



IEC/TC or SC 21	Secretariat France	Date 2007-08-29
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Please ensure this form is annexed to the Report to the Standardization Management Board if it has been prepared during a meeting, or sent to the Central Office promptly after its contents have been agreed by the committee.

Title of TC TC 21 : Secondary cells and batteries SC 21A : Secondary cells and batteries containing alkaline or other non-acid electrolytes
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**A. Background****TC 21**

Date of establishment : 1931

**Scope :**

To prepare product standards for all secondary cells and batteries, irrespective of type or application. All electrochemical systems are considered.

To support other technical committees standardizing application oriented systems using secondary cells and batteries.

**Liaisons :**

-IEC/TC18, SC21A, SC 34D, TC 35, TC 69 and TC 82;

-ISO / TC20/SC1, TC 22, TC23/SC13, TC110, TC 207/SC3;

-category D Liaisons with EUCAR (European Council for Automotive R & D) and with SAE AE 7D (Society of Automotive Engineers/USA).

**P-member list :**

- |           |                   |                  |
|-----------|-------------------|------------------|
| - Belgium | - Italy           | - Russian Fed    |
| - Canada  | - Japan           | - South Africa   |
| - China   | - Kenya           | - Spain          |
| - Finland | - Korea (Rep. of) | - Sweden         |
| - France  | - Luxembourg      | - Switzerland    |
| - Germany | - Poland          | - USA            |
| - India   | - Romania         | - United Kingdom |

Total : 21 countries

**Maintenance teams and Working Groups:**

WG 2: Starter batteries and Maintenance of the IEC 60095 Series

WG 3: Traction and stationary batteries

MT 6 : Maintenance of the IEC 61056 series "General purpose batteries"

**Joint Maintenance Teams:**

JWG69 TC 21/SC 21A/TC 69 - Secondary batteries for propulsion of electric and hybrid-electric road vehicles

JWG82 TC 21/SC 21A/TC 82 – Secondary Lead-acid and Nickel Cadmium batteries for photovoltaic electricity storage systems

PT 62485: Safety requirements for secondary batteries and battery installations (stationary, traction and portable batteries)

PT 62450: Radio Frequency identification tags for secondary cells and batteries. Part 1 : stationary batteries.

## SC 21A

Date of establishment : 1965

### Terms of reference:

To prepare product standards for all sealed and vented secondary cells and batteries containing alkaline or other non-acid electrolytes.

To support other technical committees standardizing application oriented systems using secondary cells and batteries.

### Liaisons:

IEC/TC18, TC21, SC 34D, TC 35, TC 69, TC 82 and TC108.

ISO / TC20/SC1, TC 22, TC23, and TC 207/SC3,

and Category D Liaison with EUCAR: European Council for Automotive R & D. and SAE Society of Automotive Engineers/USA

### P-member list:

- |           |                   |                  |
|-----------|-------------------|------------------|
| - Belgium | - Japan           | - Spain          |
| - Canada  | - Korea (Rep. Of) | - Sweden         |
| - China   | - Luxembourg      | - Switzerland    |
| - France  | - Norway          | - United Kingdom |
| - Germany | - Poland          | - USA            |
| - India   | - Romania         |                  |
| - Italy   | - Russian Fed     |                  |

Total : 19 countries

### Maintenance teams and Working Groups:

WG 1: Vented alkaline secondary cells and batteries and maintenance of IEC 61434, 60622, 60623 and 62259.

WG 2: Sealed alkaline secondary cells and batteries and maintenance of 61438, 61951-1 and 61951-2.

WG 3: Lithium secondary cells and batteries and maintenance of IEC 61960

WG 4: Safety and mechanical tests on secondary cells and batteries and maintenance of IEC 61959, 62133, 62188.

WG5: Large capacity secondary lithium cells and batteries.

JWG TC 21/SC 21A , IEC 60993 Ed 2 Electrolyte and refilling water

JWG 35/ISO: SC21A/35/ISO/TC114 Secondary lithium micro batteries.

## B. Environment

### B.1 Business environment

#### TC 21

The key areas of standardization activities relate to the SLI (Starting- Lightning Ignition-) also named "Starter" Batteries and the Stationary Batteries of the Valve Regulated type. In these two market segment, customer and technical innovation driven product renewal continuously entail new standardized dimensions, interfaces, test methods and definition of requirements.

Lead Acid Starter Battery evolution is tied closely to the technical and commercial needs of the Car industry with weight and cost savings, material recycling issues, frequent and more severe discharge cycles being the key development drivers.

