



ASSOCIATION OF THE GLASS AND CERAMIC
INDUSTRY OF THE CZECH REPUBLIC

ANNUAL REPORT

GLASS AND CERAMIC INDUSTRY
OF THE CZECH REPUBLIC 2018



AUGUST 2019

Introduction

Dear colleagues,

Just now, you are holding the Annual Report of our industrial branch, where we have resumed the data of the year 2018.

This Annual Report contains a great volume of selected information from glass, ceramics and china branch, usually divided to smaller groups from the period since 2013 to 2018.

As we know, industrial production in 2018 wrestled, especially, with a lack of working force. In spite of continual trend to go forward, and a general goal of the Czech industry is automation and robotization, just workers, especially good quality workers, are and will be a key to success. Glass and ceramic industry urgently needs to increase its attractiveness again and attract young generation and also optimize its assets and also its view to today world. And it means them to keep together, and also systematically help to develop the best tradition and knowledge in this branch. After all, it certainly be worthy of praise. Our products are not only beautiful, but also ecological, practical, hygienically perfect and in a great extent also recyclable.



Glass, ceramics and china are an integral part of our life and its production makes a good name to Czech companies and also to the Czech Republic, especially in the world. Our branch is strongly oriented to export. You will find Czech glass, ceramics and china in all continents. The results of the Czech glass and ceramic industry of 2018 are good, in spite of a fact that we chart a mild short decline in some production branches. It is possible to say that this decline is caused in some branches mainly by an unstable economic and political situation in a number of export destinations, i.e. including an impact of international sanctions and war conflicts. Therefore, companies always search new markets and they come with innovative and modern design, they keep their eye on new trends and try to anxious to please them. I wish we will be successful together.

I wish you only positive thoughts while reading the Annual Report 2018.

A handwritten signature in blue ink, likely belonging to Ing. Petr Mazzolini.

Ing. Petr Mazzolini
president

Association of the Glass and Ceramic industry of the Czech Republic



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

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INTRODUCTIONS

Výroční zpráva podává v úvodní části přehled o postavení sklářského a keramického průmyslu v rámci zpracovatelského průmyslu České republiky, jeho struktuře a vývoji v letech 2013 – 2018. Součástí zprávy je přehled vývozu a dovozu dle jednotlivých výrobních oborů. Dále je ve zprávě uvedeno i zhodnocení činnosti Asociace sklářského a keramického průmyslu ČR v uplynulém období.

Údaje zpracované ve zprávě vycházejí z údajů Českého statistického úřadu (platné k 30. 6. 2019). Tyto údaje jsou doplněny údaji získanými z výročních zpráv členů Asociace.

Členění a názvosloví zpracovatelského průmyslu, používané v kapitole „Postavení sklářského a keramického průmyslu v České republice“, je převzato od Českého statistického úřadu.

Časové vývojové řady srovnávané v kapitole „Vývoj sklářského a keramického průmyslu“ jsou uvedeny pro období 2013 – 2018.

Sklářský a keramický průmysl je v předložené výroční zprávě převážně sledován a popisován rozděleně, a to v sedmi tzv. agregacích. Tyto agregace jsou tvořeny technologicky a marketingově příbuznými sklářskými a keramickými produkčními činnostmi. Tato metodika odpovídá i způsobu statistického vykazování v České republice.

- **Ploché sklo** (nezušlechťené a zušlechťené ploché sklo)
- **Obalové sklo** (lahve, konzervové sklo, ostatní skleněné obaly)
- **Skleněná vlákna** (výztužná/textilní, izolační skleněná vlákna)
- **Ostatní sklo** (speciální skla – laboratorní sklo a laboratorní přístrojové sklo, trubice, skleněné díly pro obrazovky, technické kuličky, skleněné průmyslové aparatury, ochranné svářečské sklo, optické sklo, skleněné tvárnice, bižuterní sklo aj.) a **osvětlovací sklo**
- **Užitkové sklo** (sklo nápojové, domácké, ozdobné, umělecké apod.)
- **Užitkový porcelán a keramika** (porcelánové výrobky pro domácnost a ozdobná keramika)
- **Technická a zdravotnická keramika** (izolátory, laboratorní porcelán, keramické výrobky pro sanitární účely, výrobky pro technické účely).

Ve zprávě není koncentrovaně sledován vývoj ve zbývajících skupinách činností (agregací), kterou tvoří produkce strojů a zařízení, servis a služby pro sklářský a keramický průmysl. Z hlediska statistického vykazování jsou činnosti související s touto agregací sledovány v řadě různých jiných subsekcích zpracovatelského průmyslu a nelze je tak, zvláště číselná data, věrohodně zpracovávat a srovnávat.



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 (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. The members of the Association are the Czech Glass Society and the Union of Glass and Fashion Jewellery Producers. A separate part of this chapter is devoted to them.

The Association had 46 members at the date of December 31, 2018. The activities of the Association were based on the plan accepted by the general meeting of the Association on May 30, 2018. The organization Cesty skla o.p.s. – Huť František became a member of the Association in 2018.

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 materials, 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 problems.

Activities of the Association in 2018

The Association collaborated on national level on fulfilling the policy statement of the Confederation of Industry of the Czech Republic (Confederation of Industry) and with the Czech Glass Society on the promotion of interests directly connected with the glass and ceramic industry. Within the European Union the Association collaborated with the Glass Alliance Europe (GAE) on the promotion of interests of the glass industry and in the framework of its possibilities also on the promotion of interests of other associated branches and with other professional groups.

The plan suggestion for 2018 followed the activities in 2017. The activities in 2018 were divided to the following themes: “Support of the glass and ceramic industry competitiveness”, “Environment”, “Collective negotiations of higher degree”, “Education (apprenticeship, secondary and university)”, “Social dialogue”, and “Services and information”. Support of research and development and lobbying for the glass and ceramic industry interests and activities promoting the Association and its members, were an important part of activities of the Association.

The Association took part in a number of projects in 2018: National System for Qualification (NSK2), Interconnection of national, sector and regional social dialogue in the Czech Republic, Education and collaboration among social partners (as a partner with the Trade Union of Employees of Glass and Ceramic Industry and China (Trade Union).

