ASOCIACE SKLÁŘSKÉHO A KERAMICKÉHO PRŮMYSLU ČR

Association of the Glass and Ceramic Industry of the Czech Republic

ANNUAL REPORT – GLASS AND CERAMIC INDUSTRY OF THE CZECH REPUBLIC 2012

August 2013

ASOCIACE SKLÁŘSKÉHO A KERAMICKÉHO PRŮMYSLU ČR
Association of the Glass and Ceramic Industry of the Czech Republic

Dear friends,

it is a remarkable fact that the glass and ceramic industry in the Czech Republic still has such strong roots. Art, skills and knowledge of people working in our industry commit us to struggle for these values and to develop them. I am convinced that despite long adverse impacts of economic crisis, inflow of various material substitutes into our traditional markets and application of energy policies and directives (imposed especially by the EU), the importance of our industry will have an increasing tendency.

The Association of the Glass and Ceramic Industry of the Czech Republic submits the "Annual Report - Glass and Ceramic Industry of the Czech Republic - 2012", where we would like to inform the public about the main economic indices of the glass and ceramic industry of the Czech Republic in 2012, and also about trends in its development in the period from 2007 till 2012. In the annual report you will find information how the use of glass and ceramic products can significantly contribute to the reduction of energy consumption and related CO_2 emissions volume. An integral part of this report is also a chapter dealing with the activities of the Association of the Glass and Ceramic Industry of the Czech Republic.

The glass and ceramic industry is an export-oriented branch. In spite of the adverse development of other national economies, the demand for quality Czech products has increased. We have monitored increasing sales especially in countries outside the EU. The active balance of foreign trade was 22.302 bill. CZK in 2012, which significantly strengthened the balance of foreign trade of the whole processing industry.

Unfortunately, we are not always able to work in fair, competitive environment. A typical feature of our industrial branch is high energy consumption. The Czech government made a series of faulty decisions regarding energy policies, which have had a negative impact on especially large producers. Nevertheless, the glass and ceramic industry remains relatively successful, even though this applies only to medium-term views. Financial means which could have been invested in firm reproduction and innovation had to be spent on high energy costs instead. Our industry develops and applies technologies to improve energy efficiency and to produce less CO_2 emissions. At the same time our products also contribute to the reduction of energy consumption, sustainable development and are usually recyclable.

The glass and ceramic industry very sensitively reacts to changes of economic and political development not only because of its export orientation but also because of dependence on a number of following industrial branches for which it delivers its products. For companies there is still the same necessity to search ways how to orientate to the production with a high added value, how to strengthen the innovation in the production and in the management and commercial strategies.

Despite the negative prediction of domestic economy, ongoing global trend of decreasing demand and increasing number of new directives, I believe that we will manage to put our plans into action and to reach our goals.

I hope you will find interesting and usable information in our annual report.

Ing. Petr Mazzolini
president
Association of the Glass and Ceramic Industry of the Czech Republic

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INTRODUCTION

The Annual Report gives in its introduction part an overview on the position of the glass and ceramic industry within the processing industry of the Czech Republic, its structure and development in the period from 2007 till 2012. A paper on abilities of some products of the glass and ceramic industry to decrease the energy demand during their use creates a part of this Report. Further on, an evaluation of the activities of the Association of the Glass and Ceramic Industry of the Czech Republic in the past period is given, as well.

Data processed in the Annual Report are based on data of the Czech Statistical Office (valid at the date of June 30, 2013). These data are completed with information gained from annual reports of the Association members.

Classification and terminology of the processing industry used in the Chapter “Position of the glass and ceramic industry in the Czech Republic“ are taken from the Czech Statistical Office.

Time development lines compared in the Chapter ”Development of the glass and ceramic industry” are given for the period from 2007 till 2012.

The glass and ceramic industry is in the submitted Annual Report mostly investigated and described separately, i.e. in seven so-called groups. These groups are created by related glass and ceramic production activities as far as technology and marketing. This methodology corresponds to a method of the statistical statement in the Czech Republic.

- **Flat glass** (unfinished and finished flat glass)
- **Container glass** (bottles, preserve glass jars, other glass containers)
- **Glass fibres** (reinforcing/textile fibres, insulating glass fibres)
- **Other glass** (special glasses - laboratory and laboratory apparatus glass, tubing, glass TV components, technical spheres, glass industrial apparatuses, protective welding glass, optical glass, glass blocks, fashion jewellery glass, etc.) **and lighting glass**
- **Utility glass** (drinking glass, glass for household, decorative glass, art glass, etc.)
- **Household china and ceramics** (china ware for household and decorative china, ceramic ware for household, decorative ceramics)
- **Technical ceramics and sanitary ware** (insulators, laboratory china, ceramic products for sanitary purposes, products for technical purposes)

The development in the rest groups created by the production of machinery, equipment and services for the glass and ceramic industry, is not investigated in the Annual Report as the whole. From the point of view of the statistical statement the activities connected with this group are investigated in a number of other subsections of the processing industry, and so it is not possible to process and compare them, especially numerical data, reliably.

1. THE ASSOCIATION OF THE GLASS AND CERAMIC INDUSTRY OF THE CZECH REPUBLIC

The Association of the Glass and Ceramic Industry of the Czech Republic

The Association of the Glass and Ceramic Industry of the Czech Republic is a member of the Confederation of Industry of the Czech Republic and a member of the Glass Alliance Europe.
The Association of the Glass and Ceramic Industry of the Czech Republic (hereinafter Association) was established in 1990 as an interest group of producers of flat, container, technical, utility and lighting glass, glass and mineral fibres, household china, household ceramics and sanitary ware, trade companies, suppliers of machinery, machine and technological equipments and services, specialized schools, research institutes and publishers of specialized journals. Also the Czech Glass Society is the member of the Association. A separate part of this chapter is devoted to the Czech Glass Society.

The activities of the Association are focused, especially on the promotion, assertion and defence of interests and demands in relation to the bodies of the state administration, on organizing a mutual cooperation of members in solution of common problems, on rational utilization of local raw material resources, on environmental problems solution, on ensuring collective negotiations with respective trade union and making collective bargains, on ensuring a database for strategic decisions of its members, on assistance in search of foreign partners, on coordination of research and development in the glass and ceramic industry in cooperation with specialized schools and workplaces, on expert and financial support in publishing specialized literature and journals, and also on solution of specialized education orientation.

Activities of the Association in 2012

The Association within the membership in the Confederation of Industry of the Czech Republic (hereinafter Confederation) collaborated on fulfilling the Agenda 2012 on national level. As far as the promotion of interests directly connected with the glass and ceramic industry the Association cooperated with the Czech Glass Society, the Silicate Union and the Czech Union of Fashion Jewellery Producers. The Association worked within the European Union on promotion of interests of the glass and ceramic industries with the Glass Alliance Europe (hereinafter GAE) and with the CERAME UNIE, respectively.
The Association had 45 members at the date of December 31, 2012. The KAVALIERGLASS, a.s. company became a new member in 2012. Starorolský porcelán Moritz Zdekauer, a.s., Saint-Gobain ADFORS CZ, s.r.o., the Czech Union of Fashion Jewellery Producers and AGC Olomouc s.r.o. left the Association.

The activities of the Association in 2012 followed the activities in 2011. The development of economical situation forced the Association to look for new ways how to promote the interests of its members in the area of competitiveness, environment, energy savings and medial promotion. A great accent in 2012 was put also on deepening of common interests of the Association members and their promotion.

Export oriented support

The aim was to support competitiveness of glass and ceramic industry products on inland and also on international markets.

An important activity in this area was a participation of the Association in the antidumping management – **Draft of the European Commission No. 1072/2012 imposing a provisional antidumping duty on imports of ceramic tableware and kitchenware originating in the People's Republic of China.** The Association and its members - Český porcelán, a.s. and THUN 1794, a.s. - cooperated with the European corporation CERAME UNIE. The Association was delegated by the above mentioned members to lobby on the national and international level. This initiative was supported by the Confederation and the Trade Union of Employees of Glass, Ceramic, Fashion Jewellery and China Industry (hereinafter Trade Union). On April 4, 2013 a negotiation of the Consultative ***antidumping*** and antisubventional committee of the European Commission was held. During this negotiation the antidumping customs duty for the import of ceramic (incl. china) table- and kitchenware coming from the People's Republic of China in amount of 13.1 to 36.1 % for a period of 5 years, was agreed.

In the second half a year of 2012 the Association took part in activities against **introduction of fees for Renewable Energy Sources**. These activities resulted in the negotiation in the Ministry of Industry and Trade and the establishment of expert working group. The aim of this working group is lowering of companies burden with fees for Renewable Energy Sources.

Collective agreement of higher degree

In 2012 the negotiation on collective agreement of higher degree between the Association and the Trade Union of Employees of Glass, Ceramic, Fashion Jewellery and China Industry (hereinafter Trade Union) proceeded on the Collective agreement of higher degree to the period of 2013 till 2014.

After very complicated negotiation the Collective agreement of higher degree to the period of 2013 till 2014 was agreed and signed on January 31, 2013. This Collective agreement was signed by Mr. Petr Mazzolini, the President of the Association and by Dr. Vladimír Kubinec, the Chairman of the Trade Union.

Education

The Association in cooperation with the Czech Glass Society, the Silicate Union and the Czech Union of Fashion Jewellery Producers collaborates in the framework of Sector council for glass, ceramics and other mineral products on elaboration of national system of qualifications in the project of the second stage of the **National Qualification System (NSK 2).** The project is controlled by a consortium of the Confederation, the Chamber of Commerce and TREXIMA, s.r.o. In the area of glass production there were in 2012 created profession qualifications of glass machinery operator for pressing, press-and-blowing, blowing and refinery automatic and semiautomatic lines. In the area of ceramic production there were created profession qualifications of ceramic foreman and ceramic technician.

Environment

The Association remarked the following regulations in collaboration with the Confederation, and individually as well:

- the Regulation on permissible level of air pollution and its detection and on carrying out of some other provisions of law No. 201/2012 of the Coll. of Laws, on air protection
- the Amendment of law on packaging. The basic comment was not to increase the range of recycling for container glass.

In cooperation with the Glass for Europe the Association lobbied on national level and also at members of the European Parliament in the letter from Mr. Mazzolini for a support of the glass and ceramic industry during the European Commission negotiation on revision the list of branches where a risk of great amount of carbon release is supposed.

The Association and its members, namely Crystal Bohemia, a.s., Český porcelán, a.s. and Thun 1794, a.s., started to negotiate with the Ministry of Health on a preparation of the European Commission directive regarding the contact of products with food.

In the framework of the Confederation and the specialized group at the Ministry of Industry and Trade the Association will participate on the preparation of the amendment of law on wastes. The priority is a solution of problems of waste glass for processing for recycling.

Public Relations activities promoting the Association and its members

In 2012 a regular contact with the Czech News Agency was established. There were elaborated press news about the mark Czech Product, guaranteed by the Association of the Glass and Ceramic Industry of the Czech Republic, publication of preliminary results of the glass and ceramic industry in 2011 and outlook to 2012, preliminary results of the glass and ceramic industry for the first half a year of 2012 and preliminary evaluation of 2012.

Good contacts are developed also with the Czech Television. The interest of editors was focused directly to the Association members.

On November 27, 2012 a meeting of the Association representatives with journalists proceeded. The theme of the meeting was the supposed results of 2012, outlook to 2013, influence of fees to renewable energy sources to the glass and ceramic industry, glass recycling and its influence to energy saving.

The Annual Report - Glass and Ceramic Industry of the Czech Republic - 2011 was published. An extract from this report and also information on activities of the Association were published in Keramický zpravodaj and Sklář a keramik

In the meeting of the representatives in September 2012 there was decided that every two weeks an electronic information bulletin will be published. The aim is to inform the Association members regularly on activities in the Association. The bulletin and other information coming from the secretary of the Glass Alliance Europe (GAE) are regularly sent to the Association members.

The Czech Glass Society

The Czech Glass Society is a member of the International Commission on Glass (ICG) and the European Society of Glass Science and Technology (ESG).

The Czech Glass Society was originally established in 1946 as a glass section of the Czechoslovak Glass and Ceramic Society. In present form it exists after division of the Czech and Slovak Federal Republic in 1993 as the Czech Glass Society (hereinafter CGS).

The CGS is a voluntary organization associating individual and collective members from the production of glass, fashion jewellery and related branches.

Activities of the CGS in 2012

At the date of December 31, 2012 the CGS had totally 252 individual members and members of art, 2 subsidiaries (VETROPACK MORAVIA GLASS, a.s., KAVALIERGLASS, a.s.) with 41 members and 18 collective members.

The activities of the CGS in the international field in Technical Commissions of the International Commission on Glass (ICG) are important: TC 2 - Chemical Durability & Analysis, TC 3 - Basic Glass Science, TC 7 – Nucleation, Crystallisation & Glass-Ceramics, TC 13 - Environment, TC 14 - Gases in Glass, TC 19 - Glass Surface Diagnostics, TC 20 - Glasses for Optoelectronics, TC 21 - Modelling of Melting Processes, TC 23 - Education & Training in Glass Science & Engineering, and TC 25 – Modelling of Glass Forming Processes.

The CGS collaborates with the Deutsche Glastechnische Gesellschaft (DGG) and with the Slovak Glass Society. The delegation of the CGS participated on the 86th Annual Conference of the DGG in Saarbrücken in June.

The whole year 2012 was in the sign of preparation of the 23rd International Glass Congress on Glass being held in July 1 till 5, 2013 in Prague.

In February 2012 the 17th seminar of doctorands with the theme “Inorganic Non-Metallic Materials – Processes, Technologies, Properties” was held. The organizer was the Institute of Glass and Ceramics of the Institute of Chemical Technology, Prague.

The 13th International Conference on Glass Machinery, extended by a seminar Metals in Glass Technologies was held in September. The conference was organized by the Department of glass producing machines and robotics of the Technical University of Liberec and the CGS.

The CGS collaborates with the Foundation of Josef Viewegh in the project called Way of Glass – National Centre of Glass Art – Glassworks František in Sázava.

The CGS is a publisher of the Sklář a keramik journal. In 2012 it was the 62nd year and the 89th year of Czech glass journal already. There were published 6 issues with total number of about 330 pages.

2. STRUCTURE OF THE GLASS AND CERAMIC INDUSTRY IN THE CZECH REPUBLIC

The structure of the glass and ceramic industry of the Czech Republic is described below according to the division of individual production branches, as it is used in the following parts of this Annual Report. Companies profiling the branch through their economic importance and prestige are given in individual groups. Further on, also basic information on Czech producers of machinery and equipment and on companies providing services for the glass and ceramic industry and suppliers of basic raw materials, is given.

The number of companies in the Czech Republic with more than 20 employees at the date of May 31, 2013:

CZ-NACE 23.1 - Production of glass and glass products – 98 companies are included. According to the investigated production branches there are 31 producers of flat glass, 37 producers of hollow glass (from which 4 producers of container glass, other companies produce utility glass), 6 producers of glass fibres and products made of, and 24 producers of the other glass (see the following text).

CZ-NACE 23.41 - Production of ceramic and china products, mostly for household and decorative products – 21 companies are included, from which 6 producers of china.

CZ-NACE 23.42 - Production of ceramic sanitary ware – 2 companies are included.

Flat glass

AGC Flat Glass Czech, a.s.: the key player in the area of flat glass production and processing

The only producer of a large-dimension flat glass in the Czech Republic is AGC Flat Glass Czech, a.s., a member of the AGC Group with the seat in Teplice. This company is at present the greatest producer of flat glass and its applications in Central and Eastern Europe. The 100 % owner of the company is Asahi Glass Co. Ltd., Japan.

The activities of AGC Flat Glass Czech, a.s. include the production of basic flat float glass, clear or with defined green tint. It is finished by further transformation to the so-called low-emission glasses controlling the light and energy flow, safety (laminated or toughened) glass, sound insulating glass, matt or painted glasses for exterior and interior applications and mirrors. By further treatment double or triplex insulating glass, bent building glasses, furniture glass, glass for solar technique and fire resistant glass, are produced. Beside float glass the company produces dozens of ornamental patterns of cast glass. The trade policy of the company is based on export to the countries of Central and Eastern Europe. The company production is applied also in world distribution channels of the AGC Group.

The activities of AGC Flat Glass Czech, a.s. are supported by distribution channels in the Czech Republic, Slovakia and Poland created by subsidiary companies for distribution of glass for architecture and the building industry. Through them the company is a supplier of important volumes of unfinished flat glass to processing companies.

Great volumes of flat glass are processed in the Czech Republic in the automotive division of the AGC Group, konkrétně AGC Automotive Czech, a.s. Chudeřice u Bíliny. This company produces toughened and laminated safety glasses, especially for private cars, trucks and busses, including the additional operations like application of encapsulated or extruded plastic profiles and application of required additional components (connectors, holders, etc.). AGC Automotive Czech produces and sells approx. 25 mill. of automotive glasses/windshields per year and so, it is one of the greatest and the most complex producers in Europe.

The company is a part of European group of producing, development and trade subjects of the AGC Automotive Europe Ltd. group. Its activities are concentrated in Belgium, Czech Republic, France, Italy, Hungary, Germany, Russia, Spain, Turkey and Great Britain. The company is a producer of more than 70 mill. of windshields, rear windows, sidescreens and skylights made of safety automotive glass per year.

AGC Automotive Europe Ltd. is a part of the worldwide active Automotive Glass Company, Asahi Glass Co. Ltd., Japan. The main goal and vision is to be the most respected world supplier of all safety glasses for the automotive industry.

In the Czech Republic there are many other companies processing flat glass for various specialized products. It is for instance SAINT-GOBAIN GLASS SOLUTION, s.r.o. – production of insulation glasses, treatment of glasses for the building industry and interiors; Saint-Gobain Sekurit ČR, spol. s r.o. Hořovice - production of glass for private cars; Pilkington Czech, spol. s r.o. Noviny pod Ralskem - production of glass for the building industry; Amirro, s.r.o. Čelákovice - production of mirrors and furniture glass; ERTL GLAS, s.r.o. Říčany - production of laminated safety glass, heat protective glass; WMA-Glass, s.r.o. Chrastava - production of insulation glass; Bepof, spol. s r.o., Hranice u Aše - processing of flat glass and mirrors, etc.

Beside the above mentioned companies there are also many wholesale companies trading with products and services regarding finished flat glass.

Container glass

The production of container glass includes beverage bottles and preserve glass jars made for the food industry (beer, wine, liquors, non-alcoholic drinks, mineral waters, fruit, etc.), and further on, glass containers for products of the chemical, pharmaceutical and cosmetic industries.

Dominant producers of container glass in the Czech Republic are O-I Manufacturing Czech Republic, a.s. with trading company O-I Sales and Distribution Czech Republic, s.r.o. Dubí u Teplic, members of the transnational group of companies Owens-Illinois, USA, and VETROPACK MORAVIA GLASS, a.s. Kyjov, a member of the transnational group Vetropack Holding AG, Switzerland. Both these companies have about 80 % of a market share of container glass in the Czech Republic and they have also important export shares in neighbouring countries within their transnational ownership and trade bonds.

Further on, there are producers of container glass, e.g. SKLÁRNY MORAVIA, a.s. Úsobrno and STÖLZLE UNION, s.r.o. Heřmanova Huť (the owner is Stölzle - Oberglas GmbH) in the Czech Republic.

Glass fibres and products made of

The only producer of glass textile fibres and products made of in the Czech Republic is SAINT-GOBAIN ADFORS CZ, s.r.o. Litomyšl, which is organizationally included to the sector of innovative materials of the group Saint-Gobain. As far as products it includes activities: "Vetrotex" and ADFORS CONSTRUCTION PRODUCTS EUROPE". The term "CONSTRUCTION PRODUCTS" reflects the final utilization of company products.

The only Czech producer of thermal and sound insulation made of glass fibres in the form of mats and slabs (ROTAFLEX SUPER® trade mark) is Union Lesní Brána, a.s. Dubí u Teplic.

Insulation material based on glass wool in the form of slabs and rolls is produced by KNAUF INSULATION, spol. s r.o. Krupka u Teplic. The plant in Krupka is one of the most modern/up-to-date production plants for the production of mineral insulation made of glass wool in Europe.

