; Medium duration exposure time ≥ 175 days; Long duration exposure time ≥ 250 days; Very long duration exposure time ≥ 350 days.		
6.17	Abusive over-discharge		
	The test methods are according to clause 6.17.1 to 6.17.15 which are stated in the standard IEC 60896-21 Requirement and application: determine capacity ration C_{aod} , unbalanced string over-discharge C_{oad} , $C_{oad} \geq 0,80$ (for the string)		-
	Requirement and application: determine capacity ration C_{aoc} , unbalanced string over-discharge C_{oac} , $C_{oac} \geq 0,90$ (for the string)		
6.18	Thermal runaway sensitivity		
	The test methods are according to clause 6.18.1 to 6.18.14 which are stated in the standard IEC 60896-21		
	Requirement and application: Comply for all applications: Achieve at least 1 week below 60°C at 2,45Vpc and at least 24h below 60°C at 2,60Vpc; Show ultimate time to 60°C or ultimate temperature after 168h at 2,45Vpc and 2,60Vpc.		-
6.19	Low temperature sensitivity		
	The test methods are according to clause 6.19.1 to 6.19.13 which are stated in the standard IEC 60896-21		-
	Requirement and application: show abusive low temperature service capacity (Cals) of all unit and report eventual freezing induced damages.		
6.20	Dimensional stability at elevated internal pressure and temperature		
	The test methods are according to clause 6.20.1 to 6.20.6 which are stated in the standard IEC 60896-21		-

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IEC 60896-21:2004 IEC 60896-22:2004			
Cl.	Requirement – Test	Result	Verdict
	Requirement and application: Show dimensional change in percentage and in mm.		
6.21	Stability against mechanical abuse of units during installation		P
	The test methods are according to clause 6.21.1 to 6.21.6 which are stated in the standard IEC 60896-21	12V250AH: 1#, 2#, 3#	
	Requirement and application: Show leakage inspection results; No leakage detectable after two times two drops.	No leakage detectable after two times two drops.	

Table A: 6.11 Discharge capacity								
Type	12V250AH					12V200A H	12V150A H	12V100A H
C No	C ₁₀ (Ah)	C ₈ (Ah)	C ₃ (Ah)	C(Ah)	C _{0.25} (Ah)	C ₁₀ (Ah)	C ₁₀ (Ah)	C ₁₀ (Ah)
Crt	250	240	187,5	137,5	106,3	200	150	100
1 #	267	247	195	147	117	204	146	121
2 #	252	246	194	143	112	-	-	-
3 #	255	249	197	147	118	--	-	-
%of Crt								
1 #	106,8	102,9	104,0	106,9	110,1	102,0	97,3	121,0
2 #	100,8	102,5	103,5	104,0	105,4	-	-	-
3 #	102,0	103,8	105,1	106,9	111,0	-	-	-

注 意 事 项

Important

1. 报告无检验单位公章无效。
The test report is invalid without the official stamp of CVC,
2. 未经本试验室书面同意, 不得部分地复制本报告。
Any photocopies or part photocopies of the test report are forbidden without the written permission from CVC,
3. 报告无负责人、审核人签名无效。
The test report is invalid without the signatures of Author and Reviewer,
4. 报告涂改无效。
The test report is invalid if altered,
5. 对检验报告若有异议,应于收到报告之日起十五天内向检验单位提出。
Objections to the test report must be submitted to CVC within 15 days,
6. 一般情况,委托检验仅对来样负责。
Generally, commission test is responsible for the tested samples only,
7. 检验结果中“N/A”表示“不适用”,“P”表示“通过”,“F”表示“不通过”,“-”表示“不需要判定”。
As for the test result, “N/A” means “not applicable”, “P” means “pass” and “F” means “fail”, “-” means “no need for judgement”.