Support of competitiveness of the glass and ceramic industry

The aim was to support competitiveness of glass and ceramic industry products on inland and international markets, and with regard to the possibilities of the Association to collaborate with the Confederation of Industry. Specific problems of the glass and ceramic industry were solved directly with the Ministry of Industry and Trade, the Ministry of Environment and further bodies of the state administration and institutions of the European Union, e.g. the European Chemical Agency (ECHA) and the European Commission.

The Association in cooperation with member companies and within the membership in the GAE, and also on national level with the Confederation of Industry, **took a firm stand actively against changes and elimination of the glass and ceramic industry from the list of sectors endangered by carbon leakage after 2020.** (Definition: Carbon leakage is a term describing a situation, which can appear when tradesmen, due to high expenses on climate protection, transfer their production to other countries with free access to greenhouse gases and emissions.)

The Association carried out **a systematic dialogue with the Ministry of Industry and Trade and the Ministry of Environment** on general support of the glass and ceramic industry, especially in the area of competitiveness support.

The Association supported **providing the working force, development of professional education** and motivation of working force through social dialogue and through all further available means.

The Association established **expert groups** for the promotion, assertion and defence of interests of the glass and ceramic industry. They discussed about up-to-date problems regarding the glass and ceramic industry. The aim of expert groups is to define the attitude to basic themes influencing the position of the Association members, and, subsequently, in cooperation with the Association secretary, to stand up for their promotion within the state authorities, the Confederation of Industry and the GAE and European Union bodies.

In the framework of the project Education and collaboration among social partners the Association realized a number of trainings focused to the competitiveness support of companies in this sector.

Personal staff of groups was ensured in cooperation with all members.

Social dialogue

For fulfilling of employers' functions and keeping the social dialogue the Association managed the Collective negotiation of higher degree with representatives of the Trade Union. Further on, the Association collaborated with the Confederation of Industry, the Ministry of Industry and Trade and the Ministry of Labour and Social Affairs.

In 2018 the negotiation on a new **Collective agreement of higher degree to the period from 2019 to 2020** with the Trade Union proceeded.

The Association took part in the project of the Confederation of Industry "Interconnection of national, sector and regional social dialogue in the Czech Republic" (NORD); KA1 **Bipartite negotiations on sector level**.

Through the working groups of the GAE the Association shared in the attitude within the European Union to the problems of the **respirable crystalline quartz**.

With aim to increase knowledge on social dialogue and strengthening the cooperation between employers and employees the Association was a partner of the Trade Union in the project **Education and cooperation between social partners** and transfer of knowledge and experience from abroad. This project was accepted and realized in the period from June 2016 till May 2018. In 2018 the Association secretary was actively involved in the preparation and **organization of panel discussion, round table and final conference**.

Education (apprenticeship, secondary and university)

The Association is supporting the development and ensuring the quality of professional education on all levels.

In the area of education **problems regarding professional education system** for the glass, jewellery and ceramic industry are continuously solved. It was necessary to interest employers, as well.

The Association collaborated with the consortium of the Confederation of Industry, the Chamber of Commerce and TREFIMA, s.r.o. on the **National Qualification System (NSK 2)**.

Environment

The Association cooperated with the GAE, the Confederation of Industry, the Ministry of Environment and the Ministry of Industry and Trade and took part in the activities of respective working groups.

In cooperation with the GAE the Association took part on national level in support of interests of the Czech glass and ceramic industry within the European environmental policy (REACH, EU ETS, IPPC, etc.) and on making favourable legislation surroundings.

In the framework of activities regarding EU ETS problems (emission permits) the Association joined to the common Stand on the processing industry of the Czech Republic to the EU ETS reform appointed primarily to members of the European Parliament.

In collaboration with its members the Association put forward a proposal to the European Chemical Agency (ECHA) to re-evaluate the lead reduction in fashion jewellery according to the direction REACH (EC) No. 1907/2006 in wording of the direction (EU) No. 836/2012.

In collaboration with the GAE and with the own members the Association solved the problem of the REACH, RoHS and incorporating substances, used as glass raw materials (new substances suggested for qualification, permission and protection of raw materials as semi-products).

The Association monitored through the GAE and in cooperation with member companies the problem of contact of products with food (new values, total migration limits, specific problems, etc.).

In cooperation with the Confederation of Industry and within a systematic dialogue with the Ministry of Industry and Trade (Action plan for a support of an increase of the Czech Republic independence in raw materials sources by substitution of primary sources by secondary raw materials) the Association promoted the solution of the problem of waste glass for recycling (waste flat glass, container glass, etc.). In collaboration with the Confederation of Industry and its members the Association promoted the interests of industry in preparation of legal regulations regarding the environment.

Services and information

The Association secretary continued in collecting and searching for information important for the Association members and transferred it to them. The Association gave information on this branch to the bodies of the state administration and to other institutions which can contribute to the development of the glass and ceramic industry.

The Information bulletin was published monthly. This bulletin gives reports and news on activities of the Association, its members and on up-to-date problems regarding the glass and ceramic industry. The members of the Association received regularly the bulletin of the GAE and other information coming from the Association secretary.

The Association regularly updated information given to members and public on the Association web site and on www.skloakeramika.cz, oriented to the support of the glass and ceramic industry in the Czech Republic and on the facebook profile. A re-design of the Association web site and its modernization for mobile equipment was realized.

The Association continuously gave information from the branch to the state administration and to other institutions. According to requirements the Association gathered and evaluated important data for monitoring of up-to-date situation and development of this branch.

In the framework of the project Education and collaboration with social partners the Association co-organized training for its members oriented to the social dialogue.

Promotion of the Association and its members

The aim of the Association was to continue in medial promotion of the glass and ceramic industry and improve its image. The aim was always to introduce public with the production and the level of

the branch and to contribute to gaining new qualified workers to companies and young people to schools of all levels of education.

The Association updated the web site oriented to the glass and ceramic industry containing latest news from this branch, report on glass and ceramics, survey of companies and schools, offer of working places, specialized publications, and calendar of specialized activities (see www.askpcr.cz and www.skloakeramika.cz).

The Association promoted also the logo the Czech product, guaranteed by the Association of the Glass and Ceramic Industry of the Czech Republic.