Utility glass

There are about thirty companies with more than 20 employees with the main production of utility glass. To the greatest belong Crystalex CZ, s.r.o. Nový Bor (machine made utility soda potassium glass), Crystal BOHEMIA, a.s. Poděbrady (lead crystal) and CRYSTALITE BOHEMIA, a.s. Světlá nad Sázavou. Further on, there are many smaller companies with various assortments, e.g. art glass, cut lead crystal, utility glass decorated with painting, pen-and-ink drawing, staining, high enamel and engraving, handmade utility glass, historical replicas, off-hand glass, etc. For example: Ajeto, s.r.o. Lindava, Rückl CRYSTAL, a.s. Nižbor, Blažek Glass, s.r.o. Poděbrady, CAESAR CRYSTAL BOHEMIAE, a.s. Světlá nad Sázavou, SKLÁRNA SLAVIA, s.r.o. Nový Bor, Královská Huť, s.r.o. Doksy, EGERMANN, s.r.o. Nový Bor, BOHEMIA MACHINE, s.r.o. Světlá nad Sázavou and a number of other companies.

Luxury handmade utility glass is produced by MOSER, a.s. Karlovy Vary. The pressed-and-blown decorated utility and decorative glass is produced by Sklárna Heřmanova Huť, a.s.

KAVALIERGLASS, a.s. Sázava nad Sázavou is a producer of household cooking glass.

Other glass

Products included into this group of the glass industry are often (especially in abroad) called special glasses. It is a wide range of glass products with specifically defined properties having their customers mostly in other processing branches of industrial market. The assortment of this group in the Czech Republic is very wide. It includes technical, laboratory and laboratory apparatus glass, technical spheres, glass industrial apparatuses, protective welding glass, optical glass. Also the production of glass blocks, fashion jewellery semiproducts and lighting glass are included.

A dominant Czech producer of technical and laboratory glass, tubing and apparatus glass made of borosilicate glass is KAVALIERGLASS, a.s. Sázava. Technical and laboratory glass is also produced by TECHNOSKLO, s.r.o. Držkov, EXATHERM, s.r.o. Železný Brod (glass thermometers and densimeters), Detesk, s.r.o. Železný Brod (technical borosilicate glass), Vitrum, spol. s r.o. - Sklárna Janov, Janov nad Nisou and other smaller companies.

From the producers of optical glass can be stated ECOGLASS, s.r.o. Jablonec nad Nisou, the producer of exactly pressed components of optical glass for electro-optical apparatuses.

VITRABLOK, s.r.o. Duchcov is the producer of glass blocks for the building industry.

Frits and glazes are made in MEFRIT spol. s r.o. Mělník and Glazura, spol. s r.o. Roudnice.

Production of fashion jewellery semiproducts is a subject of activities of many companies mostly in the north part of the Czech Republic in Jablonec region (Preciosa, a.s., LIGLASS, a.s., PAS Jablonec, a.s.).

Lighting glass is produced by Sklárny Janštejn, s.r.o. and it is a supplementary assortment of several smaller producers of utility and technical glass. A number of companies are engaged in the production of components for chandeliers and also in individual production of chandeliers, the most significant are, e.g. Preciosa, a.s., LIGLASS, a.s.

Household china and ceramics

The assortment of household china includes products intended for daily use to luxury products, e.g. luxury household china, household and decorative china, e.g. rose, onion pattern, and figural china.

Among significant china producers belong Thun 1794, a.s. Nová Role, Český porcelán, a.s. Dubí u Teplic, G-Benedikt, s.r.o. Karlovy Vary, Rudolf Kämpf, s.r.o. Nové Sedlo, König-Porzellan Sokolov, spol. s r. o. Sokolov, and Starorolský porcelán Moritz Zdekauer, a.s. Karlovy Vary - Stará Role.

A great number of more specialized smaller companies produce household ceramics. The greatest are KERAMO Kožlany, v.d., and Keramika Krumvíř, spol. s r.o. Krumvíř. Ceramic tiles are made in KERAMIA, s.r.o. Znojmo.

Technical ceramics and sanitary ware

There are two dominant Czech producers of sanitary ware – LAUFEN CZ, s.r.o. (with producing facilities in Bechyně and Znojmo), a member of the Roca and Ideal Standard, s.r.o. Teplice. Both companies are strongly oriented to export and their market success is dependent in a great extent on the building industry boom in Europe.

The producers of technical china are Elektroporcelán, a.s. Louny with its assortment of insulators for the energy industry and Jizerská porcelánka, s.r.o. Desná v Jizerských horách producing also laboratory chinaware and china tubing, and ELPOR-Rauschert, s.r.o. Krupka Bohosudov.

From the producers of technical ceramics can be stated TECHNICKÁ KERAMIKA, a.s. Hradec Králové - production technical oxide ceramics for the electrotechnical industry, machinery and chemical industry, etc., KERAMTECH, spol. s r.o. Žacléř - production of foundry ceramics and technical china, and BRISK TÁBOR, a.s. - production spark and glow plugs for internal combustion engines and technical ceramics, HOFMAN CERAMIC CZ, s.r.o. Bělá nad Radbuzou - production of technical ceramics for foundries, ESTCOM CZ-oxidová keramika, a.s. Louny - production of refractory ceramics and ceramic tubes, Diamorph Hob Certec, s.r.o. Horní Bříza - production of technical ceramics, etc.

Other mineral products

Aluminosilicate fibres resistant to high temperatures and insulating fibre products (wool, mats, shaped pieces, slabs) with Sibral trade mark used mainly in the construction of heat appliances are produced by UNIFRAX, s.r.o. Dubí u Teplic.

Fused basalt products (abrasion resistant and refractory materials with EUROR trade mark), abrasion resistant piping, and tiles for industry and interiors are produced in EUTIT, s.r.o., Stará Voda. This company is the only world producer of interior floor basalt tiles.

Furnaces/kilns, glass machinery and equipment, and special services for glass and ceramic industry

Nowadays, about forty or fifty independent companies produce and deliver glass furnaces, kilns, machinery and equipment, glass moulds and apparatuses for the glass and ceramic production, or carry out service, design and various specialized and consultancy work for this industry. These companies are of a different size and they have, of course, various ranges of their activities.

Among the companies with individual production and trade activities exceeding significantly the territory of the Czech Republic belong some producers of machinery and equipment, e.g. Sklostroj Turnov CZ, s.r.o. producing machines and equipment for automatic production of container glass. Further on, SKLOPAN LIBEREC, a.s. is a supplier of machinery for processing of flat glass, Sklářské stroje Znojmo, s.r.o. delivers various glass machinery equipments and TRIMA, s.r.o. Turnov delivers machinery and equipment for the production and processing of glass fibres.

Heat appliances and kilns for china and ceramics firing, as a complex and in greater amount, are designed and delivered by REALISTIC, a.s. Karlovy Vary, BVD PECE, s.r.o. Karlovy Vary, and LAC, s.r.o. Rajhrad. The company Elsklo, s.r.o. Desná v Jizerských horách designs and delivers equipment for small-scale electric melting of glass. Glass melting aggregates are designed and delivered by Teplotechna Prima, s.r.o. Teplice and PKI SKLOPECE Olomouc, s.r.o. Companies GLASS SERVICE, s.r.o. Vsetín and DITES, s.r.o. Teplice (automatized control systems for technological processes) have important activities in abroad in the area of design and control systems for glass melting aggregates. Gas-fired melting furnaces and auxiliary furnaces for hand production of glass are produced by EGT servis, s.r.o. Hradec Králové.

Producers and suppliers of cast iron and steel moulds for utility and lighting glass - Brnoform, s.r.o. Brno, and for container glass SKLOFORM, a.s. Suchdol nad Lužnicí - work predominantly on the level of services and deliveries for Czech producers. Further on, Desko, a.s. Desná v Jizerských horách delivers machinery and moulds for fashion jewellery production. Other producers of machinery for the production of glass are, e.g. FOR G, s.r.o. Teplice, and BOHEMIA MACHINE, s.r.o. Světlá nad Sázavou.

Quite a great group of companies and also a number of independent individuals are dealing with design of procedures and construction of machinery for mechanical working of glass (engraving, cutting, polishing), e.g. DIAS TURNOV, s.r.o. and POLPUR, s.r.o. Turnov.

Raw materials for the glass and ceramic industry

A long tradition and the development of glass, china and ceramic production were determined, beside other factors, by an abundance of basic raw materials, i.e. sand, kaolin, feldspar and quartz.

High quality glass sands with extremely high content of SiO_2 are outstanding for the glass industry and also for various utilizations in other branches. Sands are delivered in a moistened or dried form. In the Czech Republic, companies Provodínské písky, a.s. Provodín and Sklopísek Střeleč, a.s. Mladějov v Čechách mine and deliver these sands.

Mining and processing of kaolin is carried out by LB MINERALS, s.r.o. Horní Bříza, Sedlecký kaolin, a.s. Božičany and Kaolin Hlubany, a.s. Podbořany. LB MINERALS, s.r.o. is a supplier of ceramic kaolins intended for wall and floor tiles and sanitary ware, mixed kaolins for sanitary ware, paper mills kaolins and kaolins for glass fibres. Floated kaolin delivered by Sedlecký kaolin, a.s. is used, especially for china and ceramics. Kaolin Hlubany, a.s. delivers floated kaolins for ceramics.

Beside mining and processing of kaolins also mining and processing of feldspar is a part of the production of the LB MINERALS, s.r.o. Potassium feldspars are suitable for production of container and flat glass, glazes and china; soda-lime feldspars are suitable for the production of frits and enamels. Sodium-potassium and potassium-sodium feldstars are delivered by K M K GRANIT, a.s. Krásno. Feldspars are applied as flux.

3. POSITION OF THE GLASS AND CERAMIC INDUSTRY IN THE CZECH REPUBLIC

The glass and ceramic industry is a traditional part of the processing industry in the Czech Republic.

The glass and ceramic industry is included in the subcategory Production of other non-metallic mineral products according to the Classification of Economic Activities (NACE) used by the European Union.

The CZ-NACE 23 Production of other non-metallic mineral products put together productions of glass, ceramics and building materials of various types and utilization. Production of these commodities has a long tradition and a high level in the Czech Republic.

Classification of CZ-NACE activities is the following:

23.1 Production of glass and glass products

23.2 Production of refractory products

23.3 Production of building materials from clay materials

23.4 Production of other china and ceramic products

23.5 Production of cement, lime and plaster

23.6 Production of concrete, cement and plaster products

23.7 Cutting, shaping and finishing of stones

23.9 Production of abrasive materials and other non-metallic mineral products not stated elsewhere

Sections 23.1 and 23.4 from which:

23.41 Production of ceramic and china products, mostly for household and decorative products

23.42 Production of ceramic sanitary ware

23.43 Production of ceramic insulators and insulation accessories

23.44 Production of other technical ceramic products

represent the production of glass, glass products and production of other china and ceramic products which are a subject of evaluation of this Annual Report.

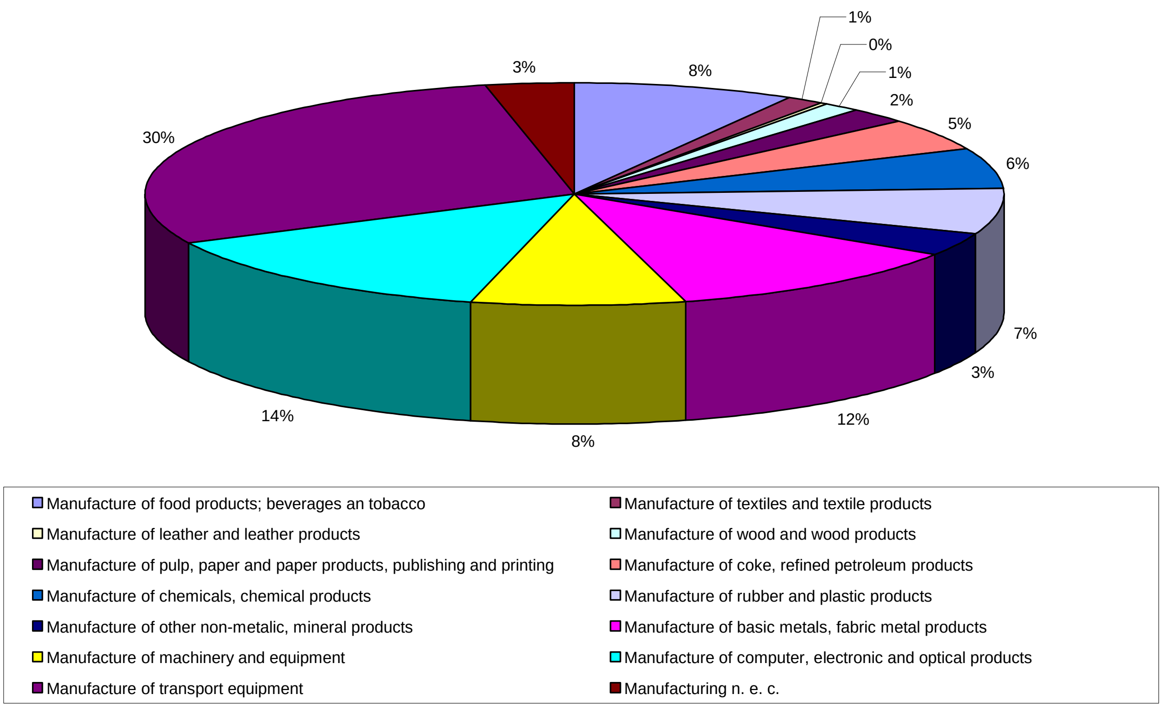
In the following tables the revenues without the value added tax (VAT) from sale of own products and services of industrial character (hereinafter revenues) and revenues without the VAT from the direct export (hereinafter direct export) of individual subcategories of the processing industry. Revenues and direct export are given in current prices. Their share within the Czech processing industry in 2012 is described by this method.

The revenues of the processing industry in the Czech Republic reached a value of 2854.60 bill. CZK in 2012 (in 2011 it was 2790.80 bill. CZK). In comparison with previous year the revenues of the processing industry increased by 2.3 %. The category Production of other non-metallic mineral products with revenues in amount of 92.88 bill. CZK shared on the revenues of the processing industry with 3.3 %.

Revenues of the processing industry in 2012

	Revenues 2012 (bill. CZK)	Share (%)
Manufacture of food products; beverages an tobacco	240.49	8.4
Manufacture of textiles and textile products	40.85	1.4
Manufacture of leather and leather products	2.50	0.1
Manufacture of wood and wood products	39.32	1.4
Manufacture of pulp, paper and paper products, publishing and printing	69.72	2.4
Manufacture of coke, refined petroleum products	133.02	4.6
Manufacture of chemicals, chemical products	167.85	5.9
Manufacture of rubber and plastic products	194.05	6.8
Manufacture of other non-metalic, mineral products	92.88	3.2
Manufacture of basic metals, fabric metal products	336.44	11.7
Manufacture of machinery and equipment	228.09	8.0
Manufacture of computer, electronic and optical products	402.52	14.0
Manufacture of transport equipment	821.22	28.6
Manufacturing n. e. c.	99.38	3.5
Manufacturing	**2 868.35**	**100.0**

Structure of revenues of the processing industry in 2012

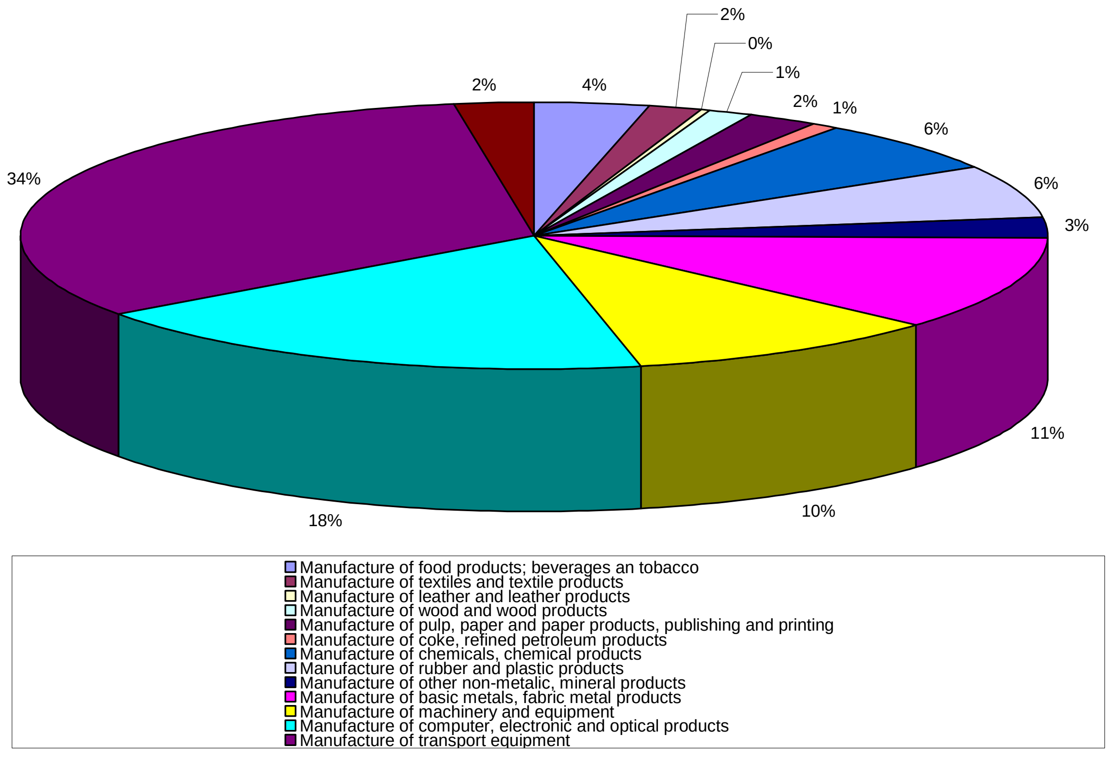


The direct export of the processing industry was 1674.34 bill. CZK, i.e.by 4.3 % more than in 2011 (1605.79 bill. CZK).

Direct export of the processing industry in 2012

	Direct export (bill. CZK)	Share (%)
Manufacture of food products; beverages an tobacco	59.61	3.6
Manufacture of textiles and textile products	30.13	1.8
Manufacture of leather and leather products	1.85	0.1
Manufacture of wood and wood products	23.54	1.4
Manufacture of pulp, paper and paper products, publishing and printing	37.16	2.2
Manufacture of coke, refined petroleum products	17.00	1.0
Manufacture of chemicals, chemical products	104.21	6.2
Manufacture of rubber and plastic products	107.24	6.4
Manufacture of other non-metalic, mineral products	44.20	2.6
Manufacture of basic metals, fabric metal products	188.83	11.3
Manufacture of machinery and equipment	168.92	10.1
Manufacture of computer, electronic and optical products	306.52	18.3
Manufacture of transport equipment	544.23	32.5
Manufacturing n. e. c.	40.89	2.4
Manufacturing	**1 674.34**	**100.0**

Structure of direct export of the processing industry in 2012



In the following table the individual processing industry subcategories are arranged according to the level of the inter-year change of revenues reached within years 2012 and 2011. These inter-year changes are used here as indicators of growth dynamism of individual branches.

Dynamism of sale according to the individual processing industry subcategories

	Revenues 2011	Revenues 2012	Index 12/11
	(bill. CZK)	(bill. CZK)	(%)
Manufacture of coke, refined petroleum products	118.43	133.02	112.3
Manufacture of chemicals, chemical products	155.21	167.85	108.1
Manufacture of rubber and plastics products	183.40	194.05	105.8
Manufacture of machinery and equipment	217.44	228.09	104.9
Manufacture of computer, electronic and optical products	388.69	402.52	103.6
Manufacture of transport equipment	795.06	821.22	103.3
Manufacturing	**2 790.80**	**2 868.35**	102.8
Manufacture of food products, beverages and tobacco	235.41	240.49	102.2
Manufacture of textiles and textile products	40.23	40.85	101.5
Manufacture of wood and wood products	39.27	39.32	100.1
Manufacture of pulp, paper and paper products; publishing and printing	70.45	69.72	99.0
Manufacture of basic metals, fabric metal products	347.03	336.44	96.9
Manufacture of other non-metalic, mineral products	96.39	92.88	96.4
Manufacturing n. e. c.	101.14	99.38	98.3
Manufacture of leather and leather products	2.64	2.50	94.8

The most significant growth was in the production of coke and refinery processing of oil, followed by the production of chemical substances, preparations and medicaments.

The revenues of the Production of other non-metallic mineral products, to which also the industry of glass and ceramics belongs, decreased by 3.6 % in comparison with 2011 due to permanently decreasing number of orders in the building industry.

Glass and ceramic industry

In the following Chapter "Development of the glass and ceramic industry in the period from 2007 till 2012", the glass and ceramic industry as a part of the Czech processing industry, which corresponds to the characteristic orientation of organizations activities included in the Association, is studied and described in more details, i.e. in group division. For understanding the relations among the processing industry, production of other non-metallic mineral products and the glass and ceramic industry an informative table is given further on.

