



IEC/TC or SC 51	Secretariat Japan	Date 2008-03
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Title of TC <b>MAGNETIC COMPONENTS AND FERRITE MATERIALS</b>
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**A. Background**

The technical committee was set up in 1958 under the title “Magnetic components and ferrite materials”.

The scope of TC51 is to prepare standards relating to:

- parts and components displaying magnetic properties and intended for electronics and telecommunications,
- parts associated with such components,
- measuring methods and tests, and specifications for transformers and inductors using such components,
- ferrite materials.

Currently, there are three active operating working groups:

**WG1:** Ferrite and Powder cores

**WG9:** Inductive components

**WG10:** Magnetic materials and components for EMC applications

TC51 has issued 63 publications (published 17 publications in last 3 years) and 6 projects (5 new works and 1 maintenance work) are in its programme of work.

There are presently 8 participating countries (P-members) in TC51: China, Germany, Japan, Korea, Russian Federation, Slovenia, United Kingdom and USA.

There is an active liaison with IEC TC68 and co-ordination with IEC TC40.

TC 51 System approach relevance:

Component committees (TC 51 – role of a customer)	IEC/TC 40	Dimensional standardization of multilayer chip parts, packaging, safety requirement
	IEC/TC 68	Classification, measuring methods and properties of magnetic materials
System committees (TC 51 – role of a supplier)	IEC/TC1	Terminology
	IEC/SC46F	RF and Microwave components
Other committees	IEC/TC77	EMC
	IEC/TC91	Electronic assembly technologies, soldering
	IEC/TC104	Environmental conditions, test methods
	IEC/TC111	Environmental aspects

<p><b>B. Environment</b></p> <p><b>B.1 Business environment</b></p> <p>The business of magnetic components is experiencing changes during the period 2006-2008 due to rising demand and favourable developments in a number of application areas. These areas include high definition LCD-TV and plasma-TV; integrated service digital broadcasting; broadband mobile-phone with digital video broadcasting for handheld (DVB-H); personal computers; computer game systems; broadband data communication; next generation DVD such as blue-ray disk; GPS; consumer adoption of digital photography; electrical equipment for automotive industry; power management (UPS); energy systems; and robotic systems.</p> <p>It is forecasted that the long-term business prospects look reasonable. Magnetic components are always required for EMI suppression, power supplies, and transformers for telecommunication. In addition, planar technology continues to be the most suitable for high power density DC/DC converters.</p> <p>Under these business circumstances, customers for magnetic components have forced increased competition among the suppliers. Lower prices and shorter delivery times are demanded, without any reduction in quality. The demand of magnetic components has increased in quantity, At the same time, many uncertified components may appear on the market, it should become increasingly important to produce and supply products based upon IEC standards.</p>
<p><b>B.2 Market demand</b></p> <p>Manufacturers of transformers, inductors and OEM manufacturers are the users of TC51 standards. TC51 recognizes the need for a stronger involvement of users of ferrite and inductive components.</p> <p>A proactive effort, which is standardization by foreseeing the future demand rather than documentation of the established industry standard (de facto standard), is desired. IEC standards are widely used at the national level.</p>
<p><b>B.3 Trends in technology and trade</b></p> <p>“High frequency” and “small &amp; low profile” describe the key trends at present for magnetic components. Digital techniques are adopted in IT products such as mobile phones and personal computers, as well as in growth fields such as consumer electronics and automotive applications. Because the problem of the high frequency noise occurs inevitably, the growth in demand for EMC components (as the related products of TC51: ferrite cores of WG1, inductors of WG9 and noise suppression sheets of WG10 have contributed) is higher than the growth rate of electronic equipment generally.</p> <p>The trend in power systems is to have distributed power architecture, usually a DC/DC converter on each board. With this trend, the magnetic components need to have a “low profile” and a “low loss with high saturation magnetic flux density” at high frequencies.</p> <p>The demand for active power factor correction (PFC) circuitry has become important, and exhibits strong growth.</p> <p>The environmental conditions in the automotive application require new materials and components to operate at temperatures from –40 °C to +150 °C. High frequency circuits utilizing magnetics are increasingly used in automotive applications.</p>
<p><b>B.4 Ecological environment</b></p> <p>The ferrite does not have an impact on ecological environment. Users of magnetic components have an increasing need for certification of materials against RoHS and other environmental regulations, written by governments and by individual companies. Certification of environmental compliance is taken up by other IEC standards, not originating in TC51. (IEC 62321 from TC 111.)</p>
<p><b>C. Work programme</b></p> <p><b>C.1 Current work</b></p> <p>The work programme and revised dates is attached.</p>

