



IEC/TC or SC 15	Secretariat US	Date 2008-05-16
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Title of TC Solid Electrical Insulation Materials
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<b>A. Background</b>
<b>Scope</b> 'To prepare international standards including specifications for solid electrical insulating materials alone and in simple combinations. This includes coatings which are applied in the liquid state but cure to solids, such as varnishes and coatings.'  Note: TC 15 strictly understands "simple combination" as insulation materials (e.g. combined flexible materials according to IEC 60626) and not as combinations of insulation materials due to the manufacturing process of electrical devices. This does not exclude that during testing it might be necessary to include electrodes on specimens of material.  TC 15 establishes definitions, general requirements and specification sheets for individual types of materials. The standards include test methods and guidance where these are required for the specifications.
<b>Membership</b> P Members (18): AUSTRIA (AT), BELGIUM (BE), CANADA (CA), CHINA (CN), CZECH REPUBLIC (CZ), DENMARK (DK), GERMANY (DE), ITALY (IT), JAPAN (JP), KOREA (REPUBLIC OF) (KR), NETHERLANDS (NL), POLAND (PL), PORTUGAL (PT), ROMANIA (RO), SWEDEN (SE), SWITZERLAND (CH), UNITED KINGDOM (GB), UNITED STATES OF AMERICA (US).  O Members (20): AUSTRALIA (AU), BULGARIA (BG), CROATIA (HR), FINLAND (FI), FRANCE (FR), GREECE (GR), HUNGARY (HU), INDIA (IN), IRELAND (IE), ISRAEL (IL), NORWAY (NO), RUSSIAN FEDERATION (RU), SERBIA (RS), SINGAPORE (SG), SLOVAKIA (SK), SLOVENIA (SI), SOUTH AFRICA (ZA), SPAIN (ES), THAILAND (TH), UKRAINE (UA).
<b>Publications:</b> 169
<b>Projects under development:</b> 24
<b>Project Teams</b> The current activities are performed in the following working groups/maintenance teams: MT 1: Inorganic (ceramic and glass) insulating materials MT 3: Plastic films WG 5: Flexible insulating sleeving for electrical purposes WG 6: Rigid fibrous reinforced laminates for electrical purposes WG 7: Resins and varnishes WG 8: Pressure sensitive adhesive tapes WG 9: Cellulosic materials MT 10: Combined flexible materials MT 11: Mica products  TC 15 publishes specifications for widely used electrical equipment. All electrical systems require insulation and most use some materials covered in the TC 15 compendium. The System approach relevance of TC 15 is as follows:

Systems Committees	TC 2	Rotating machinery
	TC 14	Power transformers
	TC 23	Electrical accessories
	TC 52	Printed circuits
	TC 96	Small power transformers
Other Committees	TC 33	Power capacitors
	TC 40	Capacitors
	TC 61	Household appliances

## B. Environment

### B.1 Business environment

Solid electrical insulating materials cover the whole range of materials starting from glass and ceramic, sleeveings, paper, and press boards, films and laminates, mica products, tapes, and varnishes and resins. Insulating materials are used in the field of electrical power generation and distribution, in electrical motors and transformers, in all kinds of electrical and electronic appliances and equipment. The appropriate selection and use of insulating materials enhances the reliability and safety of electrical equipment. With the materials and user technologies well-established and globally similar, a relatively small number of manufacturers, the most important of which are multinational companies, produce basic materials which are sold through local and regional distributors and fabricators. The market for these insulating materials exceeds 1000 Million US\$ per year. Innovation is driven by manufacturers' efforts to better serve specific market segments.

### B.2 Market demand

The standards of TC15 are widely used in the IEC. The specifications are the basis for commercial definitions in trade. Customers of TC15 reside in all parts of the supply chain, but are primarily insulating materials manufacturers, equipment manufacturers and certain materials specifiers. Since the standards in the range of TC15 are widely used, regular maintenance is necessary. The successive development of new materials or improved properties of materials requires additionally a continuous monitoring of the market in order to offer the appropriate standards.