Glass and ceramic industry in the processing industry in 2012

	Revenues	Export
Glass and ceramic industry		
Indicators in bill. CZK (current prices)	37.26	27.39
Share in the other non-metalic, mineral products subsection (%)	40.12	61.97
Share in the processing industry (%)	1.30	1.64
Manufacture of other non-metalic, mineral products		
Indicators in bill. CZK (current prices)	92.88	44.20
Share in the processing industry (%)	3.24	2.64
Processing industry		
Indicators in bill. CZK (current prices)	2 868.35	1 674.34

4. DEVELOPMENT OF THE GLASS AND CERAMIC INDUSTRY IN THE PERIOD FROM 2007 TO 2012

In this part of the annual report characteristic values of the main production indices of the glass and ceramic industry of the Czech Republic in 2012 and in the period from 2007 to 2012 are recorded. In the context of real outer and inner background of the Czech Republic, based on these data, the aim is to analyze and describe the main trends of the development of economic indices of the glass and ceramic industry in above-mentioned years.

In the introduction of the glass and ceramic industry development analysis a survey of basic macroeconomic indices for the Czech Republic in the investigated period from 2007 to 2012 is given for a better understanding of context.

Main macroeconomic indices in the Czech Republic in the period from 2007 to 2012
(Czech Statistical Office – July 2013)

		2012	2013	2014
Gross domestic product (GDP)	Average growth in %, current prices	-1.3	-1.5	0.8
Average rate of inflation	Average growth in %	3.3	1.6	1.4
Unemployment rate	Average growth in %	7.0	7.5	7.6
Growth of average wages	in %	2.0	0.7	2.1
CZK / EUR	Average per year	25.1	25.8	25.8

The 2012 economic development in the Czech Republic was characterized by the fall of GDP (gross domestic product). Starting with a mild year-on-year decrease in the first three months by 0.4 %, it gradually decreased in the subsequent quarters (through -1.1 % and -1.5 % in the second and third quarter) to -1.7 % in the last quarter of 2012. Prevailing causes of the economic slump can be found mostly in the first three periods in weak domestic demand with limited final consumption expenditure, in the last quarter then mostly in the weakened foreign demand.

The beginning of the 2012 Czech economy started with decrease, which was gradually deepening in the following periods. The GDP decreased by 1.2 %. Most adverse effects came from the limited final consumption expenditure of households, which decreased by 3.5 % in 2012. The year-on-year fall of the Czech government sector consumption was becoming milder,experiencing more favourable development in the last quarter. Nevertheless, the government sector consumption lowered the GDP growth rate in 2012 by 0.2 p.p., the gross capital formation by 0.8 p.p. and the final consumption expenditure by 1.8 p.p. In total, only the Czech foreign trade contributed favourably to the GDP rate (+1.5 p.p.).

External relations with foreign countries improved mainly due to inward flow of foreign direct investment and favourable trade balance.

Labour market experienced increase in the employment as well as unemployment rate. This could be caused by changes in job contract types (part-time employment, agreement to

complete a job or to perform work, help of family members, "švarc system"[1]). Relative wages decreased by 0.9 %.
(Source: Czech Statistical Office (Development of Economy of the Czech Republic in 2012, 19th March 2013)

The data and analyses given below were gathered and processed for the glass and ceramic industry as the area of the Czech processing industry corresponding to the characteristic orientation of companies associated in the Association. The selected method of the industrial development description comes out from investigation of data arranged in individual branches of the glass and ceramic industry. For the analysis of 2012 available statistical data of companies with more than 50 employees relevant to 30th June 2013 have been used.

Since 2008 the production is not stated by Czech Statistical Office consistently in tones, but for instance in square meters, pieces, kilograms, etc. Therefore, in comparison with previous reports, information about the production in weight units in individual production branches is not given in this report.

Price indices for the group of products of the glass and ceramic industry

Inter-year price indices (same period of previous year = 100 %)

REPR		2007	2008	2009	2010	2011	2012
CG 23	Other non-metallic mineral products	105.4	102.4	98.0	97.3	99.6	100.2
CG 231	Glass and glass products	108.4	98.1	93.6	97.9	101.5	99.4
CG 232	Refractory products	102.0	103.3	102.9	97.7	101.2	102.1
CG 234	Other china and ceramic products						

Inter-year price indices (same period of previous year = 100%)

The total average price index of Other non-metallic mineral products group increased by 0.6 p.p. in comparison with the previous year.

Cumulative price indices

REPR		2007	2008	2009	2010	2011	2012
CG 23	Other non-metallic mineral products	105.3	107.9	105.7	102.9	102.5	102.7
CG 231	Glass and glass products	108.4	106.3	99.5	97.4	98.8	98.3
CG 232	Refractory products	102.1	105.4	108.4	105.9	107.2	109.5
CG 234	Other china and ceramic products						

Cumulative price indices (2006 = 100 %)
**) Czech Statistical Office does not publish the price indices for branch CG 234.*

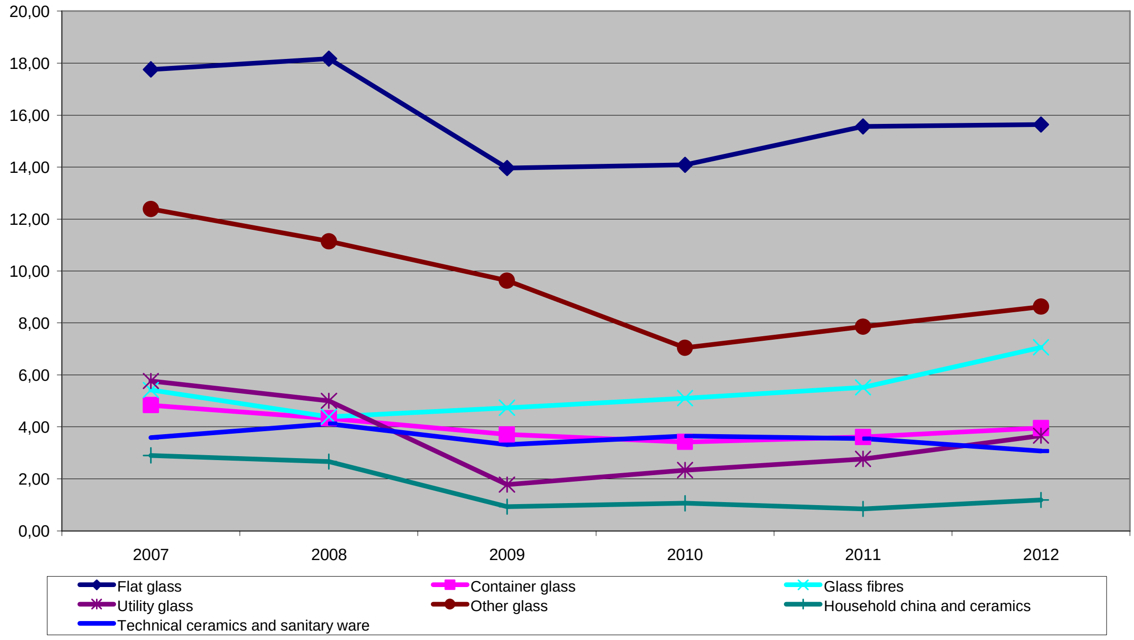
[1] "Švarc system" is a form of concealed working relationship.

Revenues for sale of own products and services

Revenues for sale of own products and services (bill CZK)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	17.76	18.17	13.96	14.09	15.56	15.64	100.5
Container glass	4.84	4.33	3.71	3.42	3.61	3.96	109.7
Glass fibres	5.42	4.39	4.74	5.11	5.52	7.06	127.9
Utility glass	5.77	5.00	1.78	2.34	2.77	3.66	132.1
Other glass	12.39	11.14	9.63	7.05	7.86	8.63	109.8
Glass total	46.18	43.03	33.82	32.01	35.32	38.95	110.3
Household china and ceramics	2.90	2.66	0.93	1.06	0.84	1.19	141.7
Technical ceramics and sanitary ware	3.59	4.12	3.32	3.65	3.55	3.07	86.5
Ceramics total	6.49	6.78	4.25	4.71	4.39	4.26	97.0
Glass and ceramics total	**52.67**	**49.81**	**38.07**	**36.72**	**39.71**	**43.21**	**108.8**

Development of revenues for sale of own products and services (bill CZK)



In 2012 the revenues for sale of own products and services (hereinafter referred to as revenues) reached 43.21 bill. CZK, which represent an increase by 8.8 % (3.5 bill. CZK) when compared with 2011.

In 2012 the revenues in the glass industry amounted to 38.95 bill. CZK. Flat glass formed 40.2 %, other glass 22.2 %, glass fibres and products made of them 18.1 %, container glass 10.2 % and utility glass 9.4 %.

The revenues in the investigated branches of the glass and ceramic industry reached 4.26 bill. CZK. The share of utility glass and ceramics represents 27.9 %, technical and sanitary ceramics formed 72.1 %.

The development of revenues in 2012 in individual branches was different.

The amount of flat glass revenue in 2012 reached 15.64 bill. CZK. In comparison with 2011 it is a mere 0.5% increase. The flat glass production is dependent on the development of the building and automotive industry. Since 2008 the building industry production has been permanently decreasing. In 2012 its year-on-year rate decreased by 6.5 %. Building control authorities granted by 8.8 % fewer building permits and their approximate value dropped by 6.3 %. The total number of newly construction orders fell by 18.4 % year-on-year. In 2012 the number of started dwellings was down by 13.4 % year-on-year and the number of completed dwellings increased by 3.0 %. One of the reasons of the adverse conditions in construction has been still weak demand due to continuing prudent approach of private investors combined with restricted potential of the state budget.
(Source: Czech Statistical Office, Decline in Construction Continued in 2012, 6th February 2013)

The automotive industry developed favourably in comparison with the building industry. In 2012 the car industry produced 1,200,790 motor vehicles and reached 840 bill. CZK. Overall, the industry contributed to the revenues of industrial activity by 23 % and formed approximately 8 % of the Czech GDP.
(Source: The Association of Automobile Industry)

The situation in the following years will be influenced by the development of the building industry in Central Europe and production of the automotive industry.

In 2012 the revenues of flat glass increased by 9.7 %, reaching the amount 3.96 bill. CZK. The increase was influenced by the growth of Czech export and favourable development of the segment of bottles for non-alcoholic beverages and beer in the Czech Republic and foreign markets and, last but not least, also the development of new products with exclusive design.

The revenues of glass fibres and products made of them increased by 27.9 % year-on-year (1.54 bill. CZK), which was influenced by the increase of Czech export, especially to the countries of the EU. On the other hand, the decline in the Czech building industry projected negatively.

In comparison with previous year the revenues for utility glass increased by 27.9 % (1.54 bill. CZK). It was influenced by the increase of Czech export, especially to the countries of the EU. This branch is associated with highly competitive environment and Czech companies have to face it offering high quality, design and originality of their products. It is possible to state that Czech producers have a strong position on global market.

The revenues for other glass increased in comparison with 2011 by 9.8 % (0.77 bil. CZK). This group includes a wide assortment of products (technical and laboratory glass, glass tiles and bricks, glass semiproducts for fashion jewellery, etc.). The demand for this production branch assortment is very unbalanced. High quality and offer of new products represent a decisive factor for the revenue increase. In comparison with previous years the decline of demand for glass semiproducts for fashion jewellery decelerated very significantly (approximately 61 % of revenues of the other glass group).

The increase of revenues for household china and ceramics by 41.7 % (0.35 bill. CZK) is a consequence of consistent business policies, which enabled producers to conclude a required number of contracts.

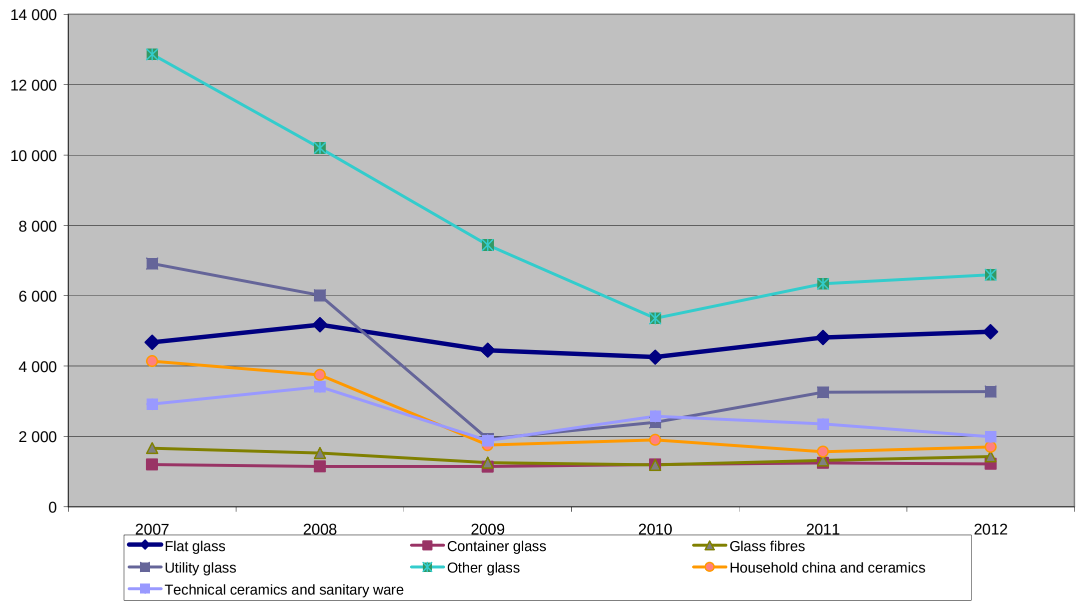
For technical ceramics and sanitary ware the revenues decreased by 13.5 % (0.48 bill. CZK). The revenues for sanitary ware increased by 6.8 % (0.16 bill. CZK), while those for technical ceramics decreased by 52.4 % (0.64 bill. CZK). The overall figures are influenced by the 57.5% decrease in export.

Workers

Average accounting number of workers (persons)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	4 683	5 175	4 453	4 256	4 817	4 975	103.3
Container glass	1 198	1 150	1 143	1 202	1 247	1 221	97.9
Glass fibres	1 670	1 529	1 259	1 188	1 319	1 432	108.6
Utility glass	6 911	6 020	1 931	2 402	3 254	3 276	100.7
Other glass	12 865	10 206	7 447	5 361	6 340	6 598	104.1
Glass total	27 327	24 080	16 233	14 409	16 977	17 502	103.1
Household china and ceramics	4 136	3 749	1 751	1 900	1 571	1 702	108.3
Technical ceramics and sanitary ware	2 917	3 411	1 885	2 576	2 351	1 988	84.6
Ceramics total	7 053	7 160	3 636	4 476	3 922	3 690	94.1
Glass and ceramics total	**34 380**	**31 240**	**19 869**	**18 885**	**20 899**	**21 192**	**101.4**

Development of average accounting number of workers (persons)



Total workers number in the glass and ceramic industry stated in 2012 in comparison with the previous year increased by 293 persons (by 1.4 %), from which it was by 525 persons (by 3.1 %) in the glass industry and the decrease in the ceramic industry was by 232 persons (by 5.9 %). The year-on-year development of workers number in individual branches is different.

The workers number increase in flat glass production is a consequence of the increase of workers number in shaping and processing of flat glass (by 6.5 %). This number forms approximately 80 % of all workers employed in flat glass industry. The workers number increased by 1.4 % in container glass production.

The workers number increased by 8.6 % in glass fibres production. It is a consequence of the increase of demand for the assortment of this production branch.

The workers number of utility glass remained on the level of the previous year.

Since 2010 the number of workers in other glass production has been gradually increasing (by 4.1 % year-on-year).

The workers number of household china production and ceramics increased (by 8.3 %) as a consequence of increasing demand for these products.

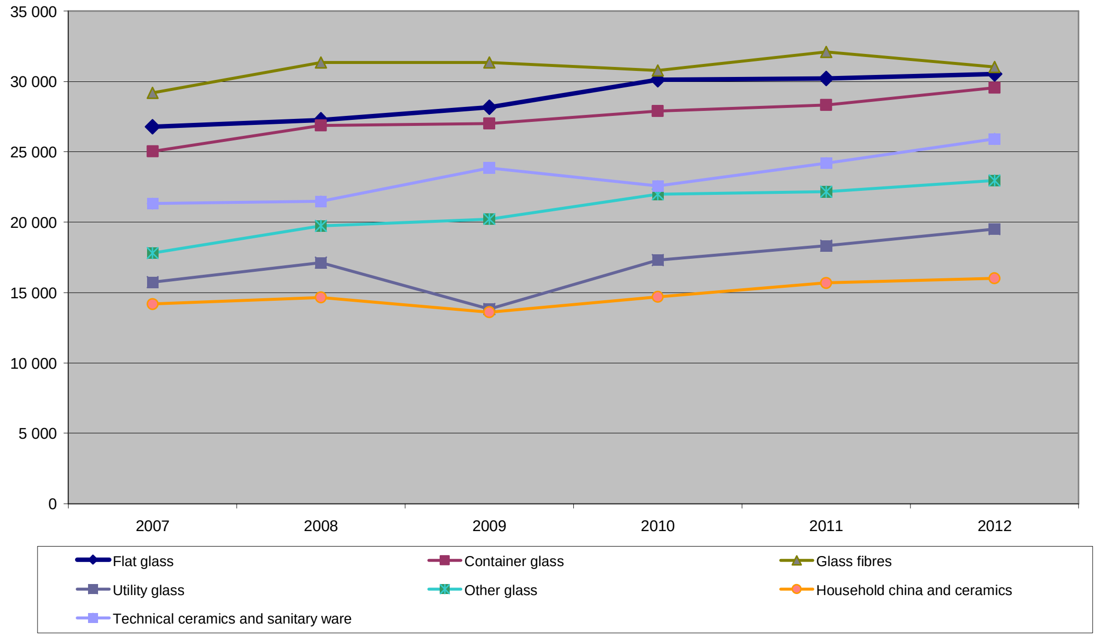
The workers number of technical ceramics and sanitary ware decreased (by 15.4 %). The most significant drop can be seen in the production of technical ceramics – decrease by 542 persons (by 37.8 %).

Average monthly wages

Average monthly wages (CZK)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	26 785	27 271	28 172	30 113	30 214	30 537	101.1
Container glass	25 035	26 875	27 007	27 896	28 332	29 561	104.3
Glass fibres	29 196	31 351	31 351	30 783	32 104	31 033	96.7
Utility glass	15 736	17 120	13 828	17 300	18 333	19 499	106.4
Other glass	17 798	19 745	20 223	21 979	22 175	22 971	103.6
Household china and ceramics	14 177	14 650	13 602	14 698	15 680	16 018	102.2
Technical ceramics and sanitary ware	21 314	21 472	23 863	22 566	24 207	25 910	107.0
Glass and ceramics total	**19 276**	**20 794**	**22 364**	**23 495**	**24 160**	**24 857**	**102.9**

Development of average monthly wages (CZK)



The year-on-year development of average monthly wages within 2012 and 2011 documents the economic situation of glass and ceramic industry companies.

Apart from glass fibre production, the average wages grew in all branches in comparison with previous year.

There is a more noticeable tendency in differentiation of wages among branches with mass and full automatized productions. It includes the production of unworked flat glass (40,069 CZK), glass fibres and products made of them and container glass. Additionally, it includes branches with more frequent changes (short production series) in the regime of automatized production lines and also a certain share of manual production. For instance, the average wage in production which requires glass shaping and processing is 28,214 CZK.

Average wages in fibre glass, flat glass and container glass production are high above the average wage of the Czech Republic *(i.e. 25,101 CZK, source: Czech Statistical Office)*.

