

Battew : Reoorted incidents

Some reported incidents



“Power bank bakar paha”
- Harian Metro Khamis
25 Ogos 2016

Power
bank



Power bank
exploded in a car



Power bank explode

This happened while the man
was charging his phone with
the power bank in his pocket

Hand
phone



Paha wanita ini cedera
gara-gara telefon bimbit
miliknya meletup dalam
saku seluar

Some reported incident

Vape

Nyaris buta vape meletup depan muka

November 11, 2015 Berita Utama, Utama 0



Hover
board



Laptop



A laptop / notebook computer that burst into flames at a Japanese Conference in June 2006, in Osaka Japan
- the fire and explosion was due to a faulty lithium battery

— source The Inquirer 2006 (July)

What are the likely cause(s) of such incidents

3 things that can potentially make the device (i.e power bank, hand phone, electronics cigarettes (vape), laptop, hover board) explode;

Poor Battery
Quality

1

-made of cheaper material —
to save cost

-some manufacturers use
recycled batteries

Explosion

Wrong
circuit
design

2

3

Improper or
wrong usage

-Expose to high temperatures or
humidity
-Overcharging

Remember — do not use power
banks in your pocket

A power bank should have a good circuit design
incorporating with:

Power protection:

This is a mechanism that ensures that the battery stops
charging once it has reached full capacity.

Short circuit control:

it's circuit fully insulated to prevent short circuit.

Temperature control: ... such that once it hits a
particular temperature, it shuts down to cool off.

The cost of non-compliance of secondary batteries to.....

1) User

- might expose risks to user's safety, health
- If incidents happen — resulted in injury or in worst case, fatality
- Less value for money - purchase / use of unsafe product and/or of low quality, less reliable

2) Supplier / importer / manufacturer

- Cost of product recall (if required)
- affect company's reputation
- unable to sell

3) Regulator / country

- Influx of low quality / sub standard product in the market
- become an issue - safety issue / dumping ground etc...

How can SIRIM assist?

SIRIM will always playing it's roles in providing assistance to industry & regulator in fighting issue of sub standard products

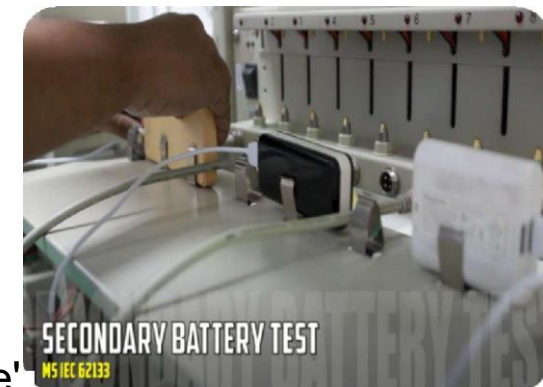
How?

- a) through compliance testing
- b) through our product certification scheme
- c) through SIRIM's market surveillance activities
- d) by carrying out verification testing on samples picked up from market - through enforcement & market surveillance —by regulator (ST, SKMM...etc)
- e) by providing a support to KPDNKK initiatives to raise the issue of sub-standard or unsafe product (batteries) to the widest audience possible

Battery : Testino Services & Renuirement

OUR CURRENT SERVICES...on battery testing..

- **Primary Battery:**
 - Standard: MS IEC 60086
 - Type of battery: Size-AA, AAA, AAAA,C,D and 9V
 - Application: Primary batteries designed or intended for consumer and household such as - torch light, remote control etc...
 - Regulation: KPDNKK's Consumer Protection (Safety Standards for Primary Batteries) Regulations 2013
- **Secondary Battery.**
 - Standard : MS IEC 62133: Secondary cells and batteries containing alkaline or other non-acid electrolytes
 - Type of battery: Lithium-ion, Nickel cadmium
 - Application: Batteries for laptop, mobile-phone, vape, power bank etc...
 - Regulation: To be regulated by KPDNKK's
- **Automotive Battery.**
 - Standard: IEC 60095, MS 45
 - Type of battery: Lead-acid battery
 - Application: Batteries for automotive industry



Secondary Batteries (also known as rechargeable batteries)

- is a group of one or more secondary cells.
- use electrochemical reactions that are electrically reversible.
- come in many different sizes and use different combination of chemicals

Commonly used secondary cell (“rechargeable battery”) chemistries are;