The Annual Report - Glass and Ceramic Industry of the Czech Republic - 2017 was published based on the collaboration with the Association members and the Czech Statistical Office.

The Association contributed to finishing of the survey Panorama zpracovatelského průmyslu ČR (Panorama of the manufacturing industry of the Czech Republic) published by the Ministry of Industry and Trade.

There were published articles on the Association activities in the Sklář a keramik journal, where the Association has a contract on cooperation.

Further on, the Association shared on media programmes in the Czech Television, Czech Radio, Hospodářské noviny, etc. devoting to the Czech glass and ceramic industry.

The 5th Meeting of glassmakers and ceramists organized by the Association was held during two autumn days in Czech Paradise. The aim was to renew and develop relations among representatives of glass and ceramic industry in the Czech Republic.

The Association became a partner of the discuss meeting Sklářské svítání (Glass dawn) in Jablonec nad Nisou. The secretary was actively involved in preparation and outputs from this action. The Association was represented in the discuss meeting by the members of the executive board and of members companies.

Based on the interest of the Ministry of Industry and Trade the Association elaborated a publikaci Sklo a jeho recyklace v České republice (Glass and its recycling in the Czech Republic).

The Association was also a partner of the international china symposium in Dubí "KEEP IN TOUCH".

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 (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 2018

At the date of December 31, 2018 the CGS had 217 individual members and 27 members of art section, i.e. 244 members; subsidiary (KAVALIERGLASS, a.s.) with 17 members, and 18 collective members.

The highest priority of the CGS was to organize the 23rd International Congress on Glass ICG in 2013. In subsequent years there were organized two dominant events - the 8th International Conference on Borate and Phosphate Glasses (2014) and the Czech and Slovak Conference on Glass (2014 and 2017)

and International Conference on Glass Machinery including the seminary Metals in Glass Technologies (2015-2018). The CGS closely cooperates with the Slovak Glass Society and the Deutsche Glastechnische Gesellschaft (DGG). They also participated on the common conference organized by the DGG.

An important activity of the CGS in the international field is the participation in activities of Technical Committees of the INTERNATIONAL COMMISSION ON GLASS (ICG). The CGS is represented in the following committees: 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 took part also in the Annual Conference of American Glassmakers 2018 in San Antonio (USA).

The CGS participated together with the Museum of Glass and Jewellery in Jablonec nad Nisou on the project of elaboration the special category “Glass and Jewellery” for web site “CzechglassCompetence.com”.

In 2018 the 7th year of the discuss meeting Sklářské svítání (Glass dawn) was organized in the Museum of Glass and Jewellery in Jablonec nad Nisou under the auspices of the Confederation of Industry. The theme was the present and the future of glass and fashion jewellery.

The CGS devotes a great interest also to young glassmakers. The competition Master of Crystal was the 11th in 2018. It was organized by PRECIOSA in collaboration with the Museum of Glass and Jewellery in Jablonec nad Nisou and with a support of the CGS.

The CGS financially supported the international competition show of students’ works of glass branches “Junior Glass Ways” which was held in the Centre of the Glass Art in the Huť František in Sázava.

The CGS is a publisher of Sklář a keramik journal. In 1924 the first number of the specialized glass journal Sklářské rozhledy, published by the Glass Institute in Hradec Králové. In 1954 the original name was changed to Sklář a keramik and since 1994 the journal is published by the CGS. In 2018 there were issued 6 double issues with almost 300 pages of texts about glass, jewellery, ceramics and china. It was also a media partner of prestigious branch activities (e.g. Sklářské svítání).

The CGS is an official partner of the Centre of the Glass Art project in the Huť František. In 2006 the foundation “Nadace of Josef Viewegh” was established, the aim of which was to buy and reconstruct the Centre of the Glass Art project in the Huť František.

Union of Glass and Fashion Jewellery Producers

The Union of Glass and Fashion Jewellery Producers (hereinafter the Union) has 52 members, from which 4 members are specialized schools and also Technical University Liberec and the Museum of Glass and Jewellery. The membership base is great enough and it represents the industry of glass beads, fashion jewellery, jewels and gift articles made of glass.

The Union keeps wide contacts with key institutions on central, regional and Jablonec Region level, e.g. with the Ministry of Foreign Affairs, the Ministry of Industry and Trade and the Ministry of Culture of the Czech Republic.

Activities of the Union of Glass and Fashion Jewellery Producers in 2018

The Union permanently looks for sales opportunities for its members companies. It promotes putting of important European fashion jewellery exhibitions to programmes of the Ministry of Industry and Trade and of the Czech Trade agency.

Also in 2018 the Union was the main organizer of the exhibition *Křehká krása* (Fragile beauty) offering a lot of beautiful products made in Czech glass and glass jewellery companies. Visitors have a unique occasion to buy favourably products directly from producers, and therefore this exhibition has its regular visitors. The main partners were Statutory town Jablonec nad Nisou, the Museum of Glass and Jewellery in Jablonec nad Nisou and the CzechTourism company. Partners of the exhibition were the Liberec Region, Ministry of Culture of the Czech Republic, Powiat Jelenogorski, Jablonec Cultural and Information Centre, Preciosa, Texo Plus and BusLine. 44 exhibitors took part in this exhibition and 12 thousand visitors came, what is a 17 % increase in comparison with previous year. A satisfaction is also on side of exhibiting companies and the Museum of Glass and Jewellery.

In cooperation with traditional partners the Union organized subsequent year of a fashion show called *Made in Jablonec*. More than 40 clothing and jewellery companies and crafts shared on preparation. The year 2018 was in sign of the anniversary of the Czechoslovakia establishment and so the fashion show was called "100 years of inspiration". Eighteen teams of jewellery companies and crafts, fashion salons and specialized schools presented their creativity in three themes "Nobleness of Thirties", "Freedom of Sixties" and New Millennium". This fashion show represented the Jablonec Region not only at home but also in abroad during the whole year.

Based on the initiative of the Museum of Glass and Jewellery and with cooperation with the Union in 2013 a tourist product called "To Jablonec for glass and fashion jewellery" appeared. Its aim is to attract organized groups of tourists to Jablonec nad Nisou for a whole day visit. The first visits showed that it is interesting.