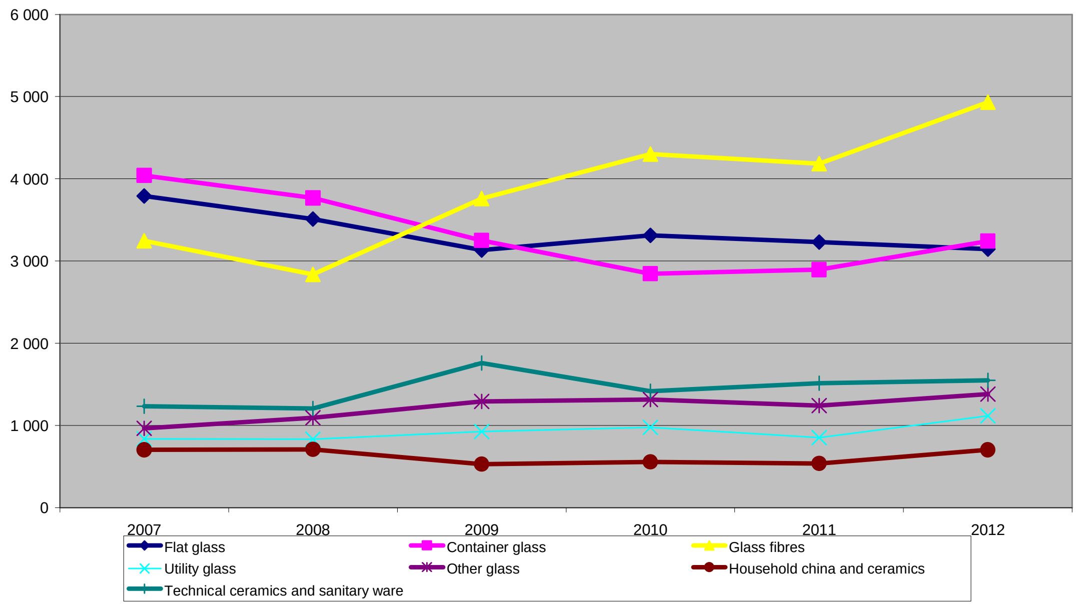
The average wage earned in technical ceramics and sanitary ware is on the level of the average wage in the Czech Republic (25,910 CZK). The average wage in sanitary ware is 29,963 CZK. Average wages in production of other glass products are influenced by an increasing share of more qualified workforce (technical glass production) and low wages in the production of glass semiproducts for fashion jewellery. According to the development within the last years, it is noticeable that qualified work is preferred in this branch. The average wages in utility glass and household china remain deeply below the average wage in the Czech Republic.

Productivity of labour

Productivity of labour from sales in current prices (thousand CZK/worker)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	3 791	3 511	3 135	3 312	3 231	3 145	97.3
Container glass	4 041	3 765	3 251	2 845	2 895	3 242	112.0
Glass fibres	3 246	2 837	3 762	4 304	4 183	4 931	117.9
Utility glass	835	831	925	974	852	1 117	131.1
Other glass	963	1 092	1 293	1 315	1 240	1 380	111.3
Household china and ceramics	701	709	527	555	536	701	130.8
Technical ceramics and sanitary ware	1 233	1 208	1 759	1 417	1 511	1 547	102.4
Glass and ceramics total	**1 532**	**1 595**	**1 915**	**1 945**	**1 900**	**2 040**	**107.4**

Development of productivity of labour from sales in current prices (thousand CZK/worker)



All above-mentioned conclusions (development of revenues, workers number and production character) are projected in more complex index of the productivity of labour from sales. The productivity of labour of the glass and ceramic industry as the whole decreased (by 7.4 %) in comparison with the previous year. Besides the year-on-year productivity of labour for flat glass production decreased.

The workers number of flat glass production decreased by 8 %, the revenues decreased by 12.7 % year-on-year. However, the workers number of flat glass production requiring shaping and processing increased by 6.5 %, the revenues increased by 16.6 % in comparison with the previous year. The decrease of revenues of flat glass production was influenced by lower labour productivity (decrease by 2.7 %).

Higher labour productivity of container glass is thanks to the increase of revenues (by 9.7 %) and the decrease of workers number (by 1.4 %).

Higher revenues of glass fibres production (increase by 27.9 %) were positively influenced by the growth of labour productivity.

Increasing demand for utility glass products projected favourably to the revenues and consequently to the increase in labour productivity (by 31.1 %). Similarly favourable development was in the production of other glass products (by 11.3 %).

The stabilization of customer demand and workers number enabled to increase labour productivity in household china and ceramics (by 30.8 %).

The increase in the labour productivity of sanitary ware production (by 5.3 %) influenced the overall labour productivity increase in the branch of technical glass and sanitary ware production (by 2.4 %).

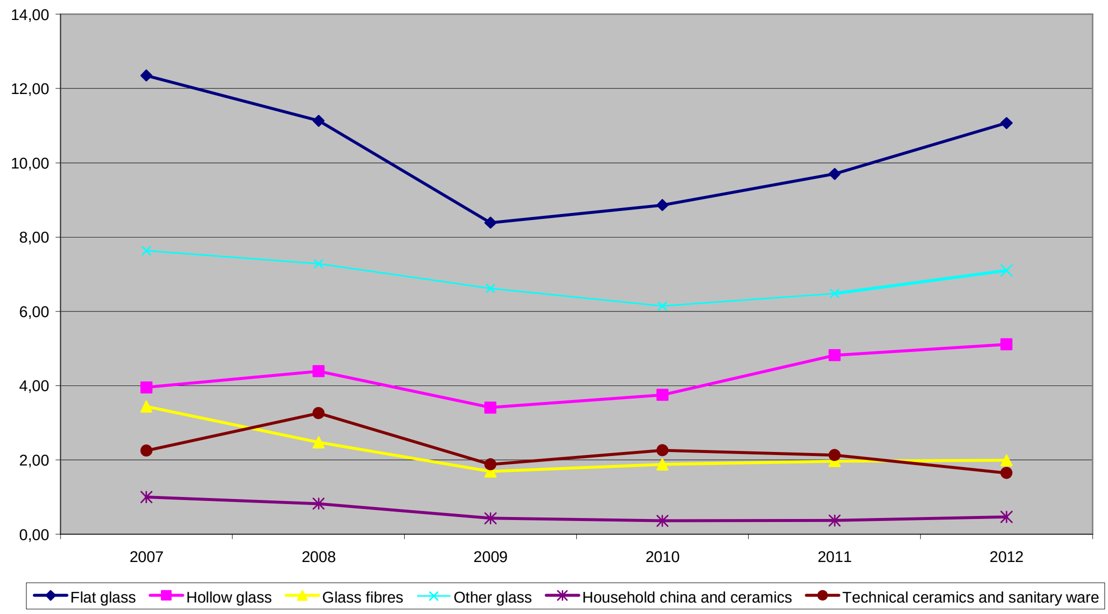
In relation to the growth of average wages to the productivity of labour in the glass and ceramic industry, the difference was 5.1 p.p.

Export

Direct export (bill. CZK)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	12.35	11.13	8.39	8.86	9.70	11.07	114.1
Hollow glass	3.95	4.39	3.41	3.75	4.82	5.11	106.0
Glass fibres	3.44	2.47	1.69	1.88	1.97	1.99	101.0
Other glass	7.63	7.28	6.62	6.14	6.48	7.10	109.6
Glass total	27.37	25.27	20.11	20.63	22.97	25.27	110.0
Household china and ceramics	1.00	0.82	0.43	0.36	0.37	0.47	127.0
Technical ceramics and sanitary ware	2.25	3.26	1.88	2.26	2.13	1.65	77.5
Ceramics total	3.25	4.08	2.31	2.62	2.50	2.12	84.8
Glass and ceramics total	**30.62**	**29.35**	**22.42**	**23.25**	**25.47**	**27.39**	**107.5**

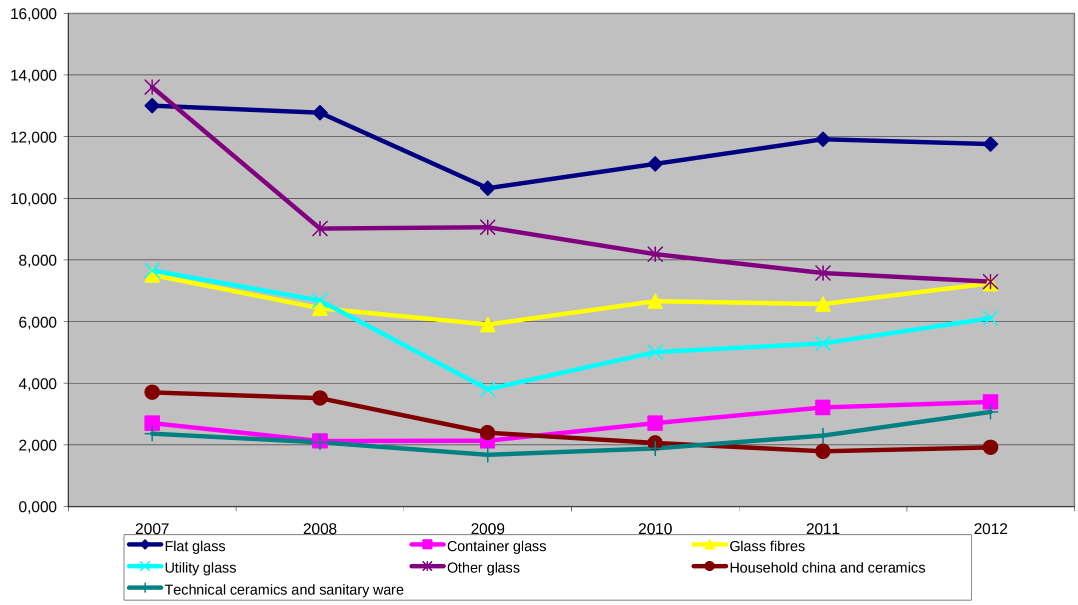
Development of direct export (bill. CZK)



Export (bill. CZK)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	13.004	12.774	10.325	11.112	11.923	11.757	98.6
Container glass	2.702	2.123	2.128	2.701	3.214	3.393	105.6
Glass fibres	7.515	6.436	5.904	6.665	6.568	7.240	110.2
Utility glass	7.660	6.685	3.805	5.010	5.291	6.112	115.5
Other glass	13.611	9.020	9.061	8.187	7.577	7.292	96.2
Glass total	44.492	37.038	31.223	33.675	34.573	35.794	103.5
Household china and ceramics	3.708	3.518	2.395	2.065	1.789	1.921	107.4
Technical ceramics and sanitary ware	2.358	2.087	1.676	1.883	2.306	3.067	133.0
Ceramics total	6.066	5.605	4.071	3.948	4.095	4.988	121.8
Glass and ceramics total	**50.558**	**42.643**	**35.294**	**37.623**	**38.668**	**40.782**	**105.5**

Development of export (bill. CZK)



The glass and ceramic industry of the Czech Republic is export-orientated, and therefore it is directly influenced by economic changes in the world.

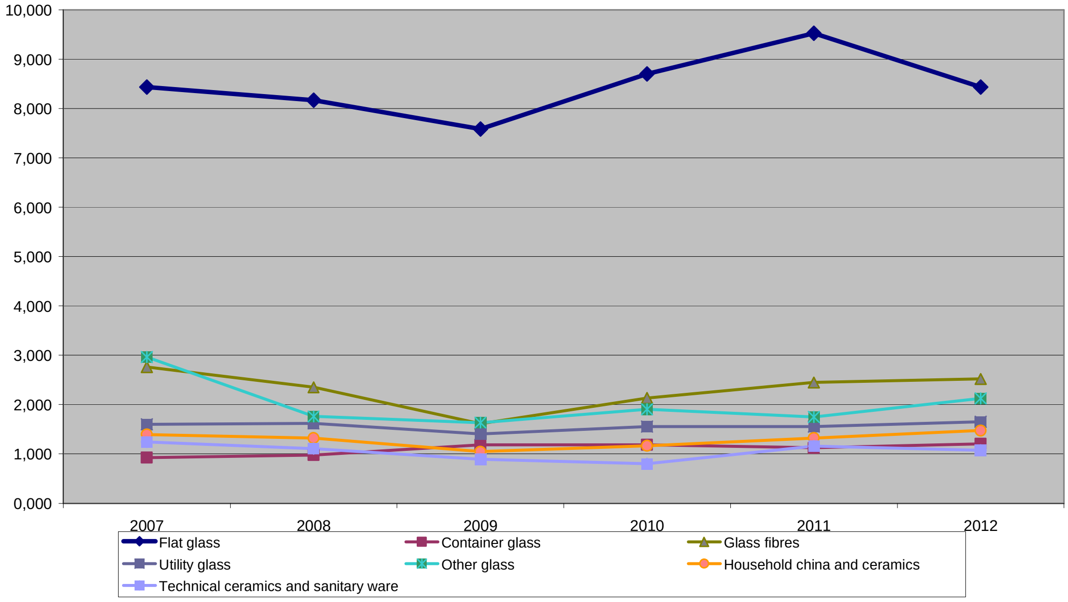
After the decline of export of this branch within years 2008 and 2009, the export has been increasing since 2010. In comparison with 2011, the direct export in 2012 increased by 7.5 % in comparison with the previous year, total export increased by 5.5 %. The direct export of investigated branches in 2012 was worth 27.39 bill. CZK, total export was 40.782 bill. CZK. The export development in 2012 in individual branches is given in more details in Chapter 5 "The analysis of export and import".

<u>Import</u>

Import (bill. CZK)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	8.437	8.167	7.583	8.697	9.521	8.433	88.6
Container glass	0.926	0.979	1.186	1.184	1.125	1.203	106.9
Glass fibres	2.761	2.351	1.615	2.133	2.448	2.520	102.9
Utility glass	1.600	1.618	1.407	1.553	1.552	1.651	106.4
Other glass	2.963	1.761	1.637	1.905	1.747	2.123	121.5
Glass total	16.687	14.876	13.428	15.472	16.393	15.930	97.2
Household china and ceramics	1.394	1.321	1.045	1.166	1.323	1.474	111.4
Technical ceramics and sanitary ware	1.240	1.104	0.895	0.801	1.163	1.076	92.5
Ceramics total	2.634	2.425	1.940	1.967	2.486	2.550	102.6
Glass and ceramics total	**19.321**	**17.301**	**15.368**	**17.439**	**18.879**	**18.480**	**97.9**

Import development (bill. CZK)



The total import of the glass and ceramic industry products decreased by 2.1 % (0.399 bill. CZK) in 2012 in comparison with 2011. The import of other glass production and household china and ceramics increased significantly. Conversely, the import of flat glass and technical glass and sanitary ware decreased.

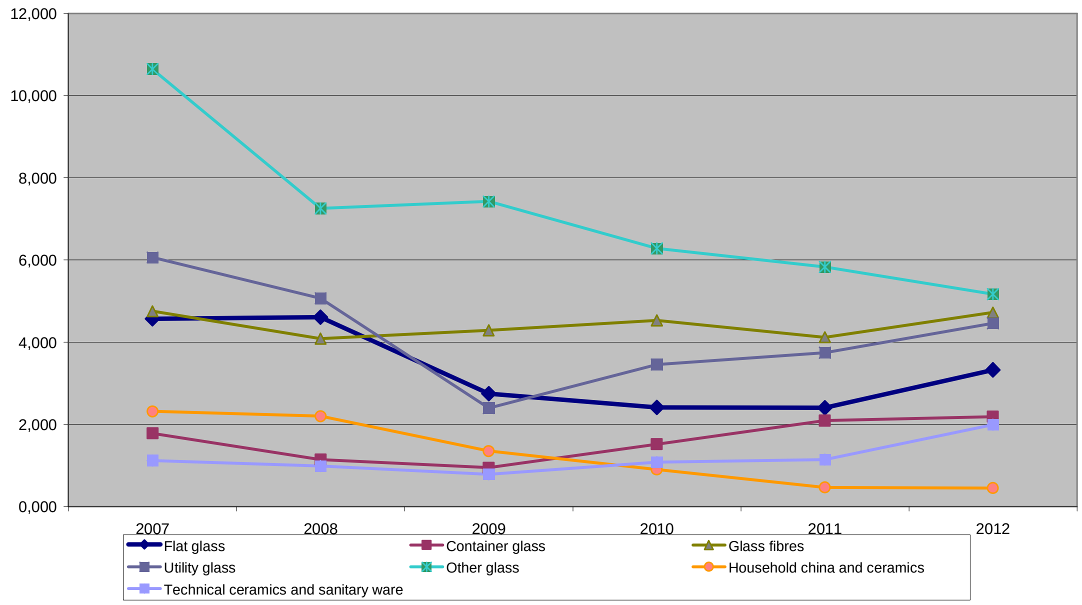
The import development in 2012 in individual branches is given in more details in Chapter 5 "The analysis of export and import".

Balance of foreign trade

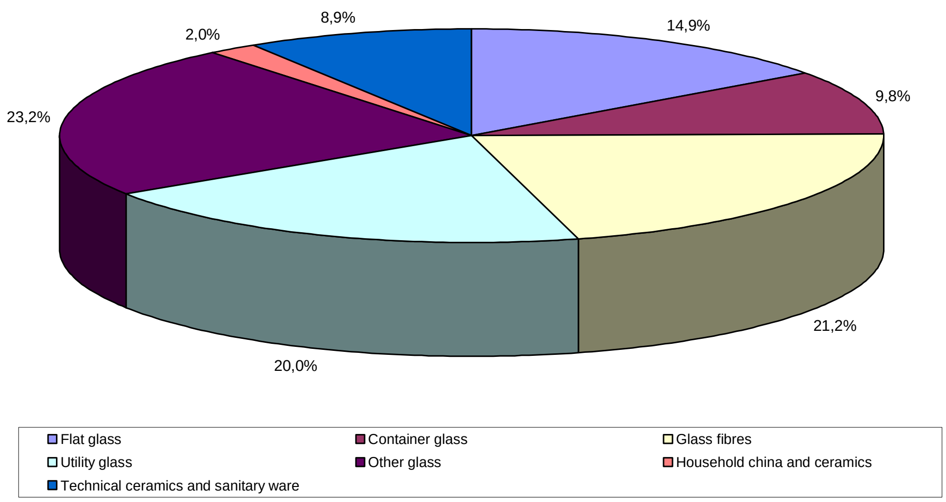
Balance of foreign trade (bill. CZK)

	2007	2008	2009	2010	2011	2012	index 12/11 (%)
Flat glass	4.567	4.607	2.742	2.415	2.402	3.324	138.4
Container glass	1.776	1.144	0.942	1.517	2.089	2.190	104.8
Glass fibres	4.754	4.085	4.289	4.532	4.120	4.720	114.6
Utility glass	6.060	5.067	2.398	3.457	3.739	4.461	119.3
Other glass	10.648	7.259	7.424	6.282	5.830	5.169	88.7
Glass total	27.805	22.162	17.795	18.203	18.180	19.864	109.3
Household china and ceramics	2.314	2.197	1.350	0.899	0.466	0.447	95.9
Technical ceramics and sanitary ware	1.118	0.983	0.781	1.082	1.143	1.991	174.2
Ceramics total	3.432	3.180	2.131	1.981	1.609	2.438	151.5
Glass and ceramics total	**31.237**	**25.342**	**19.926**	**20.184**	**19.789**	**22.302**	**112.7**

Development of balance of foreign trade (bill. CZK)



Structure of balance of foreign trade



The branches of the glass and ceramic industry in the investigated period from 2007 to 2012 always very notably contributed to the active balance of foreign trade of the whole processing industry of the Czech Republic. The values of the balance of foreign trade confirm important export orientation of this industry. The balance of foreign trade was 20.302 bill. CZK in 2012, which represents the 12.7% increase in comparison with 2011. The balance of foreign trade decline confirms quicklier growth of import of investigated production branches in comparison with their export.