The segment of Motive Power (or traction) Batteries is more stable both in terms of product design and applications. Their development are to a certain extend prisoners of a large installed base of material handling vehicles and equipment where size and shape compatibility does not allow to

initiate radical product renewals. This fact is reflected also in Standard work defining mostly outside dimensions and battery terminals. The technology for application to Electrical Vehicle has difficulty to fulfil the desire of the ordinary consumer for more and more luxurious and power hungry mobility.

The Lead Acid Battery Industry in Europe, US and Japan and their customers are continuing to experience significant industry concentration and an extraordinary rise in raw material (lead) cost from a long term average of about 700\$/ton to up 1900\$/ton as per March 2007

The market saw also China (PRC) to become a notable actor in the international trade of Stationary Lead Acid Batteries

Additional issues to be taken also in consideration are increased regulatory influences concerning the safety of batteries as voltage sources and the continued drive to outlaw heavy metals i.e. Lead and Cadmium, from consumer products.

### **SC 21A**

Secondary cells and batteries containing alkaline or other non-acid electrolytes occupy a large portion of the secondary battery market. The continuous development of the nickel metal hydride and secondary lithium cells and battery markets has been considerable and the products are finding increased uses. Large industrial nickel-cadmium cells have been on the market for almost a century now. Today we can see that also large industrial nickel metal hydride and large industrial secondary lithium cells are entering the market. The wide use of these cells and batteries by OEM's and the general public requires that safety requirements and recommendations be prepared.

#### **B.2 Market demand**

The customers of standards developed by the TC 21 and SC 21A are the manufacturers and users of batteries, battery operated products, and equipment. The TC and SC are actively promoting the participation of all, via e.g. the Joint Working Groups and/or liaisons with other organisations. Such a full cooperative venture has been experimented successfully

As both the manufacturing and user industry is mutating rapidly, all standardization work has to compete for the respective managements attention and priorities, limited manpower, scarce resources and achieve, next to technical excellence and within a narrow time window, also a real commercial relevance. Although technical properties and Battery Standards should be key decision factors in their manufacture, selection and operation, multiple other factors of commercial and environmental nature take sometime the driver seat instead. This trend, identified already in 2004, has continued unabated and makes the organization of the needed collaborative effort, due to a lack of available experts, quite difficult

A new factor to be taken also in account is the emergence of new countries involved in the manufacture and use of them. Such developments require that particular attention be paid to local technical particularities, language and technical skills present in these countries so that the "I" of IEC is not a lifeless letter.

#### **B.3 Trends in technology and trade**

### **TC 21**

In Lead Acid Batteries the continued conversion of the designs to Valve Regulated operation is noticeable whenever the operational benefits make the design also commercially attractive.

In Starter Batteries the introduction of the VRLA based 42V system has been postponed indefinitely. The capture of the battery side of the hybrid passenger vehicle market by the Lead Acid system is spotty with mayor developments in this area going toward alkaline systems.

Stationary Lead Acid Batteries are fully VRLA oriented and their technological development trend is aimed toward further improvements in volumetric energy density and operational ruggedness, which seems not always to be compatible. The feedback of the market concerning the application of the recent standards available for product characterisation and specification will provide precious information for future development and optimisation.

Portable or General Purpose Lead Acid Batteries, although cost effective and giving good

performances, are under heavy technological pressure from Non-Acid Electrolyte Secondary Systems.

Whereas the IEC Lead Acid Battery Standards are the basis on National Standards in Europe (Cenelec region) and increasingly in Japan other Economic Regions still lag behind in this conversion thus depriving their users from a larger supplier basis for their batteries.

### **SC 21A**

Safety standards and mechanical test procedures for secondary cells and batteries containing alkaline and other non-acid electrolytes are being, and will continue to be written and updated to ensure the compatibility of the products to the market place.

Secondary nickel-metal hydride and secondary lithium cells and batteries are finding increased users in both traditional and new markets.

They will complement the already well known nickel-cadmium cells by giving the potential users more flexibility in the design of new equipment. Standardisation of sizes together with recommendations for the safe operation and handling of these new systems have been taken into account as a matter of priority.

### **B.4 Ecological environment**

#### **TC 21**

Lead Acid Batteries are a superb gift of nature allowing to achieve a low cost, flexible and theoretically impossible aqueous electrochemical system with a stable voltage higher than the decomposition voltage of its electrolyte. This system carries however the birthmark of using a heavy metal (Lead) as its main constituent. In different Economic and Political regions, the local legislation is under consideration to limit its use and dispersal in the environment during manufacturing and at the end of its service life. Also other constituents such as sulphuric acid electrolyte mist and the safe recycling of plastic material are now scrutinized. Such legislative pressures are challenging for our industry and can be best met by minimizing after-effects and by making the system technically indispensable to the public. The contribution by IEC will have to be focussed in providing sound technical Standards upon which such local legislative decisions can be build on.