- 1) Lead acid
- 2) Nickel cadmium (NiCd)
- 3) Nickel metal hydride (NiMH)
- 4) Lithium ion (Li-ion) and
- 5) Lithium ion polymer (Li-ion polymer)



for a mobile phone



for a powerbank



for a Note book



for an e-cigarette

for a vape

Test Standards

***Test standards are in place that mandate a number of individual tests designed to assess specific safety risks associated with the use of secondary batteries

MS IEC 62133:2017 —

Secondary cells and batteries containing alkaline or other non-acid electrolytes — Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable appliances



MALAYSIAN
STANDARD

us ec eyu zoo

Secondary cells and batteries containing alkaline or other non-acid electrolytes - Safety requirements for portable sealed secondary cells, and for batteries made from them, for use in portable applications
fiEC 62133:2012. IT}

It is a total adoption of IEC 62133:2012 (IDT)

Those 2 standards cross refer to IEC 62281 - standard requirement for transport tests

DEPARTMENT OF STANDARDS MALAYSIA

Summary of IEC 62133-main standard

Based on the reference standard which is IEC 62133, all the tests are described in clause 8 (for lithium system)

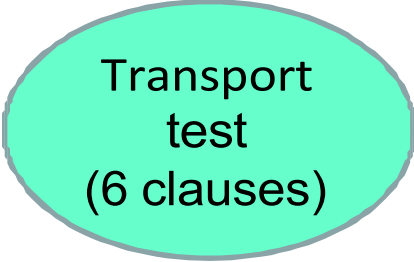
- Clause 8.1: Charging procedure for test purposes
 - Clause 8.1.1: First procedure
 - Clause 8.1.2: Second procedure
- Clause 8.2: Intended use
 - Clause 8.2.1: Continuous charging at constant voltage (cells)
 - Clause 8.2.2: Moulded case stress at high ambient temperature battery
- Clause 8.3: Reasonably foreseeable misuse
 - Clause 8.3.1: External short circuit (cell)
 - Clause 8.3.2: External short circuit (battery)
 - Clause 8.3.3: Free fall
 - Clause 8.3.4: Thermal abuse (cells)
 - Clause 8.3.5: Crush (cells)
 - Clause 8.3.6: Over-charging of battery
 - Clause 8.3.7: Forced discharge (cells)
 - Clause 8.3.8: **Transport tests (refer IEC 62281)**
 - Clause 8.3.9: Design evaluation (*Not Applicable*)
- *Note: if the battery of a nickel systems, then clause 7 is applicable.*

Charging
Procedure for
test purposes
(2 clauses)

Intended
use
(2 clauses)

Reasonably
foreseeable
misuse
(9 clauses)