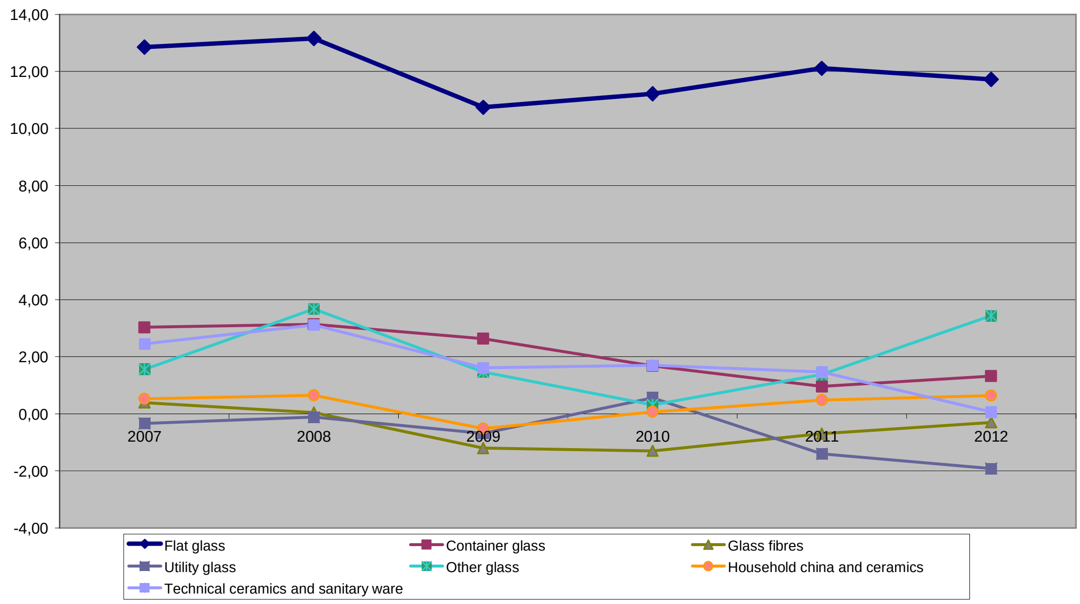
Effective home demand

The effective home demand index is defined by the formula:
(The revenues from industrial activities + Import – Export)

Effective home demand (bill. CZK)

	2007	2008	2009	2010	2011	2012
Flat glass	12.85	13.16	10.74	11.22	12.11	11.72
Container glass	3.03	3.14	2.63	1.68	0.96	1.32
Glass fibres	0.39	0.05	-1.20	-1.30	-0.69	-0.30
Utility glass	-0.34	-0.12	-0.68	0.56	-1.40	-1.92
Other glass	1.56	3.67	1.46	0.31	1.38	3.44
Household china and ceramics	0.53	0.65	-0.52	0.07	0.49	0.64
Technical ceramics and sanitary ware	2.45	3.12	1.61	1.70	1.47	0.07

Development of effective home demand (bill. CZK)



The development of the effective home demand in individual groups of the glass and ceramic industry is differentiated and specific.

Conclusion

In 2012 the Czech glass and ceramic industry continued to develop as in the previous year. The revenues for sale of own products increased by 8.8 % year-on-year, labour productivity by 7.4 %, revenues for direct export by 7.5 %, total export by 5.5 % and balance of foreign trade by 12.7 %

The prediction of Czech economy development in 2013 and 2014 does not seem too favourable. According to the study carried out by the Confederation of the Czech Industry and the Czech National Bank in the second quarter, Czech industry companies cannot expect any improvement. Economic recovery and end of recession are expected at least 2 quarters later. The Confederation of the Czech Industry originally estimated end of recession for 2014 when the Czech economy is "in the black". (Source: Economics news, 11th July 2013)

The below quoted prediction of the Ministry of Finance from July 2013 confirms these assumptions.

In the summary of prediction of the Ministry of Finance from July 2013 there is stated:

According to the current data of Czech Statistical Office, GDP recorded a significant quarter-on-quarter fall of 1.3 % in the first quarter of 2013, which was the sixth quarter-on-quarter decline in a row. However, the published data can be considered to be a generally very negative surprise. Even though the depth of this decrease was partially influenced by one-off factors (by stockpiling cigarette tax stamps in the fourth quarter 2012 or by unfavourable weather), it is obvious that the economy is not in good condition.

Even though we envisage gradual economic recovery for the second half of 2013, GDP should decrease by 1.5 % this year, primarily due to the deep slump in the first quarter 2013. In terms of uses of GDP, the main factor behind this decline should be gross fixed capital formation. For 2014, we forecast the economy to grow by 0.8%.

Despite the 1 p.p. increase in both VAT rates, effective from 1 January 2013, average inflation rate should reach only 1.6 % this year. In 2014, growth of consumer prices could further slow to 1.4 %. In both years, the year-on-year inflation rate should fluctuate within the tolerance band of the CNB’s inflation target.

Employment, which increased by 0.4 % last year, could further grow by 0.5 % this year. This somewhat paradoxical development results from a rise in the number of part-time jobs and a decline in the ratio of total hours worked to employment. For 2014, we are
forecasting a slight decrease in employment of 0.2 %. Unemployment rate should increase from last year’s 7.0 % to 7.5 %, and there could also be its slight year-on-year increase in 2014. Growth of total wage bill could reach 0.7 % this year and 2.1 % in 2014. In both years, the wage bill growth rate is expected to slightly exceed the dynamics of nominal GDP.

Prediction of the development of main macroeconomic indicators

(The Ministry of Finance from July 2013)

		2012	2013	2014
Gross domestic product (GDP)	Average growth in %, current prices	-1.3	-1.5	0.8
Average rate of inflation	Average growth in %	3.3	1.6	1.4
Unemployment rate	Average growth in %	7.0	7.5	7.6
Growth of average wages	in %	2.0	0.7	2.1
CZK / EUR	Average per year	25.1	25.8	25.8

The above mentioned facts are surely no good news for the development of the glass and ceramic industry. Being export-oriented and connected with other industry sectors, this industry represents a very sensitive part of Czech economy. A permanently increasing competition from the countries of the Third World (mainly from the Far East), belongs to uncertainties of future development, especially in Europe as the greatest export territory. This competition impacts all branches of the glass and ceramic industry mentioned in this annual report. Similarly to other branches, Czech glass companies must face problems such as increasing prices of raw material and energy, insufficient home and foreign demand and high labour costs.

Companies must still search ways how to orientate to the production with a high added value, how to strengthen the innovation in the production and in the management and commercial strategies. Last but not the least, they must search out new markets and improve their marketing activities.

5. EXPORT AND IMPORT ACCORDING TO PRODUCTION BRANCHES IN THE PERIOD FROM 2007 TILL 2012

Export

The export of the assortment of the glass and ceramic industry is investigated according to the codes of the Customs Tariff, i.e. not only the direct export, but the total export from the Czech Republic.

Flat glass

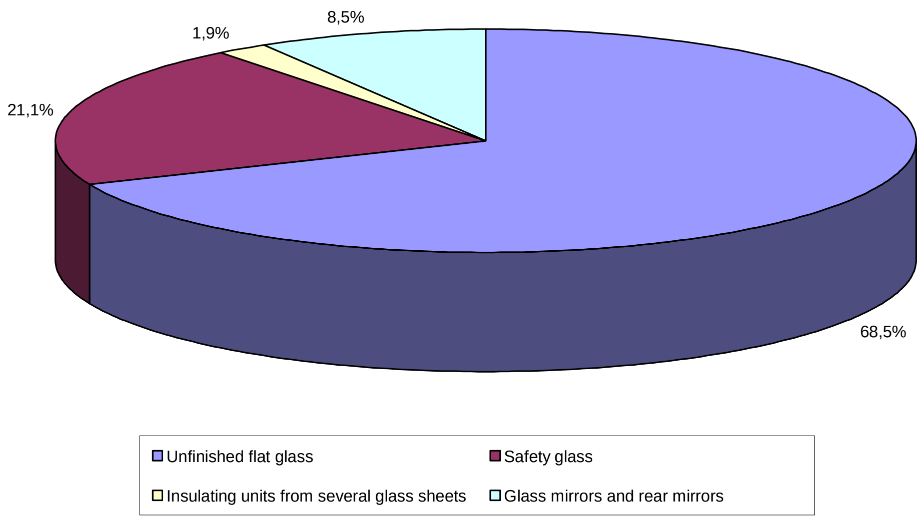
The export of flat glass in 2012 reached an amount of 11,757.2 mill. CZK.

Export of flat glass according to the assortment

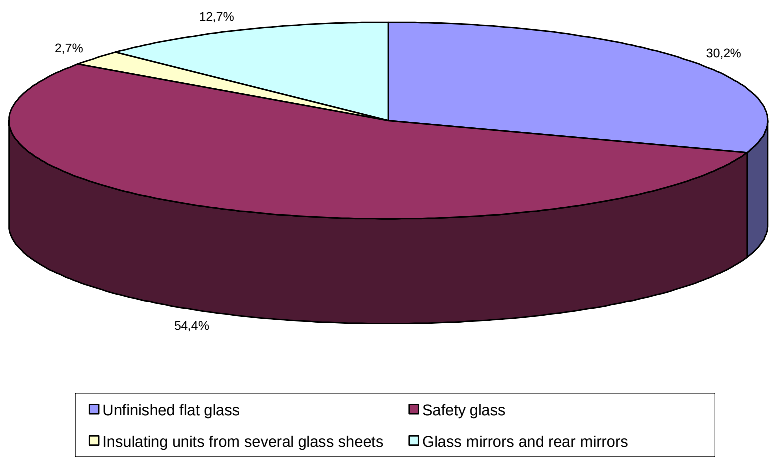
	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Unfinished flat glass	223 759.0	3 752.8	28.9	306 985.4	4 021.2	31.5	249 787.3	3 098.8	30.0
Safety glass	112 843.5	7 188.2	55.3	116 309.5	6 605.5	51.7	84 657.3	5 623.1	54.5
Insulating units from several glass sheets	6 016.5	282.2	2.2	6 878.0	322.4	2.5	7 593.9	341.7	3.3
Glass mirrors and rear mirrors	62 774.5	1 780.9	13.7	56 544.8	1 825.1	14.3	42 624.4	1 262.2	12.2
Totally	**405 393.5**	**13 004.1**	**100.0**	**486 717.7**	**12 774.2**	**100.0**	**384 662.9**	**10 325.8**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Unfinished flat glass	268 406.5	3 263.5	29.4	287 196.5	3 625.1	30.4	286 672.4	3 545.5	30.2
Safety glass	90 966.1	6 071.2	54.6	94 186.0	6 558.1	55.0	88 121.5	6 400.1	54.4
Insulating units from several glass sheets	10 377.2	361.4	3.3	7 997.2	326.9	2.7	8 033.6	321.6	2.7
Glass mirrors and rear mirrors	37 508.1	1 415.9	12.7	39 496.3	1 413.2	11.9	35 635.8	1 490.0	12.7
Totally	**407 257.9**	**11 112.0**	**100.0**	**428 876.0**	**11 923.3**	**100.0**	**418 463.3**	**11 757.2**	**100.0**

Structure of export of flat glass according to the assortment in 2012 (t)



Structure of export of flat glass according to the assortment in 2012 (CZK)



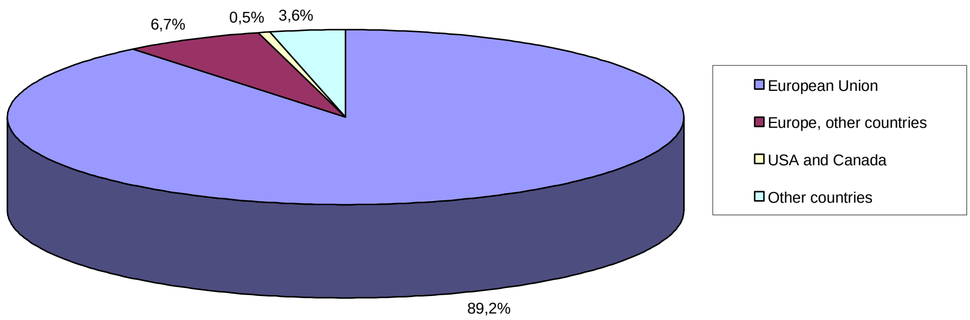
The greatest share of export in weight units had unfinished flat glass in 2012 with 68.5 % (77.0 % was created by float glass), followed by the safety glass export with 21.1 %. As far as the export in CZK, the situation was contrary. The greatest share had the export of safety glass with 54.4 %. The share of the unfinished flat glass export was 30.2 %.

Export of flat glass according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	343 888.6	11 593.9	89.2	388 200.5	11 099.1	86.9	349 526.0	9 454.5	91.6
Europe, other countries	50 996.7	1 001.5	7.7	60 686.9	1 073.2	8.4	30 662.8	613.1	5.9
USA and Canada	2 328.8	204.1	1.6	1 397.5	121.1	0.9	945.9	120.9	1.2
Other countries	8 179.4	204.6	1.6	36 432.8	480.8	3.8	3 528.2	137.3	1.3
Totally	**405 393.5**	**13 004.1**	**100.0**	**486 717.7**	**12 774.2**	**100.0**	**384 662.9**	**10 325.8**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	377 649.3	10 172.7	91.5	394 528.8	10 785.7	90.5	387 173.4	10 491.8	89.2
Europe, other countries	22 175.7	557.0	5.0	27 111.3	801.8	6.7	24 073.2	783.0	6.7
USA and Canada	1 344.3	41.3	0.4	1 988.8	40.8	0.3	2 306.9	56.5	0.5
Other countries	6 086.6	341.0	3.1	5 247.1	295.0	2.5	4 909.8	425.9	3.6
Totally	**407 255.9**	**11 112.0**	**100.0**	**428 876.0**	**11 923.3**	**100.0**	**418 463.3**	**11 757.2**	**100.0**

Structure of export of flat glass according to territories in 2012 (CZK)



A substantial part of the flat glass export was directed to the European Union countries. In 2012 the share on export was 89.2 %. The greatest customers were Germany, Austria, Romania, Poland, Belgium, France, Hungary and Slovakia. The greatest customers out of the European Union were Russia, Ukraine, Serbia and Croatia.

The structure of export corresponds to the final use of the assortment of flat glass (mostly utilized in the building and automotive industries) and to the production and trade strategy of companies.

Container glass

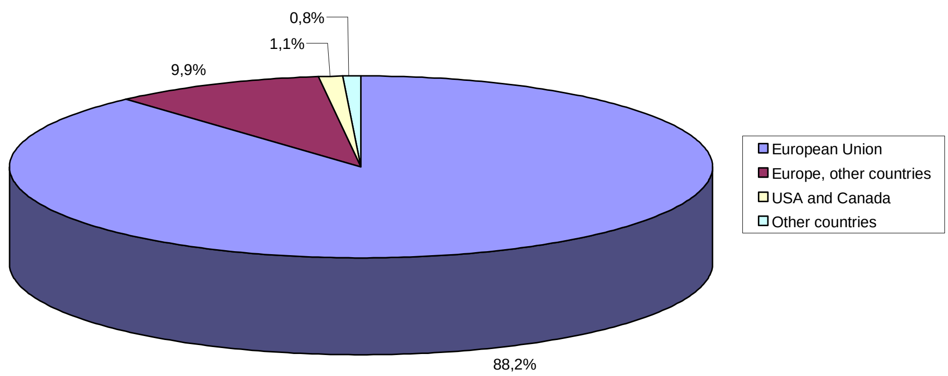
The container glass export in 2012 was 3392.7 mill. CZK.

Export of container glass according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	227 986.4	2 380.5	88.1	170 869.0	1 838.2	86.6	153 244.9	1 744.4	82.0
Europe, other countries	29 614.3	285.6	10.6	27 496.5	245.8	11.6	31 581.1	340.3	16.0
USA and Canada	456.7	9.0	0.3	615.5	14.4	0.7	808.7	17.0	0.8
Other countries	1 740.0	26.9	1.0	1 283.3	24.2	1.1	1 191.1	26.2	1.2
Totally	**259 797.4**	**2 702.0**	**100.0**	**200 264.3**	**2 122.6**	**100.0**	**186 825.8**	**2 127.9**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	258 449.2	2 358.9	87.3	288 752.6	2 797.0	87.0	293 835.3	2 992.9	88.2
Europe, other countries	27 600.9	300.1	11.1	31 980.9	354.7	11.0	28 423.2	335.2	9.9
USA and Canada	725.5	14.3	0.5	1 253.8	24.3	0.8	1 848.2	36.2	1.1
Other countries	1 307.3	27.7	1.0	1 856.3	38.3	1.2	1 334.1	28.4	0.8
Totally	**288 082.9**	**2 701.0**	**100.0**	**323 843.6**	**3 214.3**	**100.0**	**325 440.8**	**3 392.7**	**100.0**

Structure of export of container glass according to territories in 2012 (CZK)



The export is determined by the character of use of a substantial part of the container glass assortment. It is not economical to deliver bottles and preserve jars to long distances. In 2012 88.2 % of export was intended to the European Union countries. The greatest customers were Germany, Poland, Slovakia, Austria, Italy and France. The 9.9 % of export was directed to other European countries. From these countries the greatest customers were Russia and Switzerland.

Glass fibres and products made of

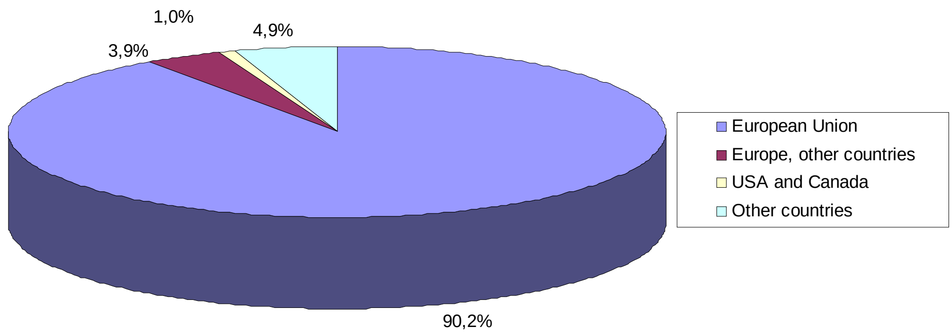
The export of glass fibres and products made of in 2012 increased in comparison with 2011 to 7239.6 mill. CZK.

Export of glass fibres and products made of according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	159 851.8	6 598.5	87.8	124 632.6	5 807.2	90.2	127 780.5	5 387.2	91.2
Europe, other countries	14 059.2	524.6	7.0	6 364.4	315.4	4.9	5 141.6	224.9	3.8
USA and Canada	2 102.2	92.7	1.2	1 359.7	56.8	0.9	1 935.9	79.2	1.3
Other countries	5 722.2	299.1	4.0	6 261.3	258.8	4.0	4 079.6	212.6	3.6
Totally	**181 735.4**	**7 514.9**	**100.0**	**138 618.0**	**6 438.2**	**100.0**	**138 937.6**	**5 903.9**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	152 659.9	6 065.9	91.0	142 284.1	5 953.7	89.4	144 169.5	6 530.9	90.2
Europe, other countries	6 681.7	240.5	3.6	5 358.6	234.4	3.5	8 275.7	279.5	3.9
USA and Canada	1 816.1	88.9	1.3	1 247.0	68.3	1.0	1 228.2	74.8	1.0
Other countries	5 281.3	269.9	4.0	5 265.7	401.3	6.0	6 112.4	354.4	4.9
Totally	**166 439.0**	**6 665.2**	**100.0**	**154 155.4**	**6 657.7**	**100.0**	**159 785.8**	**7 239.6**	**100.0**

Structure of export of glass fibres and products made of according to territories in 2012 (CZK)



A substantial part of export (90.2 %) was realized in the European Union countries. The greatest customers in 2012 were Germany, Poland, France, Italy and Austria. As far as countries out of the European Union it was Russia, Croatia and Ukraine.

Utility glass

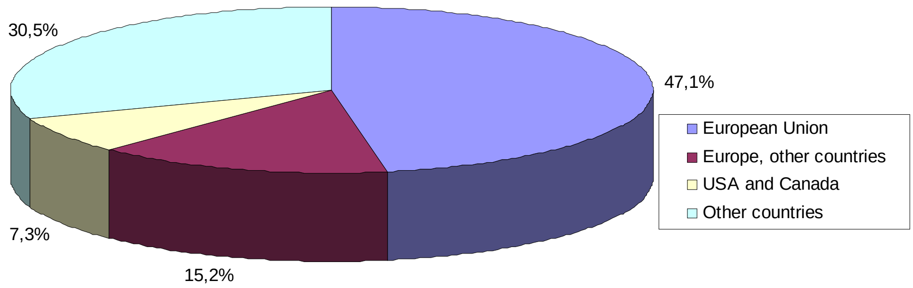
The export of utility glass belongs to the traditional export branches of the Czech processing industry. In 2012 the export was in amount of 6112.4 mill. CZK. The stimulation on the world markets brought also an increase of demand for utility glass products.

Export of utility glass according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	15 910.2	3 455.3	45.1	15 730.9	2 739.6	41.0	24 609.6	1 404.3	36.9
Europe, other countries	12 413.5	1 039.9	13.6	12 477.9	1 119.3	16.7	6 478.4	521.5	13.7
USA and Canada	7 369.3	954.3	12.5	3 187.4	852.4	12.8	1 195.7	405.4	10.7
Other countries	13 591.5	2 210.9	28.9	10 921.3	1 974.0	29.5	7 771.0	1 474.2	38.7
Totally	**49 284.5**	**7 660.4**	**100.0**	**42 317.5**	**6 685.3**	**100.0**	**40 054.7**	**3 805.4**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	33 857.1	2 095.9	41.8	42 794.7	2 389.7	45.2	41 483.4	2 878.3	47.1
Europe, other countries	8 869.6	776.7	15.5	9 435.6	840.2	15.9	9 670.8	928.1	15.2
USA and Canada	2 275.8	454.1	9.1	2 902.3	394.3	7.5	2 702.0	443.2	7.3
Other countries	10 671.6	1 683.7	33.6	12 126.0	1 666.7	31.5	12 403.4	1 862.8	30.5
Totally	**55 674.1**	**5 010.4**	**100.0**	**67 258.6**	**5 290.9**	**100.0**	**66 259.6**	**6 112.4**	**100.0**

Structure of export of utility glass according to territories in 2012 (CZK)



It is possible to say that the utility glass assortment is exported to the whole world. In comparison with previous year the share of export to Europe, where 62.3 % of export was directed in 2012, was on the same level. The greatest customers were Germany, Russia, France, Slovakia, Austria, Italy, Hungary, Poland, Ukraine and Switzerland. The share on export in the same year was directed to the Other countries (export to 80 countries) and to the USA and Canada in amount of 37.8 %. The greatest customers were the USA, Japan, Azerbaijan, Egypt, Iran, the United Arab Emirates, China and Brazil.

