



STRATEGIC BUSINESS PLAN

ISO/TC 33

Refractories

EXECUTIVE SUMMARY

Business Environment

ISO/TC 33 has developed a portfolio of standards for the classification, sampling and testing of refractory products and materials, including shaped and monolithic (unshaped) products and high temperature insulation wools, and is continuing to develop further standards for classification and environmentally sensitive analyses in conjunction with CEN/TC 187.

Refractory materials are essential for the production of steel, iron, cement, glass, ceramics, nonferrous metals, petrochemicals and incineration, wherever high temperatures are needed for production purposes. The demand for refractory products is directly related to the requirements of consumer industries and their geographic distribution worldwide. The most significant consumer industry is steel production.

Worldwide the biggest producers and markets for refractories are in China, Russia, India, USA and Brazil. Over 60 % of total refractory production is for steel, 6-8% for each of cement, glass and ceramics, with lower percentages for each of non-ferrous, metallurgy, chemistry, petrochemical energy and incineration.

Benefits

Improvements have included a reduction in energy consumption, the use of cleaner energy resources and reuse of material.

Processing has improved through quality systems and increase of furnace and casting ladle life. Repair techniques and maintenance frequencies have also been optimised further reducing total raw material consumption.

Priorities

Current priorities are the refinement of standards for classification of products and sampling, testing methods for new physical properties and environmentally sensitive components, homogenization and use of low grade raw materials and the comprehensive utilization of waste products.



1. INTRODUCTION

1.1 ISO technical committees and business planning

The extension of formal business planning to ISO Technical Committees (ISO/TCs) is an important measure which forms part of a major review of business. The aim is to align the ISO work programme with expressed business environment needs and trends and to allow ISO/TCs to prioritize among different projects, to identify the benefits expected from the availability of International Standards, and to ensure adequate resources for projects throughout their development.

1.2 International standardization and the role of ISO

The foremost aim of international standardization is to facilitate the exchange of goods and services through the elimination of technical barriers to trade.

Three bodies are responsible for the planning, development and adoption of International Standards: [ISO](#) (International Organization for Standardization) is responsible for all sectors excluding Electrotechnical, which is the responsibility of [IEC](#) (International Electrotechnical Committee), and most of the Telecommunications Technologies, which are largely the responsibility of [ITU](#) (International Telecommunication Union).

ISO is a legal association, the members of which are the National Standards Bodies (NSBs) of some 140 countries (organizations representing social and economic interests at the international level), supported by a Central Secretariat based in Geneva, Switzerland.

The principal deliverable of ISO is the [International Standard](#).

An International Standard embodies the essential principles of global openness and transparency, consensus and technical coherence. These are safeguarded through its development in an ISO Technical Committee (ISO/TC), representative of all interested parties, supported by a public comment phase (the ISO Technical Enquiry). ISO and its [Technical Committees](#) are also able to offer the ISO Technical Specification (ISO/TS), the ISO Public Available Specification (ISO/PAS) and the ISO Technical Report (ISO/TR) as solutions to market needs. These ISO products represent lower levels of consensus and have therefore not the same status as an International Standard.

ISO offers also the International Workshop Agreement (IWA) as a deliverable which aims to bridge the gap between the activities of consortia and the formal process of standardization represented by ISO and its national members. An important distinction is that the IWA is developed by ISO workshops and fora, comprising only participants with direct interest, and so it is not accorded the status of an International Standard.



2. BUSINESS ENVIRONMENT OF THE ISO/TC

2.1 Description of the Business Environment

The following political, economic, technical, regulatory, legal and social dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this ISO/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

Refractories are materials essential for the production of steel, iron, cement, glass, ceramics, nonferrous metals, petrochemicals and incineration; wherever high temperatures are needed for production purposes. Refractories need to resist all types of stresses (mechanical, thermal and chemical) encountered at high level temperatures, such as fusion, erosion, creep formation, corrosion and thermal shock. Refractory materials are not only required to work at high temperatures, they must do this with minimal heat losses to the surrounding environment.

Initially, the raw materials were high purity clays, but there is now a greater diversity including synthetic materials. Processing has improved through quality management systems and the raw material tonnage has decreased. In addition, furnace and casting ladle life has increased. Repair techniques and maintenance frequencies have also been optimised further reducing total raw material consumption.

The demand for refractory products is directly related to the requirements of consumer industries and their geographic distribution worldwide. The most significant consumer industry is steel production.