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 June 30, 2019:

CZ-NACE 23.1 - Production of glass and glass products – 108 companies are included. According to the investigated production branches there are 32 producers of flat glass, 38 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 32 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 – 19 companies are included, from which 7 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 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 glass, 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 other independent processing companies.

Great volumes of flat glass are processed in the Czech Republic in the automotive division of the AGC Group, in this case AGC Automotive Czech, a.s. Chudeřice u Bíliny. This company produces toughened and laminated safety glasses, especially for private cars, lorries, buses and coaches, including the additional operations like application of encapsulated or extruded plastic profiles and application of required additional components (strips, pins, 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 Automotive Glass Company, Asahi Glass Co. Ltd., Japan. The main vision is to be the most respected world supplier of all types of safety glass 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 Sekurit ČR, spol. s r.o. and Pilkington AGC Czech spol. s r.o. - production of glass for private cars; 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. Chrástava - 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 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. SKLÁRNÝ MORAVIA, a.s. Úsobrná 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 Saint-Gobain group. As far as products it includes activities: "Vertex" 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 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 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. Crystalex CZ, s.r.o., production plant in Nový Bor (machine made utility soda potassium glass), Crystal BOHEMIA, a.s. Poděbrady (lead crystal) and CRYSTALITE BOHEMIA, a.s. Světlá nad Sázavou belongs to the greatest. 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, spol. s r.o. Czech Glass Craft Lindava, 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.

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 is very wide in the Czech Republic. 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) and other smaller companies.

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

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

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

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., PAS Jablonec, a.s.).

Lighting glass is produced by Sklárna 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 is Preciosa, a.s.

Household china and ceramics

The assortment of household china includes not only products intended for daily use but also luxury products, e.g. luxury household china, household and decorative china, for instance rose and 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 Karlovy Vary, s.r.o., Rudolf Kämpf, s.r.o. Nové Sedlo, König-Porzellan Sokolov, spol. s r.o. Sokolov.

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 Jizerská porcelánka, s.r.o. Desná v Jizerských horách producing laboratory chinaware and china tubing, and ELPOR, s.r.o. Krupka Bohosudov.

From the producers of technical ceramics can be stated: KERAMTECH, spol. s r.o. Žacléř - production of foundry ceramics and technical china, BRISK TÁBOR, a.s. - production of spark and glow plugs for internal combustion engines and technical ceramics, HOFMANN 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, and 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 made of (wool, mats, shaped pieces, and 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, and

SKLÁŘSKÉ STROJE ZNOJMO, s.r.o. delivers various glass machinery equipments. 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. 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.

Producer and supplier of cast iron and steel moulds for container glass SKLOFORM, a.s. Suchbátka nad Lužnicí - works 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. Companies Provodínské písky, a.s. Provodín and Sklopísek Střeleč, a.s. Mladějov v Čechách mine and deliver these sands in the Czech Republic.

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. Soda-potassium and potassium-sodium feldspars are delivered by K M K GRANIT, a.s. Krásno. Feldspars are applied as flux.



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 23 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 the production of china and ceramic products which are a subject of evaluation of this Annual Report.

In following tables there are stated 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. Revenues and direct export are given without the CZ-NACE 33 Repair and installation of machines and equipment.

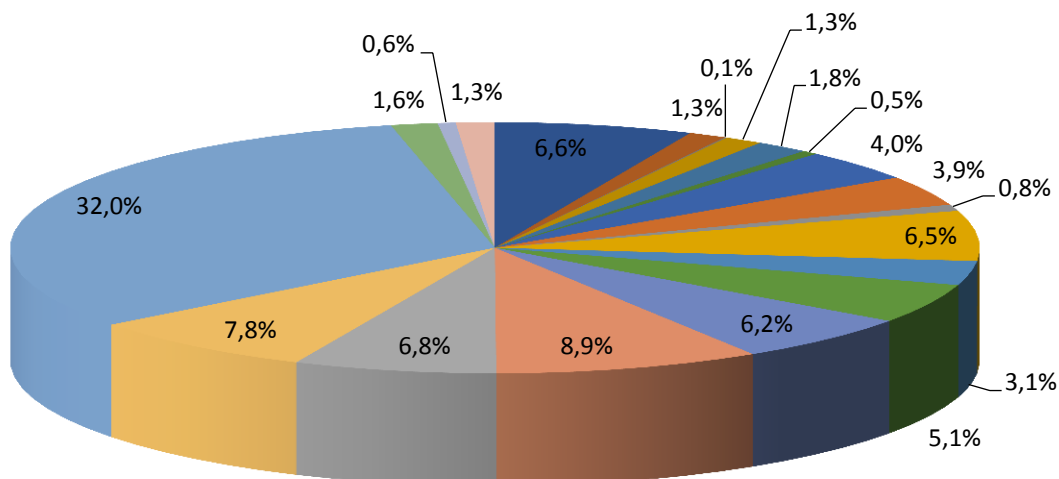
The revenues of the processing industry in the Czech Republic reached the value of 3824.86 bill. CZK in 2018 (in 2017 it was 3689.05 bill. CZK). In comparison with the previous year the revenues of the processing industry increased by 3.68 %. The revenues in amount of 118.72 bill. CZK in the category Production of other non-metallic mineral products mean the increase by 5.21 % in comparison with 2017. The Production of other non-metallic mineral products shared on revenues of the processing industry with 3.10 % in 2018.