### B.3 Trends in technology and trade

The steadily increasing demand for electrical products throughout the world is matched by the increasing consolidation and mergers within industry. And with trade becoming more global, TC15 faces an increasing demand for the international standardisations within its scope of products. Most important insulation uses are relatively similar throughout the world, with frequent development of specialized variants of existing insulation materials and components. While Markets are stable, technology is changing because of the need to meet climate change and facilitate recycling. Because engineering knowledge is widely communicated, international trade in equipment using electrical insulation products covered by TC15 standards is widespread and will likely continue. However, many important materials are proprietary to one or a few large multinational manufacturers and are made predominantly in a few countries and shipped throughout the world. This factor underscores the users' desire that the product meet widely-accepted standards with minimum testing and qualification costs.

### B.4 Ecological environment

Manufacturers are pressed to reduce waste, volatile solvents, and toxic chemicals, since most insulating materials use petrochemicals, polymers, and persistent, often toxic raw materials and intermediates. Standards developed in the scope of TC15 consider this wherever possible. TC15 strongly supports IEC Guide 109.

## C. Work programme

### C.1 Current work

The current work programme of the TC15 includes the review of approximately 35 projects relating to those standards at its 2008 meeting. These projects encompass the issuance of new or revised documents based upon either new products or changes in materials or technology. Examples of this work includes:

- Revision of IEC 60641, Part 3 (WG9)
- Revision of IEC 60626, Part 1, 2 and 3 (WG10)
- Revision of IEC 60674, Part 3 (MT3)
- Revision of IEC 60684, Part 3 (WG5)
- Revision of IEC 60819, Part 1 (WG10)
- Revision of IEC 60893, Part 3 (WG6)
- Revision of IEC 62329, Part 3 (WG5)
- New standard IEC 60684, Part 3 (WG5)

#### C.2 Resources/infrastructure needed

The principal need is for more experts from materials users to supplement the experts representing materials manufacturers, to broaden the focus of standards projects.

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

#### D. Future work

#### E. Maintenance cycle

Publication no.	Date of publication	Review date	Maintenance result data (MRD)	Responsibility (Maintenance team)
IEC 60370 Ed. 1.0	1971-01	-	2015	-
IEC 60371-1 Ed. 3.0	2003-04	-	2011	11
IEC 60371-2, Ed 3.0	2004-06	-	2009	-
IEC 60371-3-1, Ed 3.0	2006-06	-	2009	-
IEC 60371-3-2, Ed 2.0	2005-10	-	2010	-
IEC 60371-3-3, Ed 1.0	1983-01	-	2011	11
IEC 60371-3-4, Ed 1.0	1992-11	-	2009	-
IEC 60317-3-4 Am1, Ed 1.0	2006-09	-	2009	-
IEC 60371-3-5, Ed 2.0	2005-11	-	2010	-
IEC 60371-3-6, Ed 1.0	1992-11	-	2009	-
IEC 60371-3-6 Am1, Ed 1.0	2006-09	-	2009	-
IEC 60371-3-7, Ed 1.0	1995-08	-	2009	-
IEC 60317-3-7 Am1, Ed 1.0	2006-09	-	2009	-
IEC 60371-3-8, Ed 1.0	1995-08	-	2011	-
IEC 60371-3-8 Am1, Ed 1.0	2007-04	-	2011	-
IEC 60371-3-9, Ed. 1.0	1995-08	-	2011	-
IEC 60371-3-9 Am1, Ed. 1.	2007-04	-	2011	-
IEC 60394-1, Ed. 1.0	1972-01	-	2015	-
IEC 60394-2, Ed. 1.0	1972-01	-	2013	10
IEC 60394-3-1, Ed. 1.0	1976-01	-	2013	10
IEC 60394-3-2, Ed. 1.0	1988-03	-	2008	-
IEC 60454-1, Ed. 2.0	1992-05	-	2009	-
IEC 60454-2, Ed. 3.0	1994-11	-	2011	-
IEC 60454-3-1, Ed. 2.0	1998-02	-	2009	-
IEC 60454-3-1 Am1, Ed2.0	2001-05	-	2009	-
IEC 60454-3-2, Ed. 3.0	2006-01	-	2010	-
IEC 60454-3-4, Ed. 3.0	2007-06	-	2012	-
IEC 60454-3-6, Ed 2.0	1998-02-19	-	2010	8
IEC 60454-3-7, Ed 2.0	1998-03-16	-	2012	8