Other glass

The assortment of the other glass export is very wide. It includes technical, laboratory and laboratory apparatus glass, technical spheres, glass industrial apparatuses, protective welding glass, optical glass, and also the production of glass blocks, glass fashion jewellery semiproducts and fashion jewellery and lighting glass, incl. chandelier pieces, is incorporated.

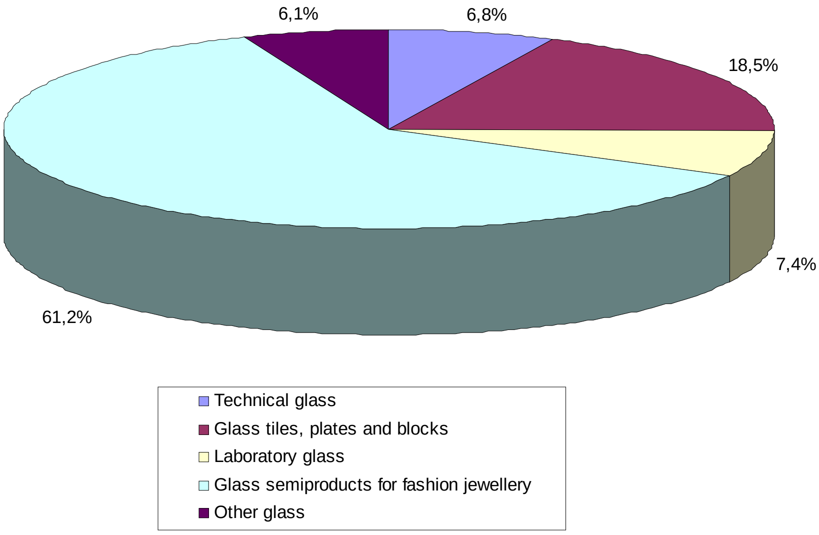
The other glass export in 2012 reached 7291.7 mill. CZK, what is by 3.8 % less than in 2011.

Export of other glass according to assortment

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical glass	9 335.0	1 242.5	10.7	10 011.8	1 134.0	12.6	9 275.5	982.3	10.8
Glass tiles, plates and blocks	51 392.4	969.3	8.3	58 160.4	1 044.6	11.6	63 918.3	1 307.0	14.4
Laboratory glass	3 278.6	510.5	4.4	3 156.0	430.1	4.8	2 535.4	350.5	3.9
Glass semiproducts for fashion jewellery	5 944.3	8 262.4	70.9	4 480.5	5 288.4	58.6	3 849.7	5 078.8	56.1
Other glass	17 630.7	673.3	5.8	37 303.6	1 123.0	12.4	26 991.1	1 342.4	14.8
Totally	**87 581.0**	**11 658.0**	**100.0**	**113 112.3**	**9 020.1**	**100.0**	**106 570.0**	**9 061.0**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical glass	7 174.8	633.0	7.7	7 041.0	616.1	8.1	4 674.7	498.1	6.8
Glass tiles, plates and blocks	64 350.6	1 422.3	17.4	68 584.5	1 405.7	18.6	70 446.9	1 348.1	18.5
Laboratory glass	3 680.3	435.9	5.3	4 070.9	522.1	6.9	3 800.2	541.6	7.4
Glass semiproducts for fashion jewellery	4 508.1	4 974.5	60.8	4 640.8	4 581.1	60.5	4 936.5	4 462.0	61.2
Other glass	12 034.1	721.5	8.8	13 726.2	452.3	6.0	22 212.4	441.9	6.1
Totally	**91 747.9**	**8 187.2**	**100.0**	**98 063.4**	**7 577.3**	**100.0**	**106 070.7**	**7 291.7**	**100.0**

Structure of other glass export according to assortment in 2012 (CZK)



The greatest share with 61.2 % had the export of fashion jewellery and glass fashion jewellery semiproducts. The export of this assortment which is traditional in the Czech Republic, has been facing up still stronger and substantially cheaper competition from the Far East. In comparison with 2011 the share of glass tiles, plates and bricks and laboratory and technical glass was the same (18.5 %), the share of laboratory glass increased (7.4 %) and the share of technical glass decreased (6.8 %).

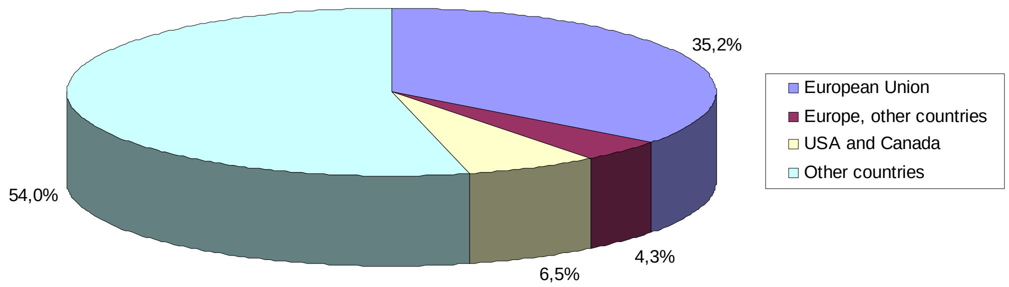
In the following table the export of other glass according to territories is given.

Export of other glass according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	50 284.3	2 743.0	23.5	77 207.8	2 713.8	30.1	67 557.4	3 322.7	36.7
Europe, other countries	4 033.0	242.1	2.1	2 381.0	180.6	2.0	1 960.6	141.7	1.6
USA and Canada	7 728.7	816.9	7.0	5 534.1	628.9	7.0	1 752.4	412.0	4.5
Other countries	25 535.0	7 856.0	67.4	27 989.4	5 496.8	60.9	35 299.7	5 184.6	57.2
Totally	**87 581.0**	**11 658.0**	**100.0**	**113 112.3**	**9 020.1**	**100.0**	**106 570.1**	**9 061.0**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	54 630.7	2 738.0	33.4	53 911.4	2 781.4	36.7	59 141.6	2 564.8	35.2
Europe, other countries	3 783.1	259.5	3.2	3 646.0	244.1	3.2	5 792.3	312.5	4.3
USA and Canada	5 213.1	701.7	8.6	6 584.4	466.9	6.2	7 504.3	475.2	6.5
Other countries	28 121.0	4 488.0	54.8	33 921.6	4 084.9	53.9	33 632.5	3 939.2	54.0
Totally	**91 747.9**	**8 187.2**	**100.0**	**98 063.4**	**7 577.3**	**100.0**	**106 070.7**	**7 291.7**	**100.0**

Structure of export of other glass according to territories in 2012 (CZK)



In contrast with the export of flat, container glass and glass fibre and products made of, the most of the other glass export (60.5 %) is oriented to the countries out of Europe. In each group of products there is a different situation and it can differ according to orders every year. In 2012 the share of export of glass tiles, plates and blocks assortment (67.0 %), laboratory glass (70.5 %) and technical glass (57.1 %) to the European Union prevailed. On the other side the export of the glass semiproducts for fashion jewellery assortment prevailed (81.1 %) to the Other countries, including the USA and Canada.

The greatest customers in the European Union were Germany, Poland, Italy, France, Belgium, Austria and Romania, in the other European countries Russia, Ukraine, Switzerland and Norway. From the Other countries and the USA and Canada the greatest customers, mostly of fashion jewellery and glass semiproducts for fashion jewellery, were the United Arab Emirates, Hongkong, the USA, Mexico and Brazil.

Household china and ceramics

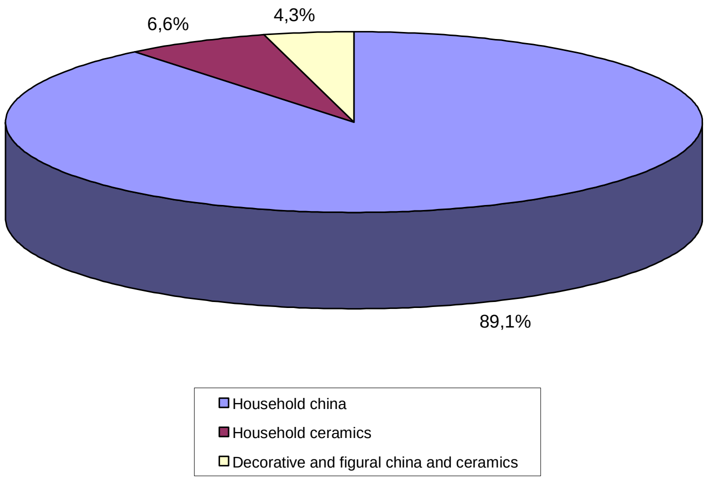
The household china export similarly as the utility glass export belongs to the traditional export branches of the Czech processing industry.

Export of household china and ceramics according to the assortment

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Household china	21 041.4	3 522.4	95.0	18 883.2	3 332.1	94.7	11 245.0	2 253.8	94.1
Household ceramics	1 996.5	91.8	2.5	2 157.0	108.6	3.1	1 488.8	82.8	3.5
Decorative and figural china and ceramics	641.0	94.1	2.5	478.8	77.4	2.2	399.3	58.7	2.5
Totally	**23 678.9**	**3 708.3**	**100.0**	**21 519.0**	**3 518.1**	**100.0**	**13 133.1**	**2 395.3**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Household china	20 826.3	1 899.5	92.0	13 466.4	1 551.6	86.7	14 549.7	1 713.0	89.1
Household ceramics	1 387.6	107.2	5.2	1 514.4	188.2	10.5	1 377.1	127.1	6.6
Decorative and figural china and ceramics	391.4	58.7	2.8	316.7	49.5	2.8	381.0	81.7	4.3
Totally	**22 605.3**	**2 065.4**	**100.0**	**15 297.5**	**1 789.3**	**100.0**	**16 307.8**	**1 921.8**	**100.0**

Structure of export of household china and ceramics according to the assortment in 2012 (CZK)



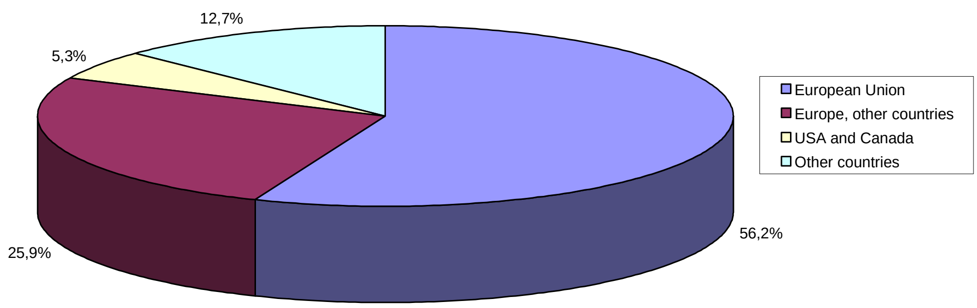
In 2012 the export of household china and ceramics was totally 1921.8 mill. CZK. The export of household china shared with 89.1 % in the household china and ceramics group.

Export of household china and ceramics according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	16 239.7	1 492.4	40.2	14 326.2	1 185.6	33.7	8 127.5	742.0	31.0
Europe, other countries	4 875.3	603.2	16.3	4 780.3	558.0	15.9	2 970.6	387.9	16.2
USA and Canada	651.4	383.4	10.3	1 196.3	1 157.3	32.9	631.3	613.6	25.6
Other countries	1 912.5	1 229.3	33.1	1 216.2	617.2	17.5	1 404.1	651.8	27.2
Totally	**23 678.9**	**3 708.3**	**100.0**	**21 519.0**	**3 518.1**	**100.0**	**13 133.5**	**2 395.3**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	17 812.2	887.4	43.0	10 668.7	898.1	50.2	12 040.1	1 079.8	56.2
Europe, other countries	3 406.7	438.6	21.2	3 298.7	457.7	25.6	3 052.5	496.9	25.9
USA and Canada	628.1	462.5	22.4	491.5	134.7	7.5	384.2	101.7	5.3
Other countries	758.3	276.9	13.4	838.6	298.8	16.7	831.8	243.4	12.7
Totally	**22 605.3**	**2 065.4**	**100.0**	**15 297.5**	**1 789.3**	**100.0**	**16 308.6**	**1 921.8**	**100.0**

Structure of export of household china and ceramics according to territories in 2012 (CZK)



As follows from the above given table and graph, in comparison with the unfavourable development in the period 2007 till 2011, the export to all investigated territories increased in 2012.

The greatest customers in the European Union countries were Germany, Slovakia, and Austria. In the other European countries it was Russia (77.0 % of export volume) and Switzerland. In the group of Other countries, incl. the USA and Canada, the export was directed to 55 countries of the world. The greatest customers in 2012 were the USA, Azerbaijan and Korea.

The household china export has been very strongly influenced by substantially cheaper ware from the Far East like the export of utility glass and glass semiproducts for fashion jewellery and fashion jewellery.

Technical ceramics and sanitary ware

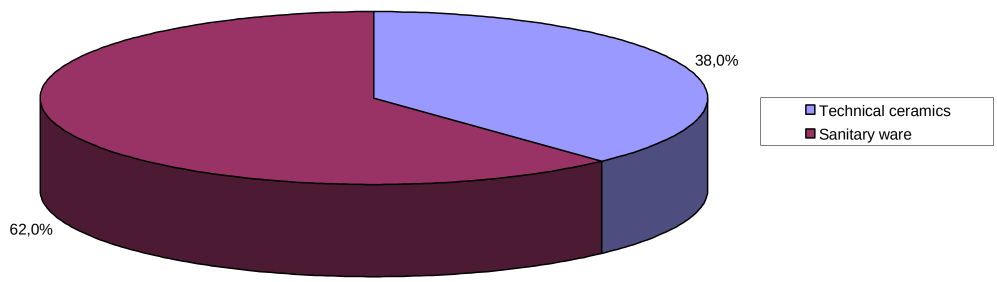
The technical ceramics and sanitary ware export was totally 3067.3 mill. CZK in 2012.

Export of technical ceramics and sanitary ware according to the assortment

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical ceramics	5 858.0	549.1	23.3	4 459.8	481.0	23.0	3 689.7	392.0	23.4
Sanitary ware	36 364.1	1 809.3	76.7	32 954.0	1 606.2	77.0	23 480.1	1 284.0	76.6
Totally	**42 222.1**	**2 358.4**	**100.0**	**37 413.8**	**2 087.2**	**100.0**	**27 169.8**	**1 676.0**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical ceramics	1 766.6	467.0	24.8	4 439.2	631.9	27.4	4 598.7	1 165.0	38.0
Sanitary ware	24 839.3	1 416.1	75.2	28 581.0	1 674.0	72.6	32 584.5	1 902.3	62.0
Totally	**26 605.9**	**1 883.1**	**100.0**	**33 020.2**	**2 305.9**	**100.0**	**37 183.2**	**3 067.3**	**100.0**

Structure of export of technical ceramics and sanitary ware according to the assortment in 2012 (CZK)



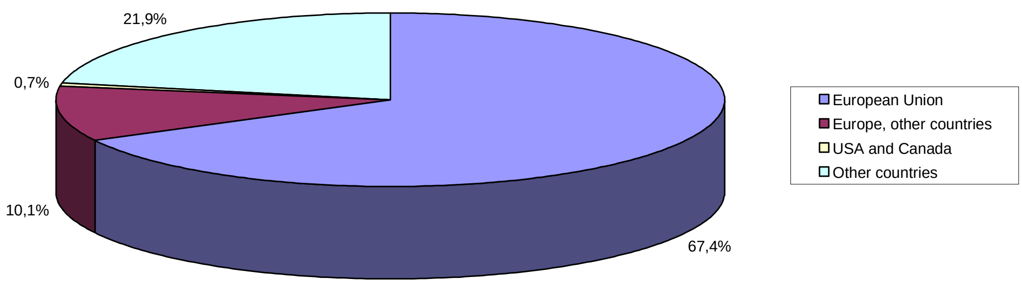
In 2012 sanitary ware shared with 62.0 % and technical ceramics with 38.0 % on export. The export of sanitary ware has been increasing since 2009.

Export of technical ceramics and sanitary ware according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	36 205.1	1 955.4	82.9	31 165.6	1 707.9	81.8	23 490.1	1 415.0	84.4
Europe, other countries	4 007.6	302.6	12.8	3 875.9	265.7	12.7	1 807.1	145.0	8.7
USA and Canada	11.4	3.7	0.2	56.6	10.3	0.5	38.6	9.1	0.5
Other countries	1 998.0	96.7	4.1	2 315.7	103.3	4.9	1 834.0	106.9	6.4
Totally	**42 222.1**	**2 358.4**	**100.0**	**37 413.8**	**2 087.2**	**100.0**	**27 169.8**	**1 676.0**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	22 520.0	1 554.7	82.6	28 132.9	1 907.0	82.7	29 664.8	2 066.1	67.4
Europe, other countries	2 291.2	218.3	11.6	3 106.7	261.4	11.3	3 883.7	310.2	10.1
USA and Canada	49.0	10.2	0.5	33.8	6.5	0.3	113.1	20.2	0.7
Other countries	1 744.7	99.9	5.3	1 746.8	131.0	5.7	3 521.6	670.8	21.9
Totally	**26 604.9**	**1 883.1**	**100.0**	**33 020.2**	**2 305.9**	**100.0**	**37 183.2**	**3 067.3**	**100.0**

Structure of export of technical ceramics and sanitary ware according to territories in 2012 (CZK)



A substantial part of both assortments was exported to the countries of Europe. Sanitary ware shared on export to European countries with 89.2 % (with 74.9 % to the European Union), technical ceramics shared on the export with 58.4 % (55.0 % to the European Union). To the greatest customers of sanitary ware in Europe belong Germany, Austria, Great Britain, Slovakia, and Russia.

Due to an unfavourable development in the building industry in the European Union producers of sanitary ware look for new markets out of Europe. In 2012 the export to the Other countries reached 196.8 mill. CZK, i.e. by 74 % more than in 2011. Sanitary ware is exported, for instance to China, South Africa, Tunisia, Oman, Nigeria and Mongolia.

Import

Flat glass

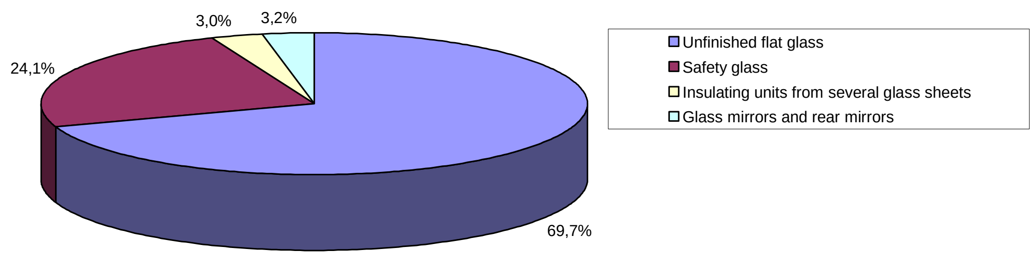
The import of the flat glass assortment was 8433.3 mill. CZK in 2012. It decreased by 13 % in comparison with 2011.