Revenues of the processing industry in 2018

	Revenues	Share
	(mld. Kč)	(%)
Production of food, beverages and tobacco products	253,202693	6,6
Production of textiles and clothing	48,234506	1,3
Production of leather and related products	2,883265	0,1
Processing of wood, production of wood, wicker and straw products, except furniture	48,945832	1,3
Production of paper and products made of	68,023163	1,8
Printing and copying of recorded media	20,667630	0,5
Production of coke and refined oil products	153,370341	4,0
Production of chemical substances and chemical preparations	147,563585	3,9
Basic production of pharmaceutical products and pharmaceutical preparations	31,066436	0,8
Production of rubber and plastic products	247,072757	6,5
Production of other non-metallic mineral products	118,715242	3,1
Production of basic metals, metallurgical processing of metals; foundry	194,909053	5,1
Production of metal constructions and metal-working products, except machines	236,192468	6,2
Production of computers, electronic and optical devices and equipment	339,754697	8,9
Production of electrical devices	258,515596	6,8
Production of machines and equipment not stated elsewhere	298,460871	7,8
Production of motor vehicles (except motorcycles), trailers and semitrailers	1225,253532	32,0
Production of other transport means	59,640099	1,6
Production of furniture	23,039909	0,6
Other processing industry not stated elsewhere	49,343371	1,3
Processing industry	3 824,86	100,0

Structure of revenues of the processing industry in 2018

The direct export of the processing industry was 2453.53 bill. CZK, i.e. by 3.1 % more than in 2017 (2379.59 bill. CZK).

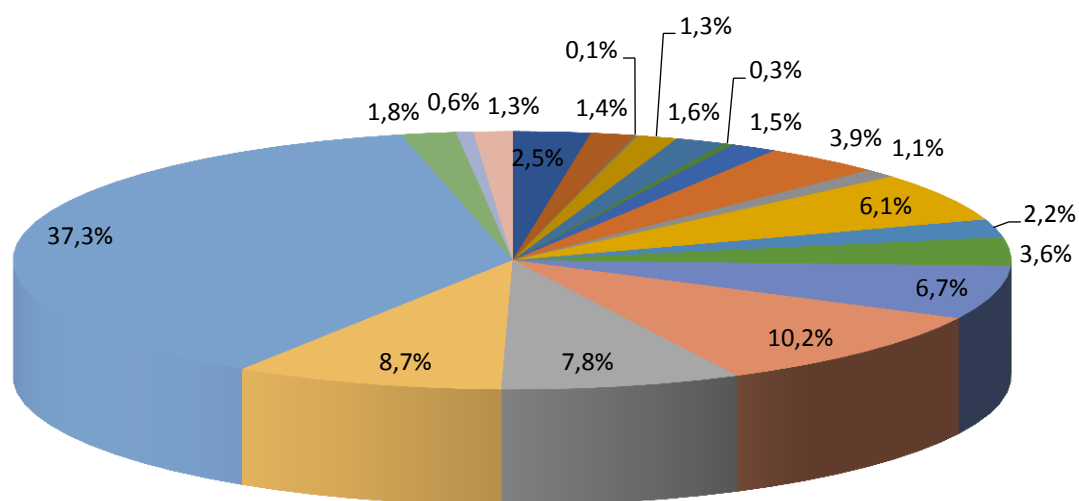


- Production of food, beverages and tobacco products
- Production of textiles and clothing
- Production of leather and related products
- Processing of wood, production of wood, wicker and straw products, except furniture
- Production of paper and products made of
- Printing and copying of recorded media
- Production of coke and refined oil products
- Production of chemical substances and chemical preparations
- Basic production of pharmaceutical products and pharmaceutical preparations
- Production of rubber and plastic products
- Production of other non-metallic mineral products
- Production of basic metals, metallurgical processing of metals; foundry
- Production of metal constructions and metal-working products, except machines
- Production of computers, electronic and optical devices and equipment
- Production of electrical devices
- Production of machines and equipment not stated elsewhere
- Production of motor vehicles (except motorcycles), trailers and semitrailers
- Production of other transport means
- Production of furniture
- Other processing industry not stated elsewhere

Direct export of the processing industry in 2018

	Revenues	Share
	(mld. Kč)	(%)
Production of food, beverages and tobacco products	61,59	2,5
Production of textiles and clothing	35,39	1,4
Production of leather and related products	2,22	0,1
Processing of wood, production of wood, wicker and straw products, except furniture	32,07	1,3
Production of paper and products made of	39,90	1,6
Printing and copying of recorded media	7,95	0,3
Production of coke and refined oil products	36,73	1,5
Production of chemical substances and chemical preparations	95,64	3,9
Basic production of pharmaceutical products and pharmaceutical preparations	26,06	1,1
Production of rubber and plastic products	150,48	6,1
Production of other non-metallic mineral products	54,89	2,2
Production of basic metals, metallurgical processing of metals; foundry	87,96	3,6
Production of metal constructions and metal-working products, except machines	164,65	6,7
Production of computers, electronic and optical devices and equipment	249,34	10,2
Production of electrical devices	190,88	7,8
Production of machines and equipment not stated elsewhere	214,02	8,7
Production of motor vehicles (except motorcycles), trailers and semitrailers	915,60	37,3
Production of other transport means	43,57	1,8
Production of furniture	13,56	0,6
Other processing industry not stated elsewhere	31,02	1,3
Processing industry	2 453,53	100,0

Structure of direct export of the processing industry in 2018



- Production of food, beverages and tobacco products
- Production of textiles and clothing
- Production of leather and related products
- Processing of wood, production of wood, wicker and straw products, except furniture
- Production of paper and products made of
- Printing and copying of recorded media
- Production of coke and refined oil products
- Production of chemical substances and chemical preparations
- Basic production of pharmaceutical products and pharmaceutical preparations
- Production of rubber and plastic products
- Production of other non-metallic mineral products
- Production of basic metals, metallurgical processing of metals; foundry
- Production of metal constructions and metal-working products, except machines
- Production of computers, electronic and optical devices and equipment
- Production of electrical devices
- Production of machines and equipment not stated elsewhere
- Production of motor vehicles (except motorcycles), trailers and semitrailers
- Production of other transport means
- Production of furniture
- Other processing industry not stated elsewhere

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 2018 and 2017. 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