Publication no.	Date of publication	Review date	Maintenance result data (MRD)	Responsibility (Maintenance team)
IEC 60454-3-8, Ed. 3.0	2006-02	-	2011	
IEC 60454-3-10, Ed 1.0	1995-11-08	-	2010	8
IEC 60454-3-11, Ed. 2.0	2007-05	-	2012	-
IEC 60454-3-12, Ed. 2.0	2006-01	-	2008	-
IEC 60454-3-14, Ed 1.0	2001-07-10	-	2012	8
IEC 60454-3-19, Ed 1.0	2003-05	-	2009	-
IEC 60455-1, Ed. 2.0	1998-08	-	2009	-
IEC 60455-2, Ed. 2.0	1998-12	-	2009	-
IEC 60455-2-2, Ed. 1.0	1984-01	-	2010	-
IEC 60455-2-2 Corr. 1, Ed. 1.0	1991-08	-	2010	
IEC 60455-3-1, Ed 2.0	2003-04-28	-	2012	7
IEC 60455-3-11, Ed. 1.0				
IEC 60455-3-2, Ed. 2.0	2003-04	-	2009	-
IEC 60455-3-3, Ed. 2.0	2003-04	-	2009	-
IEC 60455-3-4, Ed. 2.0	2003-04	-	2009	-
IEC 60455-3-5, Ed. 3.0	2006-03	-	2010	-
IEC 60455-3-11, Ed. 1.0	1988-04	-	2010	-
IEC 60464-1, Ed. 2.0	1998-11	-	2010	-
IEC 60464-1 Am1, Ed. 2.0	2006-01	-	2010	-
IEC 60464-2, Ed. 2.0	2001-07	-	2010	-
IEC 60464-2 Am1, Ed. 2.0	2006-01	-	2010	-
IEC 60464-3-1, Ed. 2.0	2001-07	-	2010	-
IEC 60464-3-1 Am1, Ed. 2.0	2006-01	-	2010	-
IEC 60464-3-2, Ed. 2.0	2001-07	-	2010	-
IEC 60464-3-2 Am1, Ed. 2.0	2006-04	-	2010	-
IEC 60554-1, Ed. 1.0	1977-01	-	2013	-
IEC 60554-1 Am1, Ed. 1.0	1983-01	-	2013	-
IEC 60554-2, Ed. 2.0	2001-11	-	2013	-
IEC 60554-3-1, ,Ed. 1.0	1979-01	-	2013	-
IEC 60554-3-2, Ed. 1.0	1983-01	-	2013	-
IEC 60554-3-3, Ed. 1.0	1980-01	-	2013	-
IEC 60554-3-4, Ed. 1.0	1979-01	-	2013	-
IEC 60554-3-5, Ed. 1.0	1984-01	-	2013	-
IEC 60589 Corr. 1, Ed. 1.0	1978-06	-	2012	-
IEC 60626-1, Ed. 2.0	1995-07	-	2010	-
IEC 60626-1 Am1, Ed. 2.0	1996-08	-	2010	-
IEC 60626-2, Ed 2.0	1995-09-20	-	2010	10
IEC 60626-3, Ed. 2.0	1996-12	In process	2008	10
IEC 60626-3 Am1, Ed. 2.0	1999-06		2008	
IEC 60641-1, Ed. 2.0	1979-01		2013	9
IEC 60641-2, Ed. 2.0	2004-06	-	2009	-
IEC 60641-3-1, Ed. 1.0	1992-05	In process	2008	9
IEC 60641-3-2, Ed 2.0	1992-05-31	-	2013	9
IEC 60648, Ed 1.0	1979-01-01	-	2010	9
IEC 60667-1, Ed. 1.0	1980-01	-	2015	-
IEC 60667-2, Ed. 1.0	1982-01	-	2015	-
IEC 60667-2 Am1, Ed. 1.0	1986-01	-	2015	-
IEC 60667-3-1, Ed. 1.0	1986-09	-	2015	-
IEC 60672-1, Ed. 2.0	1995-06	-	2012	-
IEC 60672-2, Ed. 2.0	1999-12	-	2012	-
IEC 60672-3, Ed. 2.0	1997-10	-	2012	
IEC 60674-1, Ed 1.0	1980-01-01	-	2018	3
IEC 60674-2, Amd 1, Ed 1.0	2001-10-24	-	2018	3