Import of flat glass according to the assortment

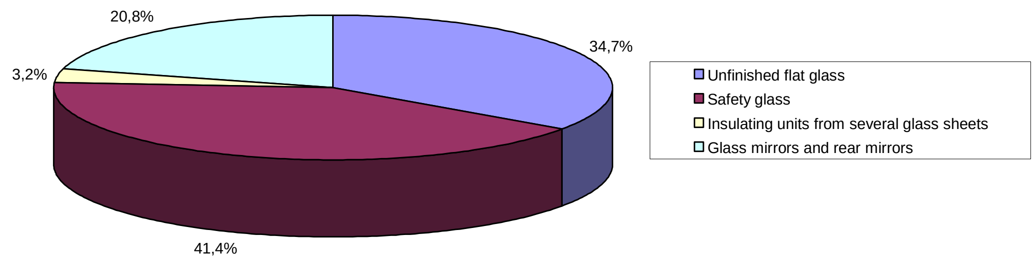
	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Unfinished flat glass	222 740.9	3 696.7	43.8	214 016.8	3 224.1	39.6	216 320.6	2 803.2	37.0
Safety glass	44 980.6	3 298.7	39.1	70 951.0	3 420.6	42.0	54 101.2	3 210.7	42.3
Insulating units from several glass sheets	7 177.8	368.5	4.4	6 986.2	274.6	3.4	5 725.4	255.8	3.4
Glass mirrors and rear mirrors	14 347.9	1 073.1	12.7	9 590.0	1 229.4	15.1	10 199.5	1 312.9	17.3
Totally	**289 247.2**	**8 437.0**	**100.0**	**301 544.0**	**8 148.7**	**100.0**	**286 346.7**	**7 582.6**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Unfinished flat glass	229 192.8	2 952.7	33.9	320 056.1	3 543.3	37.2	210 393.8	2 925.9	34.7
Safety glass	80 260.5	3 867.6	44.5	91 371.4	4 030.8	42.3	72 876.8	3 487.7	41.4
Insulating units from several glass sheets	7 266.3	282.9	3.3	5 990.5	200.4	2.1	8 978.4	266.6	3.2
Glass mirrors and rear mirrors	7 951.6	1 594.3	18.3	8 762.3	1 746.2	18.3	9 544.2	1 753.1	20.8
Totally	**324 671.2**	**8 697.5**	**100.0**	**426 180.3**	**9 520.7**	**100.0**	**301 793.2**	**8 433.3**	**100.0**

Structure of import of flat glass according to the assortment in 2012 (t)



Structure of import of flat glass according to the assortment in 2012 (CZK)



As follows from the above stated table (expressed in CZK), the import decreased in unfinished flat glass and safety glass.

The import of unfinished flat glass with 69.7 % (float glass shows 90.5 %) has share on the flat glass import in mass. The amount of import is given by the processing capacities in the Czech Republic.

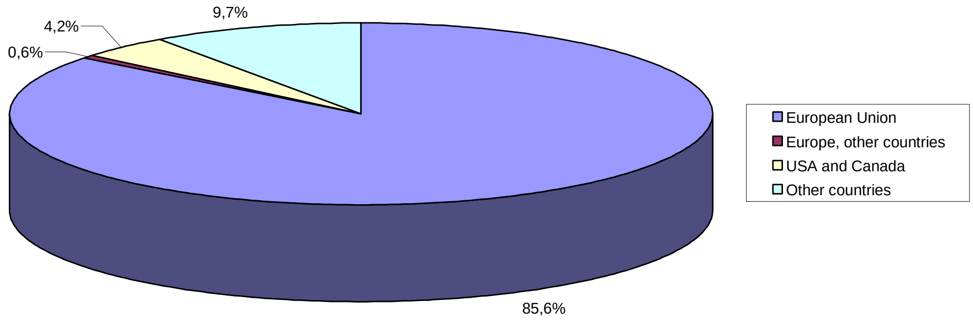
Toughened laminated safety glass shared with 41.4 % (expressed in CZK) on import. It is followed by unfinished flat glass with 34.7 %.

Import of flat glass according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	271 444.2	7 465.0	88.5	283 701.9	7 431.3	91.0	275 802.6	6 989.2	92.2
Europe, other countries	2 362.3	55.7	0.7	1 151.9	32.4	0.4	533.1	137.5	1.8
USA and Canada	1 647.7	264.3	3.1	1 304.0	64.2	0.8	9 236.0	135.6	1.8
Other countries	13 793.0	652.0	7.7	15 350.2	638.8	7.8	9 236.0	320.3	4.2
Totally	**289 247.2**	**8 437.0**	**100.0**	**301 508.0**	**8 166.7**	**100.0**	**294 807.7**	**7 582.6**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	297 369.5	7 637.2	87.8	395 053.0	8 556.2	89.9	273 871.8	7 215.9	85.6
Europe, other countries	5 697.2	99.6	1.1	362.4	48.1	0.5	318.4	46.5	0.6
USA and Canada	813.4	208.3	2.4	346.2	241.4	2.5	426.3	352.4	4.2
Other countries	20 791.1	752.4	8.7	30 418.7	675.0	7.1	27 176.7	818.5	9.7
Totally	**324 671.2**	**8 697.5**	**100.0**	**426 180.3**	**9 520.7**	**100.0**	**301 793.2**	**8 433.3**	**100.0**

Structure of import of flat glass according to territories in 2012 (CZK)



In 2012 85.6 % of flat glass (expressed in CZK) was imported to the Czech Republic from the European Union countries. The greatest importers were Belgium, Germany, France and Poland. From the Other countries the greatest importer was China with 52.2 % (i.e. 427.6 mill. CZK). Mainly the import of safety glass was realized (74.8 %).

Container glass

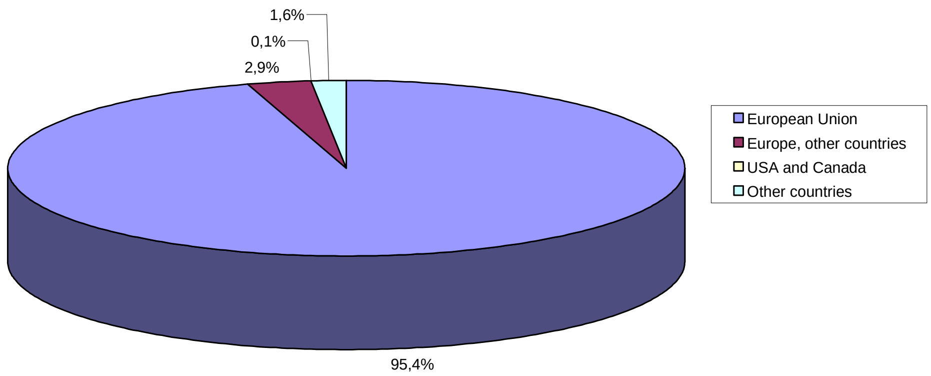
The container glass import in 2012 was in amount of 1203.4 mill. CZK, i.e. it was higher by 6.5 % than in 2011.

Import of container glass according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	77 709.3	896.5	96.8	80 178.1	902.5	92.2	96 112.3	1 107.1	93.3
Europe, other countries	1 909.4	19.3	2.1	6 326.5	63.9	6.5	6 010.1	65.1	5.5
USA and Canada	355.1	3.3	0.4	1.4	1.0	0.1	1.7	0.8	0.1
Other countries	79.0	7.1	0.8	377.4	11.2	1.1	362.6	13.0	1.1
Totally	**80 052.8**	**926.2**	**100.0**	**86 883.4**	**978.6**	**100.0**	**102 486.7**	**1 186.0**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	108 138.8	1 134.3	95.8	95 964.9	1 080.3	96.0	102 250.1	1 147.7	95.4
Europe, other countries	4 890.7	36.7	3.1	3 256.9	24.7	2.2	4 114.3	35.2	2.9
USA and Canada	58.5	3.2	0.3	1.1	0.8	0.1	4.4	1.7	0.1
Other countries	181.2	9.9	0.8	641.5	19.6	1.7	398.8	18.8	1.6
Totally	**113 269.2**	**1 184.1**	**100.0**	**99 864.4**	**1 125.4**	**100.0**	**106 767.6**	**1 203.4**	**100.0**

Structure of import of container glass according to territories in 2012 (CZK)



The import like the export is determined by the character of use of the container glass assortment. In 2012 95.4 % of import was realized from the European Union countries. The greatest importers were Germany, Slovakia and Poland.

Glass fibres and products made of

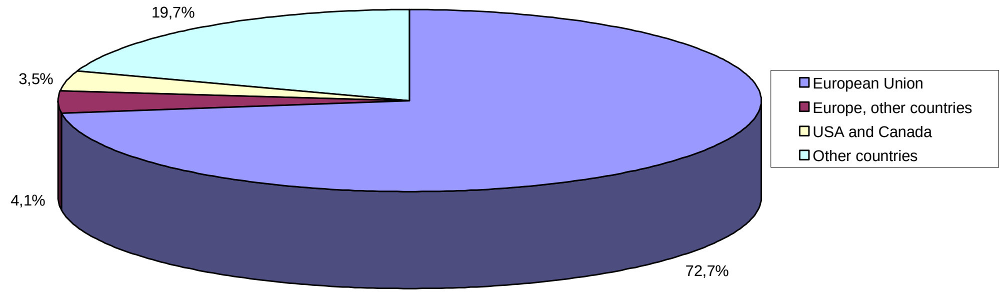
The import of glass fibres and products made of to the Czech Republic was 2519.7 mill. CZK in 2012.

Import of glass fibres and products made of according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	37 831.6	2 058.2	74.5	37 410.2	1 829.3	77.8	29 377.8	1 201.5	74.4
Europe, other countries	2 369.0	165.1	6.0	1 509.7	122.5	5.2	3 679.0	118.9	7.4
USA and Canada	557.3	133.5	4.8	511.7	101.4	4.3	218.1	16.6	1.0
Other countries	10 312.8	404.2	14.6	8 696.4	297.9	12.7	7 270.1	278.2	17.2
Totally	**51 070.7**	**2 761.0**	**100.0**	**48 128.0**	**2 351.1**	**100.0**	**40 545.0**	**1 615.2**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	35 831.1	1 467.3	68.8	44 036.3	1 534.8	62.7	48 275.6	1 832.8	72.7
Europe, other countries	6 513.2	192.6	9.0	1 163.5	53.4	2.2	1 512.2	102.4	4.1
USA and Canada	1 075.7	87.4	4.1	1 405.9	103.6	4.2	546.5	88.4	3.5
Other countries	10 638.4	386.0	18.1	19 906.1	756.5	30.9	13 705.3	496.1	19.7
Totally	**54 058.4**	**2 133.3**	**100.0**	**66 511.8**	**2 448.3**	**100.0**	**64 039.6**	**2 519.7**	**100.0**

Structure of import of glass fibres and products made of according to territories in 2012 (CZK)



The share of the European Union countries on import was 72.7 %. The greatest importers were Germany, Hungary, Poland, Slovakia and France. The importers from the other European countries were Russia, Belarus and Switzerland. The share of import of the Other countries increased from 14.6 % in 2007 to 19.7 % in 2012. The greatest importers in 2012 were China, Mexico, the USA, Malaysia and Taiwan. The import from China and Taiwan in the total amount of 336.7 mill. CZK created 67.9 % of import of the Other countries. In comparison with previous year the import from these two countries increased by 6.2 %.

Utility glass

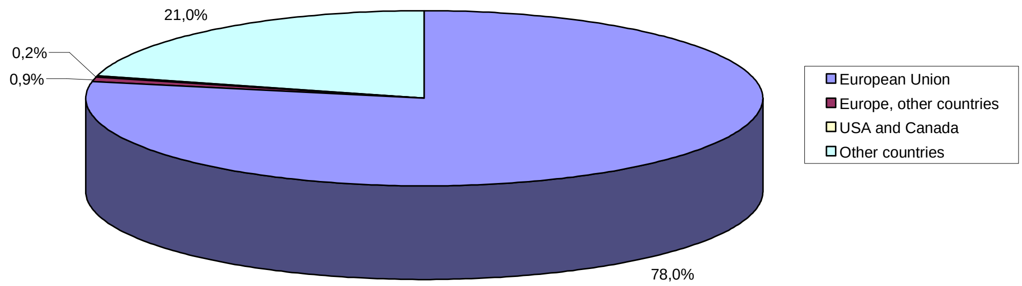
The utility glass import in 2012 was 1650.7 mill. CZK.

Import of utility glass according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	11 131.3	1 238.9	77.5	10 860.7	1 271.9	78.6	20 017.5	1 081.8	76.9
Europe, other countries	1 761.2	38.8	2.4	2 244.2	46.2	2.9	1 485.4	31.0	2.2
USA and Canada	32.0	5.3	0.3	55.4	7.1	0.4	17.2	3.3	0.2
Other countries	7 900.5	316.5	19.8	7 792.8	292.9	18.1	7 996.4	291.0	20.7
Totally	**20 825.0**	**1 599.5**	**100.0**	**20 953.1**	**1 618.1**	**100.0**	**29 516.5**	**1 407.1**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	24 038.6	1 071.7	69.0	42 883.0	1 150.7	74.2	39 905.1	1 286.9	78.0
Europe, other countries	1 142.9	28.0	1.8	1 107.6	26.9	1.7	565.3	14.2	0.9
USA and Canada	23.2	2.6	0.2	30.6	3.2	0.2	17.5	3.7	0.2
Other countries	11 656.9	450.4	29.0	10 358.1	370.7	23.9	5 581.2	345.9	21.0
Totally	**36 861.6**	**1 552.7**	**100.0**	**54 379.3**	**1 551.5**	**100.0**	**46 069.1**	**1 650.7**	**100.0**

Structure of import of utility glass according to territories in 2012 (CZK)



The greatest share of import (78.0 %) was realized from the European Union countries. The greatest importers were Germany, Slovakia, Poland, Italy, Bulgaria and France. From the Other countries (21.0 % of total import) the greatest importers in 2012 were China (192.4 mill. CZK) and Turkey (123.2 mill. CZK). Both these countries created totally 91.2 % of import from the Other countries.

Other glass

The import of other glass in 2012 was 2122.9 mill. CZK (the inter-year growth by 17.8 %).

Import of other glass according to the assortment

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical glass	11 809.3	539.8	18.2	1 791.0	263.0	14.9	1 428.7	140.2	8.6
Glass tiles, plates and blocks	10 205.0	319.7	10.8	12 303.4	376.0	21.3	8 650.2	275.8	16.8
Laboratory glass	225.0	54.6	1.8	246.1	56.0	3.2	2 988.3	60.4	3.7
Glass semiproducts for fashion jewellery	2 333.0	572.7	19.3	1 574.0	281.6	16.0	1 822.6	327.1	20.0
Other glass	83 749.7	1 476.1	49.8	85 889.9	784.7	44.6	97 409.6	833.8	50.9
Totally	**108 322.0**	**2 962.9**	**100.0**	**101 804.4**	**1 761.3**	**100.0**	**112 299.4**	**1 637.3**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical glass	1 917.0	232.7	12.2	2 057.8	245.1	14.0	1 967.6	240.3	11.3
Glass tiles, plates and blocks	8 069.5	284.8	14.9	6 664.2	230.4	13.2	5 550.0	213.4	10.0
Laboratory glass	1 892.6	73.0	3.8	502.1	76.4	4.4	473.2	80.0	3.8
Glass semiproducts for fashion jewellery	2 525.0	464.1	24.4	3 226.2	346.9	19.9	3 313.9	812.3	38.3
Other glass	102 766.8	850.5	44.6	157 324.0	847.9	48.5	136 098.9	777.5	36.6
Totally	**117 170.9**	**1 905.1**	**100.0**	**169 774.3**	**1 746.7**	**100.0**	**147 403.6**	**2 123.5**	**100.0**

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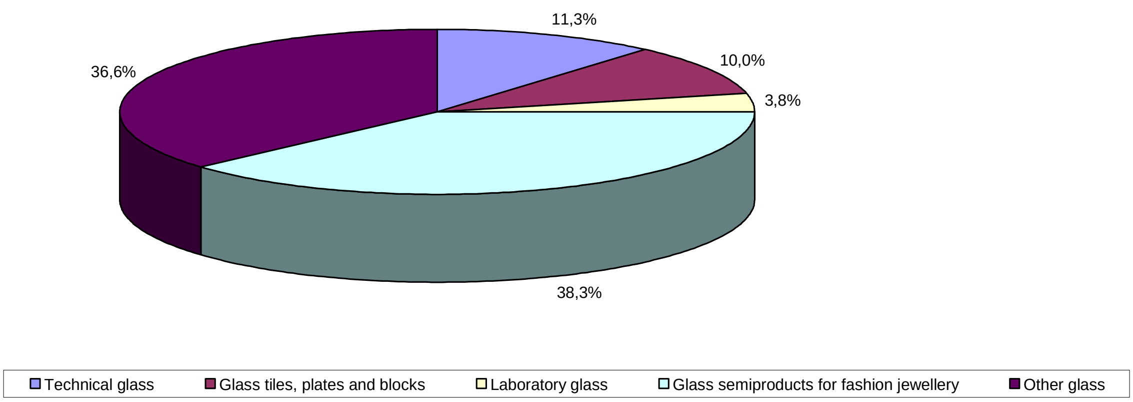
Association of the Glass and Ceramic Industry of the Czech Republic

Structure of import of other glass according to the assortment in 2012 (CZK)



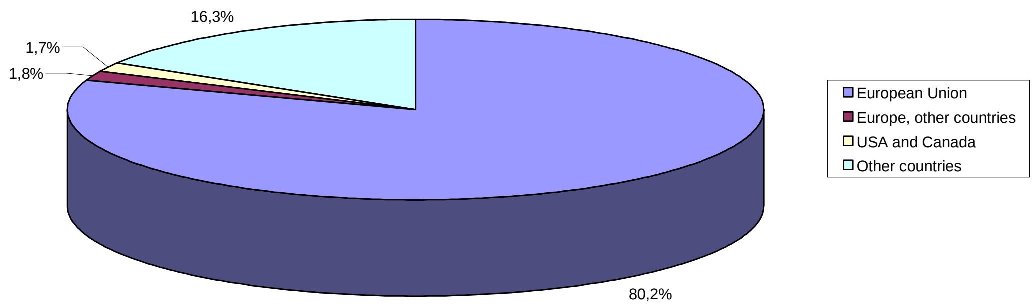
In the following table the other glass import according to territories is given.

Import of other glass according to territories

	2008			2009			2010		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	96 117.2	2 084.5	70.4	94 318.8	1 371.2	77.9	107 923.4	1 298.3	79.3
Europe, other countries	690.3	84.9	2.9	256.0	36.9	2.1	81.0	15.3	0.9
USA and Canada	18.0	34.5	1.2	25.1	21.1	1.2	148.4	42.8	2.6
Other countries	11 496.5	759.0	25.6	7 204.5	332.1	18.9	4 146.6	280.9	17.2
Totally	**108 322.0**	**2 962.9**	**100.0**	**101 804.4**	**1 761.3**	**100.0**	**112 299.4**	**1 637.3**	**100.0**

	2011			2012			2013		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	106 632.9	1 487.9	78.1	138 606.8	1 221.9	70.0	138 018.4	1 702.8	80.2
Europe, other countries	2 730.4	24.0	1.3	24 218.6	52.7	3.0	6 101.1	37.9	1.8
USA and Canada	3 178.0	28.0	1.5	40.1	40.3	2.3	33.0	36.2	1.7
Other countries	4 629.6	365.2	19.2	6 908.8	431.8	24.7	3 251.1	346.0	16.3
Totally	**117 170.9**	**1 905.1**	**100.0**	**169 774.3**	**1 746.7**	**100.0**	**147 403.6**	**2 122.9**	**100.0**

Structure of import of other glass according to territories in 2012 (CZK)



In 2012 the import from the European Union countries was 80.2 % and 16.3 % from the Other countries. The import was realized from various countries according to the assortment. In 2012 the greatest importers of technical glass were Germany, France, China, Malaysia and Taiwan; laboratory glass Germany, the USA, Great Britain, India and China; glass tiles, plates and blocks Belgium, Germany, the USA, Great Britain, India and China; glass semiproducts for fashion jewellery Austria, Germany, France, the USA, China, Hongkong and Japan; and chandelier pieces Austria, Turkey, China and Egypt.

Household china and ceramics

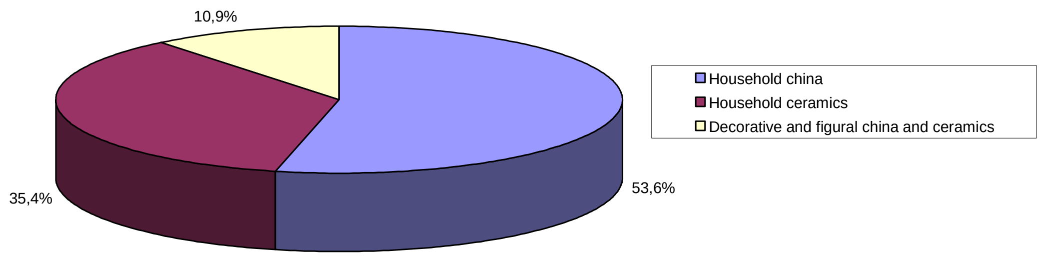
In 2012 household china and ceramics were imported to the Czech Republic in the value of 1474.0 mill. CZK.

