



IEC/TC OR SC:	SECRETARIAT:	DATE:
<b>55</b>	<b>USNC</b>	<b>2017-11-17</b>

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.

### A. STATE TITLE AND SCOPE OF TC

To prepare international standards for wires for electrical winding, irrespective of conductor material, shape, size, or type of covering, taking into account the needs in all fields of electrical engineering, and international standards for winding wire packaging.

Technical Committee 55 was created in 1962 and has met regularly to develop and maintain standards for winding wires.

### B. MANAGEMENT STRUCTURE OF THE TC

As shown on the [TC 55 structure web page](#).

### C. BUSINESS ENVIRONMENT

The winding wire industry is a mature industry that continually evolves to meet the demands of expanding applications of its products. Present standards reflect the consensus of the members for the technology and materials represented. Changes are based on new technology as they apply to methods of test and material for products and packaging, new product designs, or in addressing environmental and health considerations. Winding wires are used widely throughout a broad spectrum of electrotechnical industries mainly for creating electromagnetic fields and transforming electrical energy. The range of applications of winding wires extends from the use of extremely fine wires for electronics and telecommunications applications, to the use of large insulated and covered wires for large motor and power transformation industries. Demand and use of winding wires is slowly increasing worldwide as industrialization is proceeding and demand for electricity and more automated solutions grows in particular in less industrialized regions. Electrification of vehicles is beginning to be a further factor for increasing demands.

#### MARKET DEMAND

The Committee continually analyzes and incorporates in its standards, the trends and changes in market demand for all types of winding wires traded between countries.

Recent standardization projects were concerned with special insulated conductors for safety applications with zero-defect insulation, such as the conductors provided with “basic insulation” instead of the usual “functional insulation” of enamelled wires. This particular type of insulated conductor can be produced as enamelled wire with special technology. Further product standardization projects are currently being conducted, especially concerned with these types of winding wires but produced with a different technology and new types of high-temperature resistant wires.

Another driving market force in winding wire business is an increasing quality standard regarding basic properties of winding wires such as elongation, continuity or breakdown voltage. In several projects, mainly connected with the 60317-0-x series and its corresponding test procedures 60851-x, these market expectations are taken into account, since process technology of the production of winding wires have also been improved over the years and the state of the art developed further to higher standards. The increasing expectations from the market are due to increasing quality and performance standards in motor and transformer business. Motors and transformers have to become more efficient all the time, have an increased density of power and/ or higher life expectations at higher temperatures. All this leads to less tolerances in

winding wires, less faults per given length etc.

#### **TRENDS IN TECHNOLOGY AND IN THE MARKET**

The winding wire industry is a very mature one, because winding wires are commodities. This is because in the present day market, the industry is present and well developed virtually everywhere in the world.

Winding wires are not end products, but components used by customers as materials in electrical equipment for creating electromagnetic fields and transforming electrical energy.

We expect some of the following technology trends to become important standardization issues in the future:

- improved functionalities (e.g. nanotechnology),
- alternative and better test method, especially regarding temperature index determination,
- alternative production technologies leading to partly different properties of winding wires
- in-use simulation tests for winding wires, leading to guides for improving the use of winding wires.

The sustainability of the market is difficult and closely linked with the fluctuations of general economic trends. Since the winding wire industry is strongly connected with the trends of end user markets (automotive, domestic appliances, electrical rotating machinery, transformers, solar and wind energy conversion and distribution, other electrical equipment), the particular technical demands of the end users are very important on the market. One such trend is the continual growing demand for aluminium winding wires due to increases in the price of copper in the past several years. New specifications for rectangular aluminium wires are being developed. As such, IEC TC 55 strives to maintain a cooperative relationship with main end user representatives on the Committee and with other relevant IEC TC's, in order to open new scenarios in the future of the industry, to:

1. Maintain an awareness of new trends in relevant technology to the winding wires industry; and
2. Support the use of environmentally sound materials and processes in the production and use of winding wires. Examples of this support through standardization include
  - a. Standardization of special alloys (for soldering the enameled wires) not containing lead or other potentially hazardous metals;
  - b. Removal of the use of lead and other hazardous metals from the applicable IEC test procedures; and
  - c. Recognition of environmentally friendly refrigerants in the IEC 60851-4 Resistance to refrigerants test procedure.

Ongoing participation in the work of the Technical Committee and its Working Groups by producers, suppliers and users is highly encouraged. Increased activity toward environmental protection could pose significant difficulties on the winding wire market, particularly in Europe, due to stricter regulations concerning NMP (N-Methylpyrrolidone) and other solvents and components of insulating varnishes, because these are not replaceable based on existing electrical and electronic equipment production practices. TC 55 actions to take place include:

1. Support test methods respecting environmental protection and human health.
2. Collaborate with the electric and electronic equipment industry, in order to promote the use of winding wire that is produced using varnishes not containing NMP or other environmentally hazardous solvents.
3. Collaborate with the chemical industry in order to find alternative solvents and components not containing NMP or other environmentally hazardous solvents.
4. Discuss with the appropriate authorities to postpone for the time being, the issuing of regulations for which compliance is not possible.

#### **F. SYSTEMS APPROACH ASPECTS (REFERENCE - AC/33/2013)**

In general, the winding wire industry serves the role of material supplier to end product manufacturing industries represented in the following TC's:

IEC TC 2, Rotating machinery  
IEC TC 14, Power transformers  
IEC SC 61C, Safety of refrigeration appliances for household and commercial use  
IEC TC 96, Transformers, reactors, power supply units, and similar products for low voltage up to 1100 V  
IEC TC 108, Safety of Electronic Equipment within the field of Audio/Video, Information Technology and Communication Technology

The winding wire industry is a supplier to, but also the customer of sectors represented in the following TC's:

- IEC TC 112, Evaluation and Qualification of Electrical Insulating Materials and Systems
- IEC TC 113, Nanotechnology standardization for electrical and electronic products and systems

Cooperation with these TC's is demonstrated through the exchange of documents and liaisons.

In order to maintain contact, interface, and obtain current information/documents with these other IEC committees, TC 55/WG 1 members are assigned to be liaisons to these other committees. The assigned liaisons will be expected to report on the activities of these parallel IEC committees at TC55/WG1 meetings.

**G. CONFORMITY ASSESSMENT**

Not applicable to TC 55

**H. HORIZONTAL ISSUES**

Not applicable to TC 55

**I. 3-5 YEAR PROJECTED STRATEGIC OBJECTIVES, ACTIONS, TARGET DATES**

Consideration will be given for new technologies, user requirements and environmental or economic influences. In an effort to improve the application and ease of use of the standards developed by the Committee, the structure of these standards is subject to review.

Along with its focus on new technologies described above, TC 55 will pay special attention to adjusting existing applicable standards to align with technological developments and improvements, where established quality levels shall reflect the current state of the art. The goal of TC 55 is to ensure that the customer gets, with reference to the applicable standards, a generally acceptable level of winding wire standards without reliance on customized standards.

Another concentration of work is in harmonization of the requirements of regional standards development bodies, to incorporate new or modify existing winding wire test methods, which will better satisfy more market areas so that the IEC 60851 series of test procedures is more broadly accepted and used.

Finally, TC 55 will continually examine its Programme of Work to withdraw specifications that are either no longer market relevant, or are outdated due to manufacturing capabilities and technology.

STRATEGIC OBJECTIVES 3-5 YEARS	ACTIONS TO SUPPORT THE STRATEGIC OBJECTIVES	TARGET DATE(S) TO COMPLETE THE ACTIONS
Under consideration - to be completed by next SBP update		
Note: The progress on the actions should be reported in the RSMB.		