

## International standards applied to magnetic alloys and steels

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The success of national and international trade is dependent upon well developed agreements and specifications which are incorporated into the contract between the supplier of the product and purchaser. In the case of magnetic materials, for example, the technical specifications which would form the agreements between the two parties would be drawn from the international standards publications which cover those products. The International Electrotechnical Commission, Technical Committee 68 (IEC TC 68) is the responsible committee for the production and maintenance of the standards for hard and soft magnetic materials.

The work of IEC TC 68 is supported by the national committees of the member countries and the process for developing the standards is rigorous, well regulated and structured under the auspices of the international body. The work of drafting and preparing the standards is undertaken by specialist working groups of experts who are active in magnetics academia and industry. Draft documents are, at each stage, circulated to member countries for comment and vote so that the final published document represents, as far as possible, the global consensus of opinion on that particular topic.

For example, within the electrical steel industry, there has been continuing debate on the relative merits of the measurement of specific total loss of grain oriented electrical steel by the Epstein [1] or single sheet [2] methods of test. The Epstein method has long been the reference method of measurement for the purposes of the specification of total loss but the single sheet method may be favoured as it requires less preparation of the test specimen. A global comparison exercise was conducted through the IEC in order to establish correlations between the two methods and thus allow the single sheet method to be adopted for testing and certification of production material. [3]

Currently, there is considerable interest in the measurement of the magnetostriction of grain oriented electrical steels and TC 68 is working on the production of a technical report on the methods of measurement of magnetostriction.

National committees play an essential rôle in the development of standards and the system of the preparation of standards is critically dependent on the contributions of technical experts and their sponsoring organisations. Importantly, standards are produced through the consensus of the stakeholders

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[1] IEC 60404-2, Magnetic materials – Part 2: Methods of measurement of the magnetic properties of electrical steel strip and sheet by means of an Epstein frame.

[2] IEC 60404-3, Magnetic materials – Part 3. Methods of measurement of the magnetic properties of magnetic sheet and strip by means of a single sheet tester.

[3] Sievert, J., Ahlers, H., Brosin, P., Cundeva, M., Luedke, J., Relationship of Epstein to SST results for grain-oriented steel ISEM '99 Studies in applied electromagnetics and mechanics, Vol 18, IOS Press, Amsterdam, 2000, p 3-6.