Import of household china and ceramics according to the assortment

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Household china	19 655.3	794.3	57.0	11 765.6	732.7	55.5	8 302.5	542.5	51.9
Household ceramics	10 453.9	413.0	29.6	11 270.3	416.1	31.5	8 094.9	342.3	32.8
Decorative and figural china and ceramics	3 124.1	186.7	13.4	3 503.1	171.9	13.0	3 050.7	159.8	15.3
Totally	**33 233.3**	**1 394.0**	**100.0**	**26 539.0**	**1 320.7**	**100.0**	**19 448.1**	**1 044.6**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Household china	9 264.1	594.5	51.0	10 625.6	728.7	55.1	9 037.4	790.4	53.6
Household ceramics	10 461.3	405.3	34.8	8 712.4	415.3	31.4	7 820.3	522.5	35.4
Decorative and figural china and ceramics	3 534.0	166.3	14.3	3 249.4	179.2	13.5	2 750.2	161.1	10.9
Totally	**23 259.4**	**1 166.1**	**100.0**	**22 587.4**	**1 323.2**	**100.0**	**19 607.9**	**1 474.0**	**100.0**

Structure of import of household china and ceramics according to the assortment in 2012 (CZK)



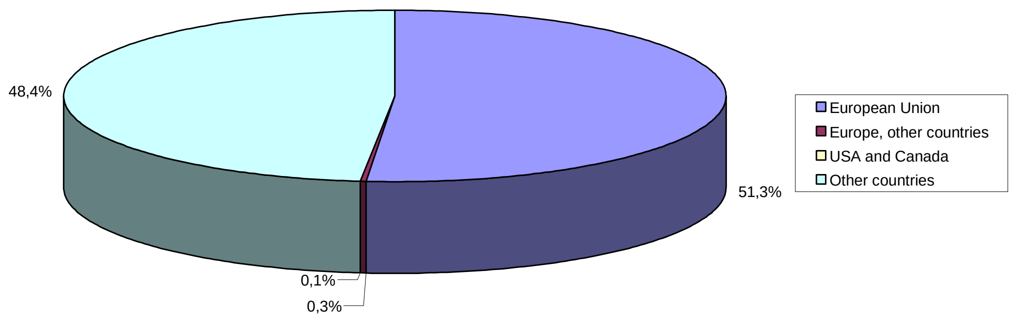
Household china shares with 53.6 %, household ceramics with 35.4 % and decorative and figural china and ceramics with 10.9 % on the import of this group assortment.

Import of household china and ceramics according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	19 178.8	850.5	61.0	10 610.9	741.0	56.1	7 447.7	576.3	55.2
Europe, other countries	509.4	12.2	0.9	421.7	11.2	0.8	293.3	9.7	0.9
USA and Canada	1.9	0.8	0.1	0.7	0.3	0.0	12.7	1.7	0.2
Other countries	13 543.2	530.5	38.1	15 505.7	568.2	43.0	11 697.4	456.9	43.7
Totally	**33 233.3**	**1 394.0**	**100.0**	**26 539.0**	**1 320.7**	**100.0**	**19 451.1**	**1 044.6**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	11 219.0	668.0	57.3	10 295.9	669.0	50.6	8 563.9	756.1	51.3
Europe, other countries	274.4	8.7	0.7	211.8	10.8	0.8	142.2	4.3	0.3
USA and Canada	1.2	0.4	0.0	5.3	0.9	0.1	5.8	0.9	0.1
Other countries	11 764.8	489.0	41.9	12 074.4	642.5	48.6	10 896.0	712.7	48.4
Totally	**23 259.4**	**1 166.1**	**100.0**	**22 587.4**	**1 323.2**	**100.0**	**19 607.9**	**1 474.0**	**100.0**

Structure of import of household china and ceramics according to territories in 2012 (CZK)



The import from the European Union countries shared on the total import with 51.3 %. The greatest importer was Germany, sharing on import from the European Union with 58.8 % (444.7 mill. CZK).

The Other countries shared on import of household china and ceramics with 48.4 %. The greatest importer was China, sharing on import from the Other countries with 69.9 % (498.1 mill. CZK).

Technical ceramics and sanitary ware

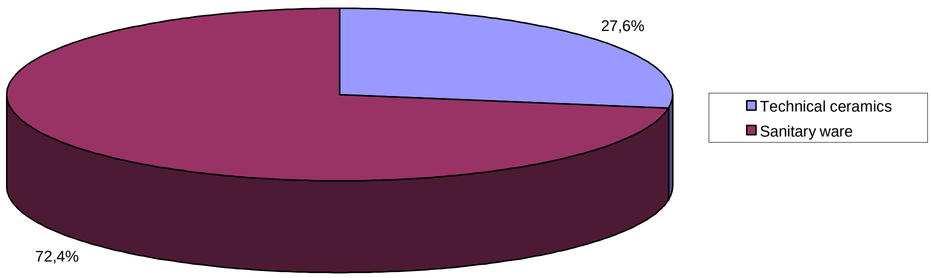
The technical ceramics and sanitary ware import was 1076.1 mill. CZK in 2012. The import of technical ceramics decreased in comparison with 2011 by 56.0 %.

Import of technical ceramics and sanitary ware according to the assortment

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical ceramics	4 991.1	467.5	37.7	5 343.2	394.6	35.7	4 142.8	278.8	31.2
Sanitary ware	16 739.9	772.7	62.3	15 085.4	709.6	64.3	12 502.2	616.2	68.8
Totally	**21 731.0**	**1 240.2**	**100.0**	**20 428.6**	**1 104.2**	**100.0**	**16 645.0**	**895.0**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
Technical ceramics	749.2	188.2	23.5	4 408.0	463.1	39.8	4 360.6	296.7	27.6
Sanitary ware	12 544.1	613.5	76.5	18 574.2	699.5	60.2	14 559.2	779.4	72.4
Totally	**13 293.3**	**801.7**	**100.0**	**22 982.2**	**1 162.6**	**100.0**	**18 919.8**	**1 076.1**	**100.0**

Structure of import of technical ceramics and sanitary ware according to the assortment in 2012 (CZK)



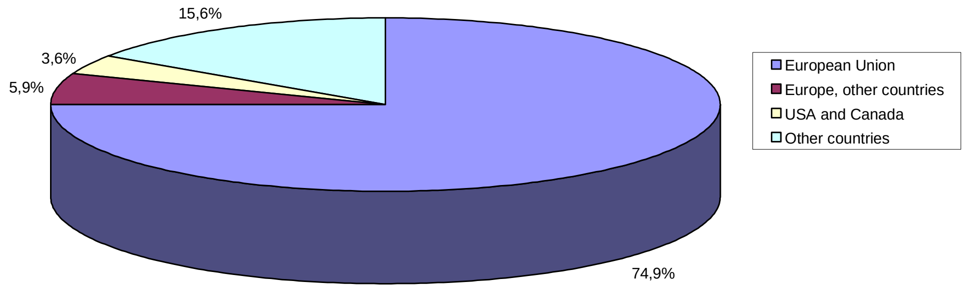
Sanitary ware and technical ceramics shared on the import with 72.4 % and 27.6 %, respectively, in 2012.

Import of technical ceramics and sanitary ware according to territories

	2007			2008			2009		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	15 797.5	994.0	80.1	14 455.3	851.6	77.1	10 965.9	605.1	67.6
Europe, other countries	490.6	89.0	7.2	909.1	60.7	5.5	772.7	36.0	4.0
USA and Canada	33.6	36.1	2.9	22.6	28.9	2.6	1.9	22.2	2.5
Other countries	5 409.3	121.1	9.8	5 041.6	163.0	14.8	5 174.5	231.7	25.9
Totally	**21 731.0**	**1 240.2**	**100.0**	**20 428.6**	**1 104.2**	**100.0**	**16 915.0**	**895.0**	**100.0**

	2010			2011			2012		
	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)	Net (t)	Mill. CZK	Share (%)
European Union	8 124.9	594.5	74.2	16 844.1	905.4	77.9	13 248.2	805.8	74.9
Europe, other countries	1 340.8	53.8	6.7	1 141.4	51.4	4.4	1 179.4	63.9	5.9
USA and Canada	2.5	18.0	2.2	22.2	38.8	3.3	14.2	38.9	3.6
Other countries	3 792.1	135.4	16.9	4 974.5	167.0	14.4	4 478.0	167.5	15.6
Totally	**13 260.3**	**801.7**	**100.0**	**22 982.2**	**1 162.6**	**100.0**	**18 919.8**	**1 076.1**	**100.0**

Structure of import of technical ceramics and sanitary ware according to territories in 2012 (CZK)



In 2012 the import from the European Union countries shared on the technical ceramics import with 74.9 %. The greatest importer was Germany. As far as sanitary ware the share of import from the European Union countries was 73.3 %. The greatest importers were Poland, Germany and Austria. The Other countries had the share 19.2 % on the total import of sanitary ware. The greatest importers from the Other countries were China and Turkey.

6. HOW CAN THE GLASS INDUSTRY CONTRIBUTE TO ENERGY EFFICIENCY AND COMPETITIVE LOW CARBON ECONOMY?

There are glass and ceramic products which, due to their properties and connection with other industry sectors, can contribute to reduce energy consumption and consequently CO_2 emissions. Glass and ceramic industry can contribute significantly to the EU 20% commitment to reduce energy consumption by 2020.

According to the results of the EU study, buildings represent a significant potential in terms of energy savings and CO_2 emission reduction. In the EU buildings account for almost 40 % of primary energy consumption and represent a large emitter of CO_2.
Source: Study on the Energy Savings Potentials in EU Member States, Candidate Countries and EEA Countries, 2009

Simple measures can be put in place in order to reduce energy consumption of buildings. They include replacement of certain building parts (windows, door, etc.) and renovation and thermal insulation.

The study also suggests that in moderate climate (including the Czech Republic) the energy consumption savings can be up to 3 times higher.

Average yearly energy consumption of residential dwellings:

Type of dwelling	**Energy consumption (kWh/m^2)**
Old dwelling	269
Old, partly renovated dwelling	197
Newly renovated dwelling	74 - 113
Newly constructed dwelling	74 - 113
Zero-energy dwelling	30

Source: Study on the Energy Savings Potentials in EU Member States, Candidate Countries and EEA Countries, 2009

6.1 The influence of high-performance glass on energy efficiency and CO_2 emissions
Source: AGC Flat Glass Czech, plc., AGC Group member

Glass façade represents not only a current trend, but also provides perfect light to the interior of buildings. Glass has always been and will be a significant architectural element due to its aesthetic qualities such as transparency, purity, diversity, processing possibility and constantly improving properties.

Glass has a positive effect on the quality of buildings and environment. If appropriate building envelope and glazing are designed, glazed areas can help maximize their solar heat gains in winter and cool them in summer.

There are 2 types of energy-saving glass: solar control glazing, which reduces energy consumption of air-conditioned building especially during summer months and insulation double and triple glazing, which minimize heat losses in winter.

6.1.1 Insulating glazing

Sufficiently daylit interior of residential, public and office buildings is a dream of many architects and investors. However, many of them fear that large glazed areas will cause heat losses in winter and overheating in summer.

A type of glazing disproving this theory is insulating glazing, which protects the interior from heat losses. Insulating glazing (e.g. double glazing Thermobel standard insulating glass) is a completed product where two glass sheets are joined with a silicon-filled space and include an inert gas. The products are inserted either to window frames or façade systems.

Functions of insulation glazing:

- reduction of the interior's heat losses in winter
- natural daylight
- sun radiation protection
- noise protection
- security (injury, robbery, explosion, bullet-resistant applications) glazing as a protective railing system

Association Glass for Europe asked Dutch technical research institute TNO to perform a study of the potential energy and CO_2 savings in Europe from an increased use of Low-E insulating glazing.

The study on contributions of the Low-E glass use to energy savings and reduction of CO2 emissions carried out by the technical research institute TNO for the EU 27, came out from two assumptions:

- glazing used in existing buildings or an assumed type of glazing in buildings built in the period 2008-2020;
- use of high efficient low Low-E insulating double or triple glazing units (replacement of existing glazing and new housing).

Based on these assumptions the following annual energy savings and CO_2 emissions reduction in the EU 27 till 2020 are possible:

- by the use of Low-E double glazing units in all European buildings, the European Union could save: annually up to 90 mill. tonnes of CO_2 emissions by 2020, it corresponds to 21 mill. tonnes of heating oil or to the amount of energy consumed by 19 mill. inhabitants;
- by the use of Low-E triple glazing units in new buildings and double glazing units in existing buildings, the European Union could save: annually up to 97 mill. tonnes of CO_2 emissions by 2020, i.e. one third from the total emissions amount which the European Union has committed to cut at buildings operation. 95 % of these savings is

created by the replacement of glazing in existing buildings.

The energy savings would be annually 975,235 TJ in the European Union, what corresponds to the reduction by 96.613 mill. tonnes of CO_2 emissions. In the Czech Republic the energy savings could reach annually 26,978 TJ, what corresponds to the reduction by 2.698 mill. tonnes of CO_2 emissions.

6.1.2 Solar Control Glass

Solar control glazing can form from 20 % to 45 % of free solar heat gains depending on a selected type of solar control glass.

The study on contributions of the solar control glass use to energy savings and reduction of CO_2 emissions carried out by the technical research institute TNO for the EU 27, came out from the following assumptions:

- in new buildings the solar control glass will be used in all air-conditioned buildings
- replacing all non-solar control glass in existing air-conditioned buildings with solar control glass

The conclusions suggest that:

- The potential savings are assumed in amount of 16 mill. tonnes of the CO_2 emissions annually up to 2020, i.e. about 5 % from the total amount of emissions, which the European Union has committed to cut at buildings operation;

- assuming both above mentioned items, and further on, assuming growing use of air-conditioning units up to the level common in the USA buildings the potential annual savings are assumed in amount of 86 mill. tonnes of the CO_2 emissions annually up to 2020, i.e. about 25 % from the total amount of emissions, which the EU has committed to cut at buildings operation.

By the use of the solar control glass the European Union can save annually 15 – 86 mill. tonnes of the CO_2 emissions up to 2020. The greatest potential is in southern countries. The energy savings 1,170,785 TJ correspond to 86 mill. tonnes of the CO_2 emissions. In the Czech Republic the volume of the CO_2 emissions would reduce by 1.470 mill. tonnes and energy savings would be 15,669 TJ.

6.1.3. Light and energy parameters

Light penetration ranges from 70 % to 80 % for double glazing and 70 % to 75 % for triple glazing. However, it is necessary to consider the fact these are only theoretical figures. The real amount of lighting is influenced by climatic conditions, daytime, season, size and placement of glazed areas, outdoor shadowing objects (such as trees or houses). All-glass façades require solar control glazing or effective sun control systems (usually outdoor blinds). If the used glazing reduces heat penetration of sun radiation, it is possible to aim 20-40% free solar heat gains, depending on a selected type of solar control glass. The latest trends use clear glass from

Stopray with low light reflection, i.e. without reflection effect. For aesthetic reasons it is possible to choose from glass with bolder colours, reflection effect Stopsol, print, etc.

6.2 Glass fibres

6.2.1 Thermal insulation

Source: Data of company Knauf Insulation, Ltd., Union Lesní Brána, Plc. websites

Glass fibres are one of the best thermal insulators. They absorb noise and therefore belong to effective acoustic insulation.Glass fibre permeability enables natural "ventilation" of buildings and after thermal insulation it helps to sustain "healthy" environment inside buildings.

Nowadays buildings consume 40 % of total produced energy. Therefore, their insulation and renovation contribute significantly to reduction of CO_2 emission. Only roof insulation with glass fibres can reduce heat losses up to 30 %. Thermal insulation of external walls can also bring similar results.

Thermal insulation (e.g. insulation slabs, mats and blown insulation) brings significant energy savings. It is widely used in residential, industrial, agricultural and technical equipment buildings.

In the Czech Republic there are two producers of fibre-glass thermal and blown insulation – Union Lesní Brána, Plc. (ROTAFLEX Super ®) and Knauf Insulation, Ltd.
Union Lesní Brána, Plc. (ROTAFLEX Super ®) produces slab and mat insulation and Knauf Insulation, Ltd. produces slab a roll insulation, so-called blown insulation.

Knauf Insulation, Ltd. produces mineral insulation with patented ECOSE Technology®.
a revolutionary, bio-based, formaldehyde-free binder technology, based on rapidly renewable materials, instead of petro-based chemicals. It reduces embodied energy and delivers superior environmental sustainability.

Energy consumption of residential building heating ranges from 50 to 67 GJ per year (13 84218456 kWh/year) for heating. The following table illustrates thermal losses
of residential building heating and possible savings generated by appropriate insulation. Heating saving potential is around 6-12 GJ per year.

	thermal loss	thermal loss reduction after insulation [by %]
windows and external door	30 - 35 %	x
external walls	25 - 35 % (or more)	15 - 30 %
ceilings, roof	10 - 15 %	by 10 %
floor	5 - 15 %	around 6 %

6.2.2 Net-like fabrics

Source: Saint-Gobain Adfors, Ltd. websites

Net-like fabrics are produced by Saint-Gobain Adfors, Ltd. They are generally used for insulation system designed to reinforce external overlays.

They are manufactured from glass fibre yarns or glass fibre roving. Special types of surface treatment of fabrics make their broad use in a number of various applications possible, especially in the building industry. Outer temperature changes connected with plaster shrinkage and movement of insulation plates of warming up system, belong to potential causes of cracks and splits occurrence in the plaster surface. Therefore, net-like glass fabrics are used as a reinforcing element in certified outer contact systems. These fabrics ensure, thanks to their mechanical properties, the required strength and stability of the whole system of buildings.

6.2.3 Ceramic fibres

High temperature insulation products offer high-quality solutions for a great variety of applications and can meet specific economic, operating and industrial requirements.

UNIFRAX, Ltd., member of international group UNIFRAX, represents the only ceramic fibre producer in the Czech Republic

The following part illustrates properties and applications of different ceramic fibre types

- mullite fibre products made in specific chemical processes exhibit high temperature stability for continuous use at temperatures up to 1600°C (Fibermax®).
- Fiberfrax® alumino-silicate fibres exhibit high temperature stability for continuous use at temperatures up to 1400°C.
- Insulfrax® Thermal Insulation products provide thermal insulation at recommended operating temperatures up to 1200°C. The Insulfrax product family was developed from a calcium, magnesium, silica chemistry. Insulfrax soluble fibre products are designed to have enhanced in-vitro solubility characteristics which enable these products to meet European regulatory requirements for synthetic vitreous fibres.
- sofrax® Thermal Insulation has the high-temperature performance characteristics required in many applications at temperatures up to 1260°C. Isofrax Thermal Insulation from Unifrax is a revolutionary new fibre that utilises a unique, patented silica-magnesia chemistry to solve a variety of demanding, high temperature application problems while meeting European regulatory requirements.

High temperature insulation products have not only outstanding properties from the point of view of production technology, but they also meet requirements for energy saving.

In the ceramic industry ceramic fibre lining is used in firing kilns. Besides meeting technological requirements of producers, they help to reduce energy consumption and enable producers to meet company and legislation obligations towards environment.

In the glass industry mats designed to perform in temperatures up to 1600 °C for installation of crown of the glass furnace, are used.

In metallurgy and foundry ceramic fibre products in all types of applications, i.e. from coking to finishing plants, are used. By their low heat absorption and low heat conductivity, these products ensure thermal insulation with higher efficiency than hard refractory products. The outstanding thermal properties of ceramic fibres offer longer service life and higher energy savings.

Ceramic fibre insulation products play an important role in energy production. They have to ensure adequate thermal insulation nearby a boiler and parts of piping because of higher efficiency of energy loss reduction. They are used for instance in insulation of steam and gas turbines, steam generators and piping.

6.3 Conclusion

Glass and ceramic products are among few building materials whose benefits outweigh their investment price. When building or reconstruction, it is necessary to consider energy efficiency and possibility of CO_2 emission reduction must be taken into account.

Nowadays glass and ceramic products are absolutely vital for reduction of energy efficiency and CO_2 emission, both within and outside the European Union. There are not many competitive replacement materials readily available.

The use of these products during the product life cycle, which can last twenty years or more, is therefore essential for meeting the EU environmental objectives for housing, transportation an renewable energy development.

In terms of renewable energy generation and energy savings, glass products, if properly recycled, outweigh the energy used and the CO_2 emissions released in production.