SECONDARY BATTERY

TESTING REQUIREMENT

26th June 2018

Electrical & Electronic 1 Section
Testing Services Department
Presentation Outline

- A brief information on “Garis Panduan Pematuhan Standard Keselamatan Bateri Sekunder 2018” - KPDNKK

- A brief introduction - SIRIM QAS International

- Battery Testing & Requirement of Standard

- Certification requirement
  - Type 1b certification (batch certification/consignment)

  (who will talk about Type 5 certification)
GARIS PANDUAN PEMATUHAN STANDARD KESELAMATAN BATERI SEKUNDER 2018
PENGENALAN

bertujuan untuk memberi panduan kepada perniagaan yang membekalkan bateri sekunder di Malaysia untuk mematuhi piawaian/standard keselamatan yang disyorkan oleh KPDNKK

DEFINISI

BATERI SEKUNDER (RECHARGEABLE BATTERY)

- Semua jenis sel dan bateri sekunder yang mengandungi elektrolit alkali atau bukan asid seperti definisi MS IEC 62133: 2017
- Termasuk sel dalam power bank, rokok elektronik, telefon bimbit, kamera, komputer riba, lampu mudah alih, permainan kawalan jauh dsb.

PENGELOUARAN

- Apa-apa perihal mengeluarkan, usaha (proses) menghasilkan atau penghasilan semua jenis bateri sekunder
DEFINISI

PENGEDARAN
- Apa-apa perbuatan atau hal mengedarkan semua jenis bateri sekunder termasuklah mengimport atau mengeksport

PERUNCITAN
- Apa-apa penjualan atau pembelian untuk penjualan barang-barang berkaitan semua jenis bateri sekunder

PEMATUHAN

Mana-mana orang yang terlibat dalam aktiviti pengeluaran, pengedaran termasuk import, eksport dan peruncitan semua jenis bateri sekunder dalam Malaysia ("Pemilik Produk") digalakkan dan disyorkan untuk mematuhi Garis Panduan ini
PIHAK BERWIBAWA

Mana-mana makmal yang diakreditasi oleh Jabatan Standard Malaysia bagi pengujian bateri sekunder

SIRIM QAS International Sdn. Bhd. bagi pengeluaran persijilan atau pelabelan standard keselamatan

STANDARD KESELAMATAN

**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 applications

**IEC 62133: 2012** 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

Pemilik produk juga digalakkan dan disyorkan untuk mendapatkan pensijilan daripada SIRIM QAS International Sdn. Bhd. bagi bateri sekunder.

Pemilik produk mengemukakan profil syarikat berserta salinan pensijilan kepada KPDNKK sebelum bateri sekunder memasuki pasaran bagi tujuan rekod dan pemantauan.
PENARIKAN BALIK

Pemilik produk digalakkan dan disyorkan supaya membuat penarikan balik bateri sekunder secara sukarela jika mendapati bateri sekunder tidak selamat, berisiko dan/ atau terdapat arahan penarikan balik oleh negara luar bagi menjaga keselamatan pengguna di Malaysia. Setiap arahan penarikan balik oleh negara luar perlulah dimaklumkan kepada KPDNKK bagi tujuan rekod dan pemantauan.

Di bawah Akta Perlindungan Pengguna 1999 (Akta 599), Menteri KPDNKK boleh mengisyiharkan mana-mana bateri sekunder sebagai barang larangan jika bateri sekunder itu menyebabkan kecederaan kepada mana-mana orang atau harta atau selainnya tidak selamat dan boleh menghendaki pembekal membanggil balik bateri sekunder tersebut dengan perbelanjaan pembekal itu sendiri.
Selain itu, Pemilik Produk perlu mematuhi Perintah Kawalan Harga (Pelabelan oleh Pengilang, Pengimport, Pengeluar atau Pemborong) 1980,
di mana Pemilik Produk hendaklah melekatkan pada bateri sekunder, bungkusuan, beg atau bekas, label atau tanda yang mengandungi:

1. berat minimum, kuantiti, jumlah atau kapasiti minimum bateri sekunder
2. nama atau deskripsi bateri sekunder dengan jelas
3. unit, berat atau ukuran hendaklah dalam metrik; dan bagi import, sama ada dalam metrik atau kedua-dua unit metrik dan imperial
4. nama dan alamat pengilang, pengimport, pengeluar atau pemborong, mengikut mana-mana yang berkenaan
5. nama negara pengilang bagi bateri sekunder yang diimport
6. label atau tanda hendaklah boleh dibaca dan menggunakan perkataan yang jelas
7. label atau tanda bagi bateri sekunder yang dikeluarkan di Malaysia sahaja, atau dalam Bahasa Malaysia dan bahasa lain
8. label atau tanda bagi bateri sekunder yang diimport handaklah dalam Bahasa Malaysia atau Bahasa Inggeris
PEMAKAIAN GARIS PANDUAN

Garis panduan ini terpakai mulai 1 Februari 2018 sehingga 31 Disember 2018 atau mana-mana tarikh yang akan ditentukan oleh KPDNKK
SIRIM QAS INTERNATIONAL
A Brief Introduction
A BRIEF INTRO

About Us

Established in 1996 as SIRIM Berhad's wholly-owned subsidiary

Conformity assessment services since 1970s

Staff strength: 760

Malaysian based, internationally recognised

Local and international clients

Malaysia’s Leading Certification, Inspection and Testing Body
## Our Services

### CERTIFICATION
- Management System Certification
- Product Certification
- Personnel Certification

### TESTING
- Product compliance testing to standards, regulatory requirements and specifications

### INSPECTION
- Engineering Inspection
- Inspection on behalf of other CBs
- Other 3rd party inspections
Connect with SIRIM QAS international to get the latest development on industry topics, news and events. Join us via our official social media platforms as below:

- **Facebook**: [https://www.facebook.com/SIRIMQASInternational](https://www.facebook.com/SIRIMQASInternational)
- **Twitter**: [https://twitter.com/SIRIMQASIntl](https://twitter.com/SIRIMQASIntl)
- **YouTube**: [https://www.youtube.com/SIRIMQASInternational](https://www.youtube.com/SIRIMQASInternational)
- **LinkedIn**: [https://www.linkedin.com/SIRIMQASInternational](https://www.linkedin.com/SIRIMQASInternational)
Battery : Reported incidents
Some reported incident .......

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

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

Paha wanita ini cedera gara-gara telefon bimbit miliknya meletup dalam saku seluar
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)
Harian Metro
– Selasa 16 jan 2018

Kuantan: Kanak-kanak perempuan berusia tiga tahun menanggung penderitaan hampir enam jam selepas mengalami pendarahan hidung akibat tersumbat bateri lithium di Pulau Tioman, Rompin, kelmarin

Latest incident ……but..

Standard does not cover for this absurd use / misuse
Important info for retailers/importers;

1) Mandatory requirement - Starting from **middle (July) of 2018** – all retailers / importers are required to get SIRIM certification and SIRIM labels for their batteries

2) Batteries shall comply with **MS IEC 62133:2017 requirements**

3) Existing KPDNKK Guidelines on Secondary battery – **will be part of regulation under Section 29 – Akta Perihal Dagangan 2011**

4) Between 2014 – 2017 – there were 12 reports on incident caused by secondary batteries

5) KPDNKK – working with Custom Dept and SIRIM to ensure that secondary batteries ( incl product with secondary batteries) comply with the standard and regulatory requirements.
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;

1. Poor Battery Quality
   - made of cheaper material – to save cost
   - some manufacturers use recycled batteries

2. Wrong circuit design
   - Exposure to high temperatures or humidity
   - Overcharging

3. Improper or wrong usage
   - 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) Users
   - risks to user’s safety and 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 play its roles in providing assistance to industries & regulator in fighting issues 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 support to KPDNKK initiatives to raise the issue of sub-standard or unsafe product (batteries) to the widest audience possible
Battery: Testing Services & Requirement
We started in 1974. For more than 42 years, we have worked successfully with multinationals company/manufacturers and retailers in Malaysia as well as around ASEAN and China to ensure products they supplied to our local market comply with ST / EIU/ KPDNKK regulatory requirement.