Publication no.	Date of publication	Review date	Maintenance result data (MRD)	Responsibility (Maintenance team)
IEC 60674-2, Ed 1.0	1988-12-05	-	2018	3
IEC 60674-3-1, Ed. 1.0	1998-03	-	2012	-
IEC 60674-3-2, Ed. 1.0	1992-05	-	2012	-
IEC 60674-3-3, Ed. 1.0	1992-04	-	2012	-
IEC 60674-3-4, Ed. 1.0	1993-03	-	2012	-
IEC 60674-3-7, Ed. 1.0	1992-04	-	2012	-
IEC 60684-1, Ed. 2.0	2003-04	-	2013	-
IEC 60684-2, Ed. 2.0	1997-07	-	2009	-
IEC 60684-2 Corr.1, Ed. 2.0	1977-12	-	2009	-
IEC 60684-2 Am 1, Ed. 2.0	2003-04	-	2009	-
IEC 60684-2 Am 2, Ed. 2.0	2005-11	-	2009	-
IEC 60684-3-100, Ed. 2.0	2001-07	-	2015	-
IEC 60684-3-116, Ed 2.0	2003-04-29	-	2010	5
IEC 60684-3-121, Ed. 2.0	2001-07	-	2015	-
IEC 60684-3-136, Ed. 1.0	1997-12	-	2014	-
IEC 60684-3-145, Ed. 1.0	2001-07	-	2015	-
IEC 60684-3-151, Ed. 1.0	1998-06	-	2014	-
IEC 60684-3-165, Ed. 1.0	2004-05	-	2018	5
IEC 60684-3-209, Ed. 2.0	2003-03	-	2010	-
IEC 60684-3-211, Ed. 3.0	2007-02	-	2011	-
IEC 60684-3-212, Ed. 2.0	2005-11	-	2010	-
IEC 60684-3-214, Ed. 2.0	2005-11	-	2010	-
IEC 60684-3-216, Ed. 1.0	2005-03	-	2009	-
IEC 60684-3-216 Am. 1, Ed. 1.0	2005-01	-	2009	-
IEC 60684-3-228, Ed. 2.0	2004-05	-	2009	-
IEC 60684-3-229, Ed. 1.0	2003-02	-	2013	-
IEC 60684-3-233, Ed. 2.0	2006-01	-	2010	-
IEC 60684-3-240, Ed. 2.0	2002-06	-	2012	-
IEC 60684-3-246, Ed. 3.0	2007-02	-	2011	-
IEC 60684-3-248, Ed. 1.0	2007-02	-	2011	-
IEC 60684-3-271, Ed 2.0	2004-05-11	-	2010	5
IEC 60684-3-300, Ed. 2.0	2002-06	-	2012	-
IEC 60684-3-320, Ed. 2.0	2002-06	-	2012	-
IEC 60684-3-340, Ed. 2.0	2003-04	-	2010	-
IEC 60684-3-343, Ed. 2.0	2002-06	-	2012	-
IEC 60684-3-400, Ed. 2.0	2002-06	-	2012	-
IEC 60684-3-403, Ed. 2.0	2002-05	-	2012	-
IEC 60684-3-406, Ed. 2.0	2003-07	-	2010	-
IEC 60684-3-409, Ed. 1.0	1999-06	-	2009	-
IEC 60684-3-420, Ed. 2.0	2002-05	-	2012	-
IEC 60763-1, Ed 1.0	1983-01-01	-	2010	9
IEC 60763-2, Ed. 2.0	2007-02	-	2012	-
IEC 60763-3-1, Ed 1.0	1992-09-15	-	2010	9
IEC 60819-1, Ed 2.0	1995-02-15	-	2010	10
IEC 60819-1,Amd 1, Ed 2.0	1996-08-23	-	2010	10
IEC 60819-2, Ed. 1.0	2001-07	-	2011	10
IEC 60819-3-1, Ed. 1.0	2001-07	-	2016	10
IEC 60819-3-2, Ed.1.0	2001-07	-	2016	10
IEC 60819-3-3, Ed. 2.0	2006-06	-	2009	10
IEC 60819-3-4, Ed. 1.0	2001-07	-	2011	-
IEC 60893-1, Ed 2.0	2004-01-26	-	2010	6
IEC 60893-2, Ed. 2.0	2003-06	-	2009	-
IEC 60893-3-1, Ed 2.0	2003-11-07	-	2010	6

