TEST REPORT

Report No.: N3E204-108R0285-017 v2

Applicant: KUNG LONG BATTERIES INDUSTRIAL CO., LTD.

Address: NO. 6, TZU-LI 3 RD, NANTOU CITY, NANTOU COUNTY, TAIWAN

Product: Valve Regulated Lead-Acid Battery

Model: EV50-12NE and EV50-12E

Note: (Client't declaration) EV50-12NE and EV50-12E are all the same products, only the terminals are different.

Test standard/Method: Special Provision 238 in International Maritime Dangerous Goods Code 2018 Edition.(Amdt 39-18)

Date of Application: 2019-02-11

Date of Issue: 2019-02-22

Test Summary:

Test Item	Test Result	Note
Special Provision 238	PASS	N/A

Prepared by:

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Testing Engineer

Reviewed by:

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Technical Manager

The issuance of this report does not exonerate buyers or sellers from exercising all their rights and discharging all their liabilities under the contract of sales. Stipulations to the contrary are not binding on the company. The company's responsibility under this report is limited to proven negligence and will in no case be more then ten times the amount of the testing fee.

1. Lab Environmental Conditions

(a) Ambient temperature : (20 ± 5)℃
(b) Ambient humidity : (55 ± 20) % RH

2. Test Equipment

Name	Brand	Model	Serial No.
Oven	Terchy	CK-200	CCS057
Vibration Tester	King Design	KD-9363-EM	CCS161
Low Pressure Chamber	博紳	A-1	CCS139
Temp. and Humidity Recorder	Testo	175H1	CCS150

3. Test Item

(a) Vibration test
(b) Pressure differential test
(c) High temperature test

4. Test Method

Vibration test — The battery is rigidly clamped to the platform of a vibration machine and a simple harmonic motion having an amplitude of 0.8 mm (1.6 mm maximum total excursion) is applied. The frequency is varied at the rate of 1 Hz/min between the limits of 10 Hz to 55 Hz. The entire range of frequencies and return is traversed in 95 ± 5 minutes for each mounting position (direction of vibrator) of the battery. The battery is tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for equal time periods.

Pressure differential test — Following the vibration test, the battery is stored for six hours at 24°C 4°C while subjected to pressure differential of at least 88 kPa. The battery is tested in three mutually perpendicular positions (to include testing with fill openings and vents, if any, in an inverted position) for at least six hours in each position.

Non-spillable type batteries which are an integral part of and necessary for the operation of mechanical or electronic equipment shall be securely fastened in the battery holder on the equipment and protected in such a manner as to prevent damage and short circuits.

High temperature test — Non-spillable batteries are not subject to the provisions of this Code if, at a temperature of 55°C, the electrolyte will not flow from a ruptured or

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cracked case and there is no free liquid to flow and if, when packaged for transport, the terminals are protected from short circuit.

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5. Test Result

Vibration test :

Model	Visual check	Test result
EV50-12NE	No leakage of battery fluid	Pass

Pressure different test :

Model	Visual check	Test result
EV50-12NE	No leakage of battery fluid	Pass

High temperature test :

Model	Visual check	Test result
EV50-12NE	No leakage of battery fluid	Pass

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Photo for EV50-12NE

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Photo for Vibration test

Photo for Pressure different test

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Photo for High temperature test

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