The key elements to us are:

1) Our expertise and competency
2) Our test facilities
3) Our vast experience over the years
4) Our credentials and recognitions from local & international bodies
CREDENTIALS

ILAC Laboratory
Combined MRA mark

MS ISO/IEC 17025 TESTING
SAMM NO. 086 – EEST HQ

ILAC-MRA

STANDARDS
ACCREDITED LABORATORY

ACCREDITED UNDER SAMM SCHEME BY THE DEPARTMENT OF STANDARDS MALAYSIA (DSM) SINCE NOV 1995

ACCREDITED AS A CBTL UNDER THE IECEE CB SCHEME SINCE 2002
(Registration no: CB053 (for NCB) and TL 128 (for CBTL))

As one of designated / listed test lab under ASEAN EEMRA for ASEAN Countries since April 2005
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
Facilities Available

- 2 units of Battery Tester 56 channel
- 1 unit of Battery Tester 24 channel
- Temperature and Humidity Recorder
- Water bath
- Hot Chamber
- Cyclic Chamber
- Vacuum Chamber
- Vibration Machine
- Impact Tester
- Tensile Machine
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.

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

Those 2 standards cross refer to **IEC 62281** - standard requirement for transport tests.
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.
• **Clause 8.3.8: Transport tests (refer IEC 62281)**
  - This standard covers 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.**
Testing & certification Process
**A battery supplier which includes importer, manufacturer and trader**

Requirement of a **FULL TYPE TEST** report:

a) Issued by an accredited test lab
b) Reference standard - either MS IEC 62133:2017 or IEC 62133:2012
c) Shall contain specific product information such as **Brand name** and **model no.**

Applicant submits test report to SIRIM QAS for product certification process
APPLICATION FOR TESTING

*A supplier includes importer, manufacturer and trader.

A supplier submit a complete test application with
- Product information
- sufficient quantity as specified by standard

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 International test lab shall issue a full type test report

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

Application by **a SUPPLIER

**A battery supplier which includes importer, manufacturer and trader

Local Manufacturer

Apply Product Certification Scheme (Type 5)

Foreign Manufacturer / Importer (Trader)

Apply Product Certification Scheme (Type 5)

Apply Batch Certification Scheme (Type 1b) (Consignment)

a) Applicant submits test report to SIRIM QAS (certification body) for application of labels or certification mark

b) SIRIM QAS will conduct scheme Type 5 or Type 1b certification process

c) SIRIM QAS shall issue label
Product Certification Process
Type 1b (Consignment/Batch)
Process Flow: Batch Certification Scheme (Type 1b)

Application by **a Supplier (importer)**

1. **Batch arrival**
   - Sample at warehouse

2. **Document evaluation**
   - Evaluation on a full type test report + all of the submitted document (as above)

3. **Sampling & Inspection**
   - SIRIM QAS will conduct consignment sampling & inspection
     - *Not a full type test*
     - It’s an **confirmatory test / partial test** to ensure that imported products are the same products as per declared in the full type test report

4. **Verification - Test* & Evaluation**
   - Passed
     - SIRIM QAS will issue label based on no. of imported quantity
   - Failed
     - No label

5. **Recommendation & Approval**
   - Submit company profile + certification to KPDNKK
Contact Information

Testing Services

Mr. M. Zamri Bin Mustaffa
Head
Electrical and Electronic Testing Section 1
Tel : +60355446251
Fax : + 60355446272
email: zamri@sirim.my

Mr. Mohamad Asnan
Sr. Testing Executive
Electrical and Electronic Testing Section 1
Tel : +60355446256
Fax : + 60355446272
email: asnan@sirim.my
THANK YOU FOR YOUR KIND ATTENTION

www.sirim-qas.com.my