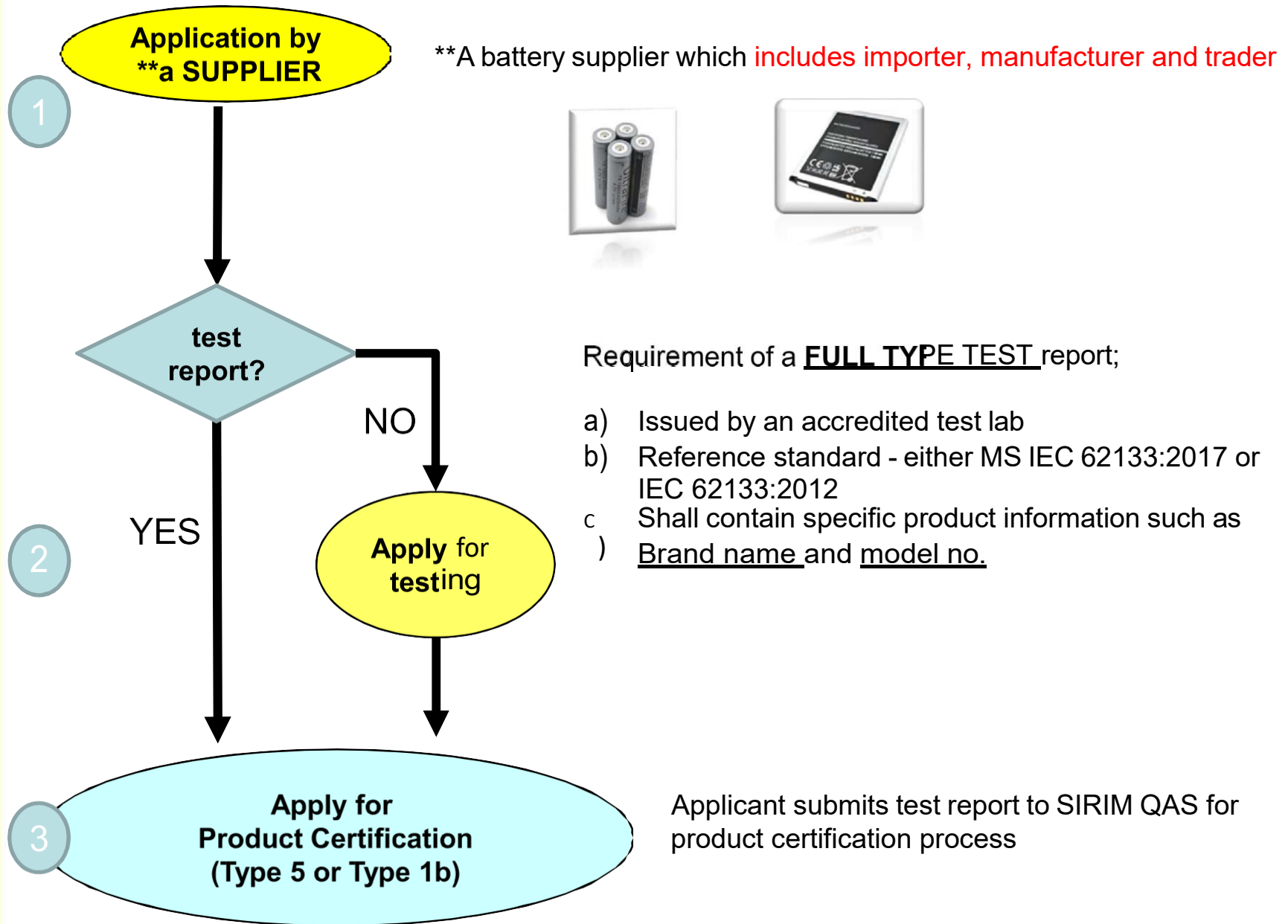
- Clause 8.3.8: **Transport tests (refer IEC 62281)**
 - This standard cover transport tests for IEC 62133
 - This test required 20 pcs battery which have to undergo all the tests as listed below (in sequence).
 - Clause 6.4: Transport tests
 - Clause 6.4.1 — Altitude
 - Clause 6.4.2 — Thermal cycling
 - Clause 6.4.3 — Vibration
 - Clause 6.4.4 — Shock
 - Clause 6.4.5 — External short-circuit
 - Clause 6.4.6 — Impact/crush
- Clause 10: Marking
 - Clause 10.2: Battery marking
 - Clause 8.1.2: Second procedure
- Clause 11: Packaging.



Transport
test
(6 clauses)

Testino & ceJification Process

GENERAL PROCESS



APPLICATION FOR TESTING

Application by
*a SUPPLIER

*A supplier includes importer, manufacturer and trader.



A supplier submit a complete test application with

- Product information
- sufficient quantity as specified by standard

Submit to



SIRIM QAS International test lab performs a full type test to a standard (to MS IEC 62133:2017 or IEC 62133:2012 + National Deviation(if any))

SIRIM QAS INTL
TEST LAB



SIRIM QAS International test lab shall issue a full type test report

The report shall then be used for submission for an application for product certification

PROCESS FLOW : PRODUCT CERTIFICATION SCHEME (TYPE 5)

Enquiry

- a) Submits application
- b) Document required;
 - i) Application form
 - ii) A full type test report
 - iii) Technical file/documentation
 - iv) Other administrative requirements

Application

Document evaluation

Evaluation on a full type test report + all of the submitted document (as above)

Factory Audit

SIRIM QAS will conduct factory audit, sampling & verification testing (if any)



Sampling selection & verification testing

Recommendation & Approval

SIRIM QAS will issue license and issue label

Award of license



Submit company profile + certification to KPDNKK



+



Application and Documents Evaluation

- Questionnaire Form (ePCS/FOR/01-1)
- Application Form (ePCS/FOR/01-2)
- Declaration of Approval from relevant authority (ePCS/FOR/01-3)*
- Declaration of Purpose for obtaining SIRIM License (ePCS/FOR/01-3.1)*
- Declaration of Trade Mark (ePCS/FOR/01-4)
- Authorization Letter of Trade Mark (ePCS/FOR/01-4.1)
- Declaration from Manufacturer (ePCS/FOR/01-5)*

*Note: * - whenever applicable*

PROCESS FLOW : PRODUCT CERTIFICATION SCHEME (TYPE 5) - Surveillance and Renewal process