Publication no.	Date of publication	Review date	Maintenance result data (MRD)	Responsibility (Maintenance team)
IEC 60893-3-2, Ed 2.0	2003-11-14	-	2010	6
IEC 60893-3-3, Ed 2.0	2003-11-14	-	2010	6
IEC 60893-3-4, Ed 2.0	2003-11-14	-	2010	6
IEC 60893-3-5, Ed 2.0	2003-11-14	-	2010	6
IEC 60893-3-6, Ed 2.0	2003-11-14	-	2010	6
IEC 60893-3-7, Ed 2.0	2003-11-14	-	2010	6
IEC/TR 60893-4, Ed. 1.0	2003-02	-	2009	-
IEC 61033, Ed. 1.0	1991-05	-	2012	-
IEC 61033 Am1, Ed. 1.0	2006-04	-	2012	-
IEC 61061-1, Ed. 3.0	2006-10	-	2008	-
IEC 61061-2, Ed. 1.0	2001-10	-	2009	-
IEC 61061-3-1, Ed. 1.0	1998-07	-	2009	-
IEC 61061-3-2, Ed. 1.0	2001-07	-	2009	-
IEC 61067-1, Ed. 1.0	1991-06	-	2016	-
IEC 61067-2, Ed. 1.0	1991-06	-	2016	-
IEC 61067-3-1, Ed. 1.0	1995-02	-	2015	-
IEC 61068-1, Ed. 1.0	1991-06	-	2016	-
IEC 61068-2, Ed. 1.0	1991-06	-	2016	-
IEC 61068-3-1, Ed. 2.0	1995-02	-	2015	-
IEC 61068-3-1 Corr. 1	1998-01	-	2015	-
IEC 61086-1, Ed. 2.0	2004-01	-	2012	-
IEC 61086-2, Ed. 2.0	2004-02	-	2009	-
IEC 61086-2 Corr. 1	2005-01	-	2009	-
IEC 61086-3-1, Ed. 2.0	2004-02	-	2009	-
IEC 61212-1, Ed. 2.0	2006-03	-	2010	-
IEC 61212-2, Ed. 2.0	2006-04	-	2010	-
IEC 61212-3-1, Ed. 2.0	2006-03	-	2010	-
IEC 61212-3-2, Ed. 2.0	2006-05	-	2010	-
IEC 61212-3-3, Ed. 2.0	2006-08	-	2010	-
IEC 61628-1, Ed 1.0	1997-11-07	-	2012	9
IEC 61628-2, Ed. 1.0	1998-11	-	2012	-
IEC 61628-2 Am1, Ed. 1.0	2007-06	-	2012	-
IEC 61629-1, Ed. 1.0	1996-11	-	2014	-
IEC 61629-2, Ed. 1.0	1996-11	-	2014	-
IEC 62011-1, Ed. 1.0	2002-05	-	2016	6
IEC 62011-2, Ed 1.0	2004-01-08	-	2010	6
IEC 62011-3-1, Ed 1.0	2003-08-21	-	2010	6
IEC 62329-1, Ed. 1.0	2005-11	-	2010	-
IEC 62329-2, Ed. 1.0	2006-07	-	2011	-
IEC/TR 62422, Ed. 1.0	2007-03	-	2010	-

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