	Revenue s 2017	Revenue s 2018	Index 18/17
	(mld. Kč)	(mld. Kč)	(%)
Production of leather and related products	3,77	2,88	76,6
Other processing industry not stated elsewhere	44,80	49,34	110,1
Production of computers, electronic and optical devices and equipment	304,58	339,75	111,5
Production of other transport means	52,34	59,64	113,9
Production of metal constructions and metal-working products, except machines and equipment	225,20	236,19	104,9
Processing of wood, production of wood, wicker and straw products, except furniture	45,64	48,95	107,2
Production of machines and equipment not stated elsewhere	290,79	298,46	102,6
Production of electrical devices	246,63	258,52	104,8
Production of paper and products made of	65,73	68,02	103,5
Production of textiles and clothing	50,43	48,23	95,6
Processing industry	3 689,05	3 824,86	103,7
Production of food, beverages and tobacco products	245,76	253,20	103,0
Production of other non-metallic mineral products	112,84	118,72	105,2
Production of rubber and plastic products	250,65	247,07	98,6
Basic production of pharmaceutical products and pharmaceutical preparations	28,94	31,07	107,3
Production of furniture	23,18	23,04	99,4
Production of motor vehicles (except motorcycles), trailers and semitrailers	1219,37	1225,25	100,5
Production of chemical substances and chemical preparations	144,51	147,56	102,1
Production of basic metals, metallurgical processing of metals; foundry	174,53	194,91	111,7
Production of coke and refined oil products	138,78	153,37	110,5
Printing and copying of recorded media	20,57	20,67	100,5

The most significant growth was in the category Production metal constructions and metal-working products, except machines and equipment and the Production of electrical devices.

Glass and ceramic industry

In the following chapter “Development of the glass and ceramic industry in the period from 2013 till 2018”, 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 2018

	Revenues	Direct export
Glass and ceramic industry		
Indicators in bill. CZK (current prices)	45,76	32,08
Share in the Other non-metallic mineral products (%)	38,54	58,44
Share in the processing industry (%)	1,20	1,31
Production of the other non-metallic mineral products Indicators in bill. CZK (current prices)	118,72	54,89
Share in the processing industry (%)	3,10	2,24
Processing industry Indicators in bill. CZK (current prices)	3 824,86	2 453,53

The revenues of the glass and ceramic industry in 2018 in comparison with 2017 decreased by 1,74 bill. CZK, i.e. by 3.66 %, from which the direct export decreased by 0.57 bill. CZK, i.e. by 1.75 %.



DEVELOPMENT OF THE GLASS AND CERAMIC INDUSTRY IN THE PERIOD FROM 2013 TILL 2018

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 2018 and in the period from 2013 till 2018 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 2013 till 2018 is given for understanding wide relations.

Main macroeconomic indices in the Czech Republic in the period from 2013 till 2018

((Source: Czech Statistical Office, July 2019))

		2013	2014	2015	2016	2017	2018
Gross domestic product	growth in %, actually	-0,5	2,7	5,3	2,5	4,4	3,0
Average inflation rate	growth in %, actually	1,4	0,4	0,3	0,7	2,5	2,1
General unemployment rate	average in %	7,0	6,1	5,0	4,0	2,9	2,2
Average real wage growth	in %	-1,5	2,5	2,9	3,7	4,2	5,3
Balance of trade	bill. CZK	350,8	154,1	155,2	183,9	152,6	132,7
CZK / EUR	average per year	25,97	27,53	27,28	27,03	26,33	25,64
CZK / USD	average per year	19,57	20,75	24,60	24,43	23,38	21,74

In favourable economic surroundings of 2018 the gross home product increased in comparison with previous year by 3.0 % and lengthened the growth trend to five years. On a side of expenses the main source was the inland demand, where the influence of investment, especially the private investments, strengthened at stable development of consumption. Also the foreign trade with goods and services accelerated. Dynamic growth of economy projected significantly to the development on labour market, which showed symptoms of overheating and which moved already under the limit of natural rate of unemployment. Difficulties with searching suitable workers to new working positions slowed down higher outputs of companies and pressed to the growth of wages.

Inflation accelerated the inter-year growth rate to the second highest rate in last six years. Food prices pulled it up in reaction to a blistering growth of prices of agricultural products and also housing costs. More expensive oil projected in the growth of import prices.

The Czech economy interrupted a tendency of slowing down the inter-year growth rate, when it increased by 2.4 % in the 3rd quarter of 2018, i.e. like in the 2nd quarter. Just one year ago the inter-year growth reached 5.1 %. Efficiency was ensured by a strong consumption and quickly growing investment expenses, while a net export slowed down the growth rate. According to the report of the Ministry of Industry and Trade "Analysis of economy development in the Czech Republic – January 2019" a slowdown of the inland economy is caused by the lack of working and production capacities rather than impacts of trade wars. In spite of warning signals coming especially from financial market and growing risks, the Ministry of Industry and Trade continue in expectations that the Czech economy after a slowdown of growth in 2018 will keep approximately the same dynamics in 2019. Weaker economic growth together with a lack of labour force leads to slower improving of situation on the labour market. Results of selective research of working force indicate a possibility of finishing the long-term growth trend and a culmination of home employment. Due to a permanently low unemployment, the general rate of which decreased to 2.4 % in the 3rd quarter, and a record excess of free working places above the number of unemployed people, it is possible to expect further dynamic growth of wages in following months.

(Source: Ministry of Industry and Trade; Analýza vývoje ekonomiky ČR; January 2019)

The industry of glass and ceramics which is included in the subcategory Production of other mineral products belongs to the competence of the Ministry of Industry and Trade, which expects continuous growth of industrial production also in the following years.

Gross home product increased by 2.9 % in 2018. The inter-year dynamics weakened in comparison with previous year. The home demand was dominant in economic growth, especially consumption, which increased by 3.3 %. At the same time the investment activity of households, non-financial companies and also government institutions strengthened. In the last year total expenses to gross fixed capital increased by 10.4 %. Foreign demand contributed to the growth less than in previous year. The value of exported goods increased by 3.4 % in the last year. A slowdown of the inter-year dynamics can be connected with a lower growth of export to Germany and also with the first decline of the value of motor vehicles export since 2009. On the other side the export to smaller destinations, i.e. to the Netherlands, Spain or Sweden strengthened. The workers number increased by 1.6 % in the last year, similarly as in the last three years. In spite of this in the second half of the year it was visible a certain slowing down of the inter-quarter dynamics. In the 4th quarter 5.45 mill. pers. worked in the Czech Republic, i.e. the greatest number in modern history. Especially, greater engagement of formerly economically not active persons contributed to the inter-year growth of employment by 83 ths. pers. General rate of unemployment approached to 2 %, however, it decreased only negligible within 2018. In spite of this the Czech Republic stayed a country with the lowest unemployment in the European Union. In spite of the fact that the balance of economy of the state budget reached in the last year in cash fulfilment only a small surplus (+2.9 bill. CZK), it was the second best result after 1995. The balance significantly surpassed budget expectations like in 2016 and 2017. All-state tax collection incomes, drafted mainly by collection of premiums to social security, grew with the strongest rate since the prosperity year 2007.

