



STRATEGIC BUSINESS PLAN – ISO/TC 160

Executive summary

The market for glass in building covers all types of basic, special and transformed glass products intended for use in buildings in different situations worldwide, which are exposed to a wide range of climatic and environmental conditions.

Flat glass is a commodity, which is used worldwide and produced by about 450 float lines worldwide. 200+ float lines are based in China, about 60 in Europe excluding Russia, 40 in North America and 11 in Japan.

China accounts for about 45% the worldwide glass volume and is the biggest single market for glass products. The major suppliers outside China are a relatively small number of multi-national groups based in Europe, North America and the Asia-Pacific areas. However, once the basic product has been made there are several glass processors which produce coated, laminated, and toughened glass. Depending on the structure of their business and their product portfolio the processors operate on (multi-) national, regional or local scale. Manufacturers of insulating glass (IGUs) mainly serve a local market as IGU's are produced in individual sizes. The number of IGU manufacturing sites varies strongly from country to country between less than hundred to more than 1000.

In Europe, about 10 m tons of float glass are produced every year. More than 1000 companies process the basic glass, leading to an annual turnover of € 15 b and employment for about 100 k people. The size of the business in North America is comparable to Europe. In Japan, the glass business offers employment for about 3 500 people with an annual turnover close to € 3 b.

Glass manufacturing and processing is estimated to provide employment for approximately 100 000 people in Europe, 5 000 in Japan. North America may be comparable to Europe.

The major customer groups in the market for basic glass products are globally estimated to be

Housing 40 %
Commercial 40 %
Industrial 20 %

The standardization activity in ISO/TC 160 has resulted in significant potential cost savings to the construction industry and provided major benefits in terms of:

- The removal of barriers to trade by the adoption of common specifications and test procedures for glass products.
- Assisting the architectural and building specification sectors by the removal of confusion brought about using a multiplicity of national standards which is particularly important for the exports of glass products.

The main objectives of ISO/TC 160 are the development of International standards on:

- Basic glass products, including float glass, polished wired glass, glass, patterned glass; wired patterned glass
- Toughened glass
- Laminated glass

- Coated glass
- Insulating glass products
- Mirrors
- Glass pavers and glass blocks
- Curved glass
- Building Integrated Photovoltaics (BIPV)
- Vacuum glass
- Active and dynamic glazing

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 164 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:

Because of the nature of the raw materials used and the complex production processes involved, basic glass production is restricted to a relatively small number of plants world-wide, which are generally owned by multinational groups. Four major groups operate in Europe, five in the U.S.A. and six in the Asia-Pacific area. However, not all glass products are manufactured in each geographical area. This is because of low local demand for some products e.g., polished wired glass which makes it more economical to produce, centrally and ship it internationally although shipping glass over large distances is often not cost effective due to the high weight.

It is difficult to quantify the disposition of the suppliers of glass products in the global market. In terms of the basic glass product there are a small number of large-scale manufacturers, but in many countries, there are many glass processors and finishers (producing products such as laminated, toughened, and insulated glass and curved glass units).

Glass in building is a constantly changing area with the development of new coatings to enhance the performance of the product, for example, for better thermal insulation or solar control and better ways of manufacturing IGUs. Architects are constantly demanding that glass play a more structural role in their buildings. With the global climate change gaining more attention there is increasing demand for better thermal insulation and solar control properties of windows as well as the generation of electrical power using building integrated photovoltaics.

2.2 Quantitative Indicators of the Business Environment

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

- 450 float lines are producing basic glass with a typical annual output of 250 000 t which is equivalent to 25 million m² of 4 mm float glass.
- The number of processing companies is at least 10 times larger with large variations in size and number between different regions and countries
- Estimated to provide employment for several hundred thousand people worldwide.
- Basic glass production is done by four major groups in Europe, five in the USA and six in the Asia-Pacific area.
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The major customer groups in the market for basic glass products worldwide are estimated to be:

- Housing 40%
- Commercial 40%
- Industrial 20%

3 Benefits expected from the work of the ISO/TC

The standardization activity in ISO/TC 160 has resulted in significant potential cost savings to the construction industry and provided major benefits in terms of:

- The removal of barriers to trade by the adoption of common specifications and test procedures for glass products.
- Better classification of products so that the consumer gains a greater understanding of the suitability of the product for their purpose.
- Assisting the architectural and building specification sectors by the removal of confusion brought about using a multiplicity of national standards which is particularly important for the exports of glass products.