**C.2 Resources/infrastructure needed**

One challenge facing TC51 is to identify meeting locations and times that are practical for members who are coming from all over the world. The solution is to organize the meetings in combination with major trade shows, conferences, or similar events.

A second challenge facing TC51 is a steady reduction in the number of experts available from the P-member countries. The reason for this is that high competitive pressure has forced nearly all companies in the industry to reduce technical staff and move operations to low cost locations, or to exit the industry.

A third challenge facing TC51 is to promote among designers the referencing of IEC standards earlier in the product development cycle. Too often, TC51 standards are only referenced to resolve reliability and/or quality issues after the fact.

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

TC51 does not have a reference to safety in its scope, therefore, the relevant standards are listed as normative references,

IEC 60068-2-6: IEC 61007, IEC61248-1 to IEC 61248-7, IEC 62211, IEC 62025-2

IEC 60068-2-7: IEC 61007, IEC 62025-2

IEC 60068-2-27: IEC 61007, IEC 61248-1 to IEC 61248-7, IEC 62211, IEC 62025-2

IEC 60068-2-29: IEC 61007, IEC 61248-1 to IEC 61248-7

**D. Future work**

Develop more International Standards specifying measuring methods and tests, and specifications for magnetic materials, core shapes and inductive components, fulfilling the requirements of the electronic industries with the following purposes,

- Guide on the format of ferrites and magnetic components in manufacturers' catalogues and measuring method for each application
- Set nomenclature for IEC standards relating to ferrites and magnetic components
- Establish uniform benchmarks for suppliers and users for performance in new development
- Assist customer in understanding the published technical data in catalogues

**E. Maintenance cycle**

Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
IEC 60133 Ed.4.0	2000-12	2008/revise and change pub. No. to IEC 62317-2	2009	WG1 (MT1)
IEC 60205 Ed.3.0	2006-04	2008/amendment	2008	WG1 (MT1)
IEC 60329 Ed.2.0	1984-09	2009	2011	(WG5/MT5)
IEC 60392 Ed.1.0	1972-01	2010	2012	(WG7/MT7)
IEC 60401-1 Ed.1.0	2002-12	2010	2012	WG1 (MT1)
IEC 60401-2 Ed.1.0	2003-04	2008/revise	2008	WG1 (MT1)
IEC 60401-3 Ed.1.0	2003-10	2009	2010	WG1 (MT1)
IEC 60424-1 Ed.1.0	1999-05	2009	2010	WG1 (MT1)
IEC 60424-2 Ed.1.0	1997-10	2009	2010	WG1 (MT1)
IEC 60424-3 Ed.1.0	1999-06	2009	2010	WG1 (MT1)
IEC 60424-4 Ed.1.0	2001-02	2009	2010	WG1 (MT1)
IEC 60556 Ed.2.0	2006-04	2009	2010	(WG7/MT7)
IEC 60635 Ed.1.0	1978-01	2009	2010	(WG5/MT5)
IEC 60647 Ed.1.0	1979-01	2009	2010	WG1 (MT1)
IEC 60732 Ed.1.0	1982-01	2008/reconfirm	2009 to 2019	WG1 (MT1)
IEC 60740-1 Ed.2.0	2005-08	2009	2010	(WG5/MT60740)
IEC 60740-2 Ed.2.0	1993-06	2008/reconfirm	2008 to 2013	(WG5/MT60740)
IEC 60852-1 Ed.1.0	1986-07	2009	2010	(WG5/MT5)

Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
IEC 60852-2 Ed.1.0	1992-05	2009	2010	(WG5/MT5)
IEC 60852-3 Ed.1.0	1992-07	2009	2010	(WG5/MT5)
IEC 60852-4 Ed.1.0	1996-07	2009	2010	(WG5/MT5)
IEC 60852-5 Ed.1.0	1994-04	2009	2010	(WG5/MT5)
IEC 61007 Ed.2.0	1994-09	2008	2009	WG9 (MT9)
IEC 61021-1 Ed.1.0	1990-08	2009	2010	(WG5/MT5)
IEC 61021-2 Ed.1.0	1995-05	2009	2010	(WG5/MT5)
IEC 61185 Ed.2.0	2005-06	2009	2010	WG1 (MT1)
IEC 61247 Ed.1.0	1995-05	2009	2010	WG1 (MT1)
IEC 61248-1 Ed.1.0	1996-06	2009	2011	WG9 (MT9)
IEC 61248-2 Ed.1.0	1996-06	2009	2011	WG9 (MT9)
IEC 61248-3 Ed.1.0	1996-06	2009	2011	WG9 (MT9)
IEC 61248-4 Ed.1.0	1996-06	2009	2011	WG9 (MT9)
IEC 61248-5 Ed.1.0	1996-06	2009	2011	WG9 (MT9)
IEC 61248-6 Ed.1.0	1996-06	2009	2011	WG9 (MT9)
IEC 61248-7 Ed.1.0	1996-06	2009	2011	WG9 (MT9)
IEC 61332 Ed.2.0	2005-09	2010	2012	WG1 (MT1)
IEC 61333 Ed.1.0	1996-03	2008	2010	WG1 (MT1)
IEC 61596 Ed.1.0	1995-05	2009	2010	WG1 (MT1)
IEC/TR 61604 Ed1.0	1997-07	2008	2010	WG1 (MT1)
IEC 61605 Ed.2.0	2005-06	2008	2010	WG9 (MT9)
IEC 61609 Ed.1.0	1996-02	2008	2010	(WG7/MT7)
IEC 61631 Ed.1.0	2001-06	2008	2010	WG1 (MT1)
IEC 61797-1 Ed.1.0	1996-10	2008	2010	(WG5/MT5)
IEC 61830 Ed.1.0	1997-04	2008	2010	(WG7/MT7)
IEC 61843 Ed.1.0	1997-11	2008	2010	(WG7/MT7)
IEC 62024-1 Ed.2.0	2008-02	2010	2012	WG9 (MT9)
IEC 62025-1 Ed.1.0	2007-05	2009	2010	WG9 (MT9)
IEC 62025-2 Ed.1.0	2005-01	2009	2010	WG9 (MT9)
IEC 62044-1 Ed.1.0	2002-05	2009	2011	WG1 (MT1)
IEC 62044-2 Ed.1.0	2005-03	2009	2010	WG1 (MT1)
IEC 62044-3 Ed.1.0	2000-12	2009	2010	WG1 (MT1)
IEC 62211 Ed.1.0	2003-10	2009	2010	WG9 (MT9)
IEC 62317-1 Ed.1.0	2007-07	2009	2010	WG1 (MT1)
IEC 62317-4 Ed.1.0	2005-09	2009	2010	WG1 (MT1)
IEC 62317-7 Ed.1.0	2005-09	2008/reconfirm	2008 to 2011	WG1 (MT1)
IEC 62317-8 Ed.1.0	2006-08	2008/reconfirm	2008 to 2011	WG1 (MT1)
IEC 62317-9 Ed.1.1	2006-04	2009	2010	WG1 (MT1)
IEC 62323 Ed.1.0	2005-06	2009	2010	WG1 (MT1)
IEC 62333-1 Ed.1.0	2006-05	2009	2010	WG10 (MT1)
IEC 62333-2 Ed.1.0	2006-05	2009	2010	WG10 (MT1)
IEC 62358 Ed.1.0	2004-05	2008/revise	2009	WG1 (MT1)
IEC/TS62398 Ed.1.0	2004-10	2008/reconfirm	2009 to 2014	WG1 (MT1)

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