(Source: Czech Statistical Office; Vývoj ekonomiky České republiky v roce 2018; April 2019)

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 2018 available statistical data of companies with more than 50 employees relevant to 30 June 2019, have been used and they were added with qualified estimations.

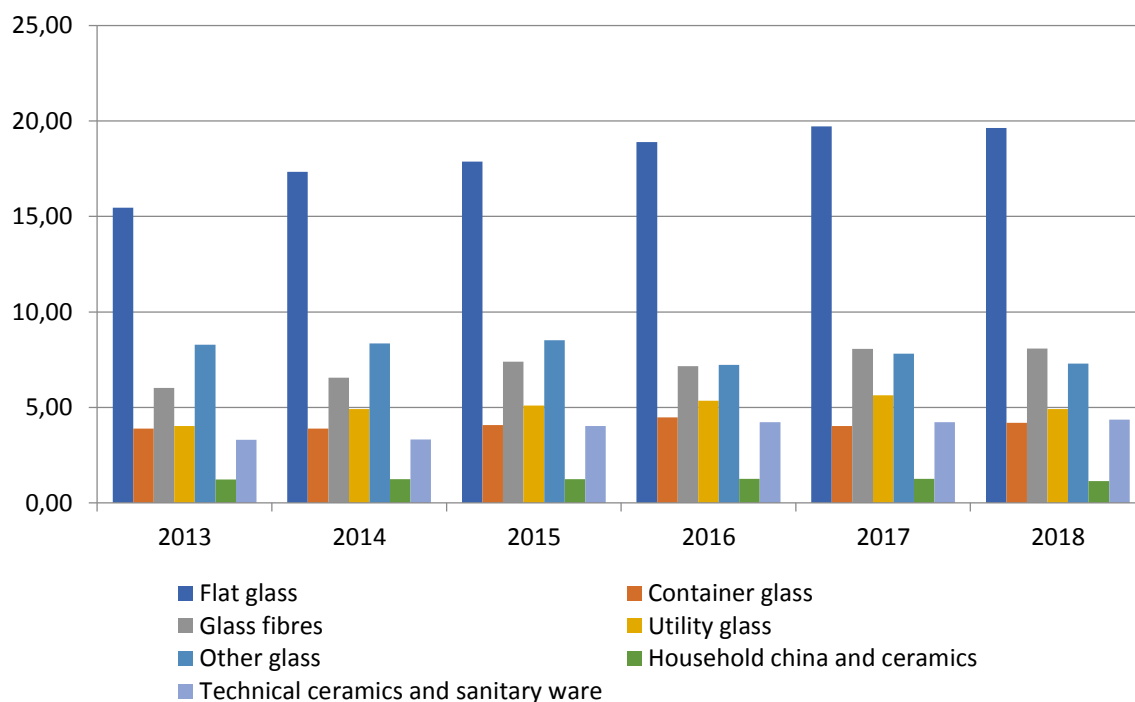
Price indices for the group of products of the glass and ceramic industry**Inter-year price indices**

REPR*		2013	2014	2015	2016	2017	2018
CG 23	Other non-metallic mineral products	99,6	99,8	100,2	101,2	100,9	103,3
CG 231	Glass and glass products	99,7	98,7	99,2	103,2	102,5	101,6
CG 232	Refractory products	101,1	100,1	99,5	101,3	98,7	101,8
CG 234	Other china and ceramic products**						

The total average price index of the Other non-metallic mineral products slightly decreased in comparison with previous year. Kumulativní cenové indexy

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

	2013	2014	2015	2016	2017	2018	index 18/17
							(%)
Flat glass	15,46	17,34	17,87	18,90	19,71	19,63	99,6
Container glass	3,90	3,90	4,07	4,49	4,02	4,19	104,2
Glass fibres	6,02	6,56	7,4	7,17	8,07	8,08	100,2
Utility glass	4,03	4,92	5,1	5,35	5,64	4,91	87,0
Other glass	8,28	8,36	8,52	7,23	7,82	7,29	93,3
Glass, total	37,69	41,08	42,96	43,13	45,26	44,10	97,4
Household china and ceramics	1,22	1,25	1,25	1,26	1,26	1,15	91,1
Technical ceramics and sanitary ware	3,31	3,32	4,03	4,23	4,23	4,37	103,3
Ceramics, total	4,53	4,56	5,28	5,48	5,49	5,52	100,5
Glass and ceramics, total	42,22	45,65	48,24	48,61	50,75	49,62	97,8

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

In 2018 the revenues for sales of own products and services (hereinafter revenues) reached in investigated branches 49.62 bill. CZK.

The revenues of the glass industry reached 44.10 bill. CZK, what is by 2.56 % less than in 2017. The revenues stayed on the level of previous year or decreased slightly. The share of flat glass was 44.51 %, other glass 16.53 %, glass fibres and products made of 18.32 %, container glass 9.5 %, and utility glass 11.13 %.

The revenues of investigated branches of china and ceramics reached 5.52 bill. CZK, what is by 0.55 % more than in 2017. The share of household china and ceramics was 20.83 %, the share of technical ceramics and sanitary ware was 79.17 %.

The development of revenues in 2018 in individual branches was the following.

The revenues for flat glass in 2018 were 19.63 bill. CZK. In comparison with 2017 it decreased by 0.41 %. The flat glass production is dependent on the development of the building and automotive industries.

The building industry showed essential change. The output of the Czech building industry, according to statistical data, improved after several years of decline due to the influence of strengthening public and private investments. The building production grew already for the second year. The last year +9.1 % was the strongest inter-year rate within last 15 years. The building industry started to revive thanks to a stronger investment activity in economy. In the end of 2018 the building industry in the Czech Republic had still very good expectations. The inter-year growth of a value of inland orders (in companies with 50 and more employees) continued within the second year already.

