Electric double-layer capacitors for use in hybrid electric vehicles - Test methods for electrical characteristics

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ICS 31.060.99, 43.120

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 62576

April 2010

ICS 31.060.99; 43.120

English version

Electric double-layer capacitors for use in hybrid electric vehicles - Test methods for electrical characteristics

(IEC 62576:2009)

Condensateurs électriques à double couche pour véhicules électriques hybrides - Méthodes d'essai des caractéristiques électriques (CEI 62576:2009)

Elektrische Doppelschichtkondensatoren für die Verwendung in Hybridelektrofahrzeugen - Prüfverfahren für die elektrischen Kennwerte (IEC 62576:2009)

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
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Foreword

The text of document 69/158/CDV, future edition 1 of IEC 62576, prepared by IEC TC 69, Electric road vehicles and electric industrial trucks, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 62576 on 2010-04-01.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN and CENELEC shall not be held responsible for identifying any or all such patent rights.

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2011-01-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2013-04-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 62576:2009 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 62391-1:2006	NOTE	Harmonized as EN 62391-1:2006 (not modified).
IEC 62391-2:2006	NOTE	Harmonized as EN 62391-2:2006 (not modified).
IEC 62391-2-1:2006	NOTE	Harmonized as EN 62391-2-1:2006 (not modified).

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Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60068-1	1988	Environmental testing -	EN 60068-1[1)]	1994
+ A1	1992	Part 1: General and guidance	-	-

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[1)] EN 60068-1 includes A1 to IEC 60068-1 + corr. October .

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INTRODUCTION

The Electric double-layer capacitor (EDLC) is a promising energy storage system for hybrid electric vehicles (HEVs), and EDLC-installed HEVs have begun to be commercialized with an eye to improving fuel economy by recovering regenerative energy. Although a standards series (IEC 62391 series) for EDLC already exists, those for HEVs involve patterns of use, usage environment, and values of current that are quite different from those assumed in the existing standards. Standard evaluation and test methods will be useful for both the auto manufacturers and capacitor suppliers to speed up the development and lower the costs of such EDLCs. With these points in mind, this standard aims to provide basic and minimum specifications in terms of the methods for testing electrical characteristics, and to create an environment that supports expanding market of HEVs and large capacity EDLCs. Additional practical test items to be standardized should be reconsidered after technology and market stabilization of EDLCs for HEVs. In terms of endurance that is important in practical use, just basic concept is set forth in the informative annexes.

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ELECTRIC DOUBLE-LAYER CAPACITORS FOR USE IN HYBRID ELECTRIC VEHICLES – TEST METHODS FOR ELECTRICAL CHARACTERISTICS

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1 Scope

This standard describes the methods for testing electrical characteristics of electric double-layer capacitor cells (hereinafter referred to as capacitor) to be used for peak power assistance in hybrid electric vehicles.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60068-1:1988, *Environmental testing – Part 1: General and guidance*

Amendment 1(1992)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
reference temperature
reference temperature (°C) to be used in the test

3.2
ambient temperature
ambient temperature of the surrounding space in which a capacitor is placed

3.3
upper category temperature
highest ambient temperature that a capacitor is designed to operate continuously

3.4
lower category temperature
lowest ambient temperature that a capacitor is designed to operate continuously

3.5
applied voltage
voltage (V) applied between the terminals of a capacitor

3.6
rated voltage
U_R
maximum d.c. voltage (V) that may be applied continuously for a certain time under the upper category temperature to a capacitor so that a capacitor can exhibit specified demand characteristics. This voltage is the setting voltage in capacitor design

NOTE The endurance test using the rated voltage is described in Annex A.