#### **SC 21A**

Recognition will be given to existing and future legislation for mandatory separate collection and recycling of spent secondary batteries. In addition effective and economic use of material and energy during the manufacturing, use and disposal of the product will be encouraged.

Standards for secondary batteries for electric road vehicles are being developed.

### **C. Work programme**

#### **C.1 Current work**

See attached programmes of work

#### **C.2 Resources/infrastructure needed**

The rapid implementation of the newly IEC established, web based national expert list is highly desirable so to be able to increase the pool of technical experts available for Standard elaboration

*(IEC document AC/8/2004 on the new application « IEC experts management »)*

#### **C.3 Safety aspects (only for committees which do not have a reference to safety in their scope)**

### **D. Future work**

#### **- TC21**

Future work will include the writing and continued updating of standards and reports within the scope of TC 21 as shown in the maintenance cycle and according to the development of the relevant technology.

#### **- SC 21A**

Future work will include the writing and continued updating including the amalgamation of standards and reports within the scope of SC 21A as shown in the maintenance cycle. The co-operation with other Technical Committees will be continued in order to give competent technical

input for standards referring to batteries as sources of energy (e.g. photovoltaic solar energy systems, luminaires, etc.).

<b>E. Maintenance cycle</b>				
<b>Publication no.</b>	<b>Date of publication</b>	<b>Review date</b>	<b>Maintenance result date</b>	<b>Responsibility (Maintenance Team)</b>
<b>TC 21</b>				
IEC 60095-1 Ed.7	2007	2009	2012	WG2
IEC 60095-2.Ed.3	1984	To be decided	2010	secretary
IEC 60254-1 Ed.4	2005-04	2008	2011	WG3
IEC 60896-11 Ed.1	2002-12	2008	2011	WG3
IEC 60896-21 Ed.1	2004-02	2009	2011	WG3
IEC 60896-22 Ed.1	2004-02	2008	2011	WG3
IEC 60952-1 Ed.1	2004-09	2009	2012	MT to be created when revision confirmed
IEC 60952-2 Ed.1	2004-09	2009	2012	MT to be created
IEC 60952-3 Ed.1	2004-09	2009	2012	MT to be created
IEC 61044 TR Ed.2	2002-12	2012	2014	MT to be created
IEC 61056-1 Ed.2	2002-10	2008	2011	MT 6
IEC 61056-2 Ed.2	2002-10	2009	2012	MT 6
IEC 61056-3 TR Ed.1	1991-08	2011	2014	MT 6
IEC 61427 Ed.2	2005	2009	2012	JWG 21/21A/82
IEC 61429 Ed.1	1995-12	2012	2014	MT to be created
IEC 61430 TR. Ed.1	1997-10	2009	2012	WG2
IEC 61431 TR. Ed.1	1995-08	2009	2012	MT to be created
IEC 61982-1 Ed.1	2006-09	2009	2012	
IEC 61982-2 Ed.1	2001-06	2009	2012	JWG 21/21A/69
IEC 61982-3 Ed.1	2001-06	2009	2012	JWG 21/21A/69
IEC 62060 TR Ed.1	2001-09	2009	2012	MT to be created
<b>SC 21A</b>				
IEC 60622	2002-10	2007	2009	WG1*
IEC 60623	2001-09	2006	2009	WG1*
IEC 60993	1989-08	2007	2009	WG1**
IEC 61434	1996-10	2004	2009	Secretary***
IEC 61438	1996-11	2004	2009	Secretary***
IEC 61951-1	2003-04	2008	2009	WG2
IEC 61951-2	2003-04	2008	2009	WG2
IEC 61959	2004-01	2009	2010	WG4
IEC 61960	2003-12	2008	2009	WG3
IEC 62133	2002-10	2007	2009	WG4***
IEC/TR 62188	2003-08	2008	2009	WG4***
IEC 62259	2003-10	2008	2009	WG1*

\*IEC 60622; IEC 60623; IEC 62259 MCR to be issued to revise and amalgamate these 3 standards

\*\*IEC 60993 Previous revision was cancelled. To be restarted in association with TC21.

\*\*\*MCR to be issued for IEC 61434; IEC 61438; IEC 62133; 62188

Name or signature of the secretary

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