2.2 Quantitative Indicators of the Business Environment

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the ISO/TC:

Worldwide the biggest producers and markets for refractories are in Russia, China, India, the USA and Brazil, the biggest of which is China. In 2010 the annual output of refractories in China was over 28 million tons, accounting for 68 % of world production, with a workforce of 400,000 employees. Globally the market is worth around 21 billion euros with an annual consumption of refractory products of over 41 million tons.

Worldwide production for 2010 by region is as follows:

World: 41.3 million tons

China 68 %; Europe 10 %, USA 4 %, India 4 %, Japan 2 %, Latin America 2 %, Rest of world 10 %



3. BENEFITS EXPECTED FROM THE WORK OF THE ISO/TC

All P-member countries of ISO TC/33 participate actively in the development of refractories standards. National and multinational raw material suppliers and producer companies provide technical experts to advance the work.

Improvements have included a reduction in energy consumption and the use of cleaner energy resources. While there has been a reduction in the consumption of raw materials, there has also been an increased emphasis on reducing the amount of material finally going to land fill as a result of the activities of the refractories and related user industries.

Methods are increasingly being found to reuse material. In 2002 it was calculated that of the raw material entering into the refractory production process, only about 18 % did not find other applications thus requiring its disposal as waste.

4. REPRESENTATION AND PARTICIPATION IN THE ISO/TC

4.1 *Countries/ISO members bodies that are P and O members of the ISO committee*

4.2 Analysis of the participation

Much of the work of ISO/TC 33 is carried out jointly with CEN/TC 187 "Refractory products and materials", under the Vienna Agreement with ISO lead.

5. OBJECTIVES OF THE ISO/TC AND STRATEGIES FOR THEIR ACHIEVEMENT

5.1 Defined objectives of the ISO/TC

The objectives of ISO/TC 33 are to contribute to the elimination of technical barriers to trade and to facilitate the international market for refractory materials.

In particular, the aim is to establish standards to characterise refractory materials through classification and by determination of their chemical and physical properties.

ISO/TC 33 will

- Identify and respond to developments in refractory technology and markets that lead to increasing commoditisation and/or increasing product differentiation. Where product classes trend towards commoditisation, ISO/TC33 will aim to develop appropriate classification standards that adequately characterise these products. Where refractory markets are highly differentiated, ISO/TC33 will aim to develop standards for test methods that allow participants to gauge those properties that have a bearing on the value in use of the refractory
- Maintain published ISO standards on refractory products and materials
- Adjust the work programme as necessary to meet market needs
- Work in conjunction with CEN/TC 187 on appropriate projects through the Vienna Agreement to avoid duplication of effort



5.2 Identified strategies to achieve the ISO/TC's defined objectives

ISO/TC 33 has developed a portfolio of standards for physical properties and general chemical analysis, and is continuing to develop standards on classification and test methods, which are considered basic to the sector.

Additional work items related to

- product requirements
- dimensions
- quality assurance of items delivered in bulk

are being developed using industrial standard practices and product properties based on internal industry documents.

TC33 develops new standards through the establishment of working groups with the appropriate representation from various member bodies and who provide access to their technical experts. See 7.1 for the list of current working groups.

The TC meets as necessary to supervise the work of the Working Groups which meet once or twice a year each as the work requires. The Secretariat produces regular work programme reports and ensures progression of the work.

6. FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE ISO/TC WORK PROGRAMME

The technical programme of ISO/TC 33 has reached an advanced state, with the majority of high priority work items being published. There is therefore little risk to the work.

Current environmentally driven standards development largely centres around chemical analysis where the quantifying of toxic components such as hexavalent chrome and pitch-related organic chemicals is important. Depending on how health and safety regulations impact on the use of crystalline silica containing raw materials and products, more reliable methods for the determination of such phases at the concentration levels required may become necessary.

7. STRUCTURE, CURRENT PROJECTS AND PUBLICATIONS OF THE ISO/TC

This section gives an overview of the ISO/TC's structure, scope, projects and publications. All of this information is updated regularly and is available on ISO's website, ISO Online.

The link below is to the TC's page on ISO's website:

[ISO TC 33 on ISO Online](#)

Click on the tabs and links on this page to find the following information:

- About (Secretariat, Secretary, Chair, Date of creation, Scope, etc.)
- Contact details
- Structure (Subcommittees and working groups)



- Liaisons
- Meetings
- Tools
- Work programme (published standards and standards under development)

Reference information

[*Glossary of terms and abbreviations used in ISO/TC Business Plans*](#)

[*General information on the principles of ISO's technical work*](#)