Representation and participation in the ISO/TC

3.1 Membership

<https://www.iso.org/committee/53408.html?view=participation>

3.2 Analysis of the participation

All the major glass producing countries are represented on the committee either as P or O Members. Committee membership is via experts from major glass producing companies and material suppliers for processed glass products worldwide together with glass processors, interested trade associations and acknowledged technical experts. The most active countries are Belgium, China, France, Germany, Italy, Japan, UK, USA.

Some recently emerged economies also participate in the committee. The committee would like more active participation from other P and O members.

4 Objectives of the ISO/TC and strategies for their achievement

4.1 Defined objectives of the ISO/TC

The principal soda lime silicate glass products covered by the activities of ISO/TC 160 and for which standards have been drafted and being maintained :

- Basic glass products, including:
 - Float glass;
 - Polished wired glass;
 - Patterned glass;
 - Wired patterned glass
- Toughened glass
- Laminated glass
- Insulating glass products
- Mirrors
- Coated glass
- Curved Glass
- Glass pavers and glass blocks
- Building Integrated Photovoltaics (BIPV)
- Vacuum glass

- Active and dynamic glazing

* NOTE: Float glass accounts for more than 95% of the basic transparent flat glass production.

The major growth sectors in the market are expected to be in the production of low emissivity, solar control, and other coated glasses (e.g. 'self-cleaning'), and for insulating glass (double or triple glazing as well as vacuum insulating glass) units. Further growing market segment are BIPV and active glazings.

The development and maintenance of the standards listed above is in line with the global market structure and its growth expectations.

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

The areas of work for ISO/TC 160 are the preparation of:

1. Product specifications
2. Test methods
3. Assembly rules for glazing

When ISO/TC 160 was originally established it had been decided by ISO/TC 160 that the standards development work can be most effectively carried out by two Sub-committees:

1. SC 1 'Product considerations'
2. SC 2 'Use considerations'

However, it was found recently that it is often not obvious if a new work item should be allocated to product or use considerations. New products often require new test methods which are best developed by the product experts who are not members of the existing working groups dealing with the development of test or calculation methods. It is therefore proposed to dissolve the two sub-committees and to assign the working groups directly to the TC.

There are now Working Groups under ISO/TC 160 responsible for specific product types or product end uses. A full list can be found on the ISO Website.

Where appropriate, the technical work will be carried out in collaboration with the European Committee for Standardization (CEN) using the Vienna Agreement. Other national standards will also be considered when preparing product specifications and test methods. Co-normative test programmes will be used as part of the test method development programme to validate any new test procedures prior to publication.

Other Technical Committees in liaison and other organisations which are actively participating in the work of ISO/TC 160 can be found on the ISO/TC 160 Site - <https://www.iso.org/committee/53408.html> :

The work of ISO/TC 160 will generally be carried out using physical meetings. However, it is anticipated that there will be an increased emphasis on web meetings and the electronic exchange of documents using ISO Documents, to speed up the work and to save time and cost by reducing the number of physical meetings.

All TC and WG meetings will be held in the English Language. The base documents will also be prepared and developed using the English Language, but they will be published in the official languages of ISO as required by the ISO Directives.

5 Factors affecting completion and implementation of the ISO/TC work programme

Factors which may influence the timely production and delivery of standards include:

- i) Consolidation and compression of the glazing industry on a global scale. This could result in technical experts serving on committees retiring or being reassigned and not being replaced within their companies or organization;
- ii) Companies operating with reduced staff levels and budgets may be reluctant to provide experts to serve on committees, or even to commit company resources to co-normative research and/or test method development;
- iii) Funding for co-normative research and test method development and validation programmes is likely be increasingly difficult to obtain from national/local government and other sources;
- iv) Lack of an international perspective from some delegates or their delegating organization whose primary interest appears to favour only specific national standards.

To overcome the problems listed above more active and wider participation from P Member Bodies in the work of the committees is required, particularly from non-European countries. Also, provision of adequate funding for research, development and test method validation will require to be provided.

6 Structure, current projects and publications of the ISO/TC

Information on ISO online

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

<https://www.iso.org/committee/53408.html>

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

- About (Secretariat, Committee Manager, 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](#)