The whole year 2018 was historically the best year for the Czech automotive industry. The production of road vehicles, i.e. motor vehicles and trailers reached 1.47 mill. The production of only motor vehicles increased in comparison with previous year by more than 23 ths. (+1.6 %). Producers of the most of trademarks achieved excellent results of production and sales. The production of cars permanently dominates to inland production and also the production of coaches/buses is very successful. The inland car producers made totally 1437,396 cars (in 2017 it was 1413,881 cars).

Production of cars created again the main part of the produced motor vehicles volume. For both main inland producers of coaches/buses the last year was successful. It was made totally 4,890 buses, i.e. a growth by 259 pieces (by 5.6 %).

(Source: Sdružení automobilového průmyslu)

The development of flat glass in following years will be influenced mainly by further development of the building industry in Central Europe and by the production of the automotive industry.

The revenues for container glass reached amount of 4.19 bill. CZK in 2018, i.e. they increased in comparison with 2017 by 4.23 %. The revenues for glass fibres and products made of increased by 0.12 % in comparison with the previous year. The increase of the building industry in the Czech Republic had an influence on revenues. The growth of export of this assortment to foreign countries, especially to the European Union and Russia, which completed the development on the Czech market, projected positively to the revenues.

Since 2010 the revenues for utility glass have been increasing permanently, in 2018 they decreased by 13 % in comparison with previous year. Among the main reasons belongs a negative development of economic and political situation in regions principal for producers of utility glass. In comparison with 2017 the revenues of utility glass decreased by 12.94 % (0.73 bill. CZK). The export is decisive for the amount of revenues. In this branch there is a very hard competition and Czech companies face it by a high quality, design and originality of products. It is possible to say that companies and their products in the world since 2010 have been strengthening their position.

The revenues for other glass decreased in comparison with 2017 (0.53 bill. CZK). This group includes a wide assortment of products (technical and laboratory glass, glass tiles and bricks, glass semiproducts for fashion jewellery, etc.). The revenues development of individual assortment groups is very unbalanced.

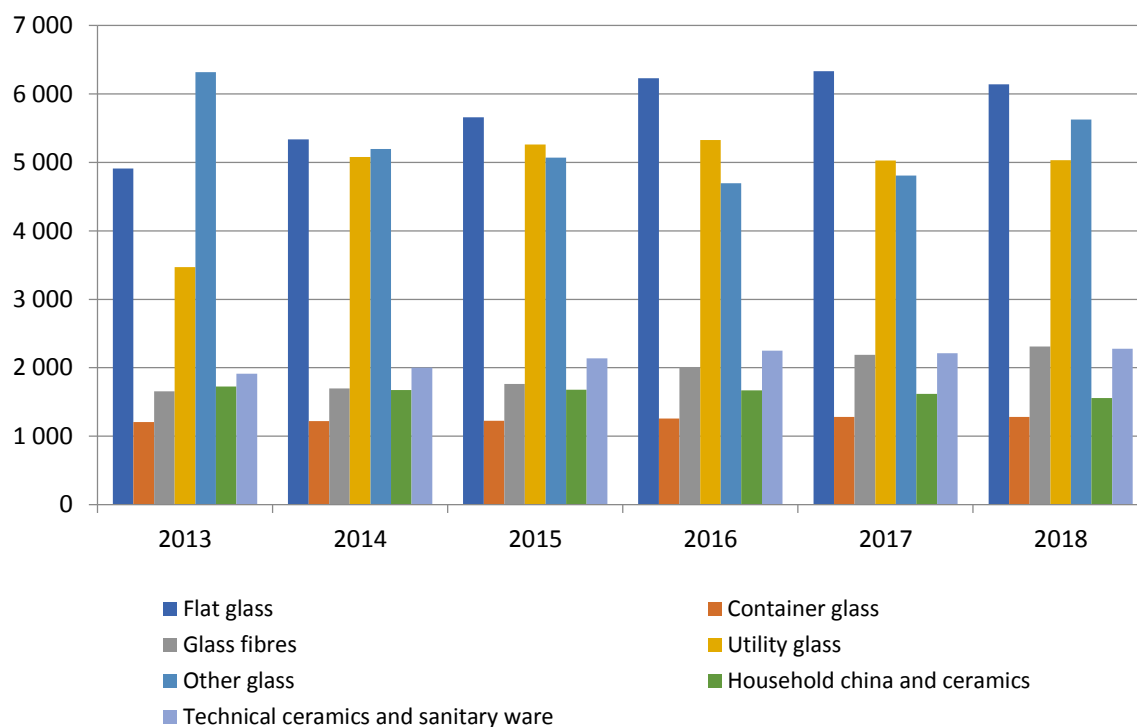
The revenues for household china and ceramics decreased in comparison with previous year (8.73 %). The china producers succeeded to conclude necessary amount of trade contracts thanks to a consistent trade policy, however, they were affected by an unstable situation in countries of the former Soviet Union.

The revenues for technical ceramics and sanitary ware increased by 3.31 %.

Workers

Average accounting number of workers (persons)

	2013	2014	2015	2016	2017	2018	index 18/17
							(%)
Flat glass	4 911	5 338	5 660	6 229	6 335	6 143	97,0
Container glass	1 208	1 219	1 223	1 257	1 280	1 279	99,9
Glass fibres	1 656	1 698	1 763	2 012	2 189	2 312	105,6
Utility glass	3 472	5 079	5 264	5 327	5 030	5 031	100,0
Other glass	6 320	5 198	5 070	4 694	4 806	5 628	117,1
Glass, total	17 567	18 532	18 980	19 519	19 640	20 393	103,8
Household china and ceramics	1 725	1 676	1 680	1 671	1 617	1 555	96,2
Technical ceramics and sanitary ware	1 915	2 000	2 138	2 251	2 210	2 279	103,1
Ceramics, total	3 640	3 676	3 818	3 922	3 827	3 834	100,2
Glass and ceramics, total	21 207	22 208	22 798	23 441	23 467	24 227	103,2

Development of average accounting number of workers (persons)

Total workers number in the glass and ceramic industry shown in 2018 in comparison with 2017 increased by 3,24 %, from which the glass industry showed a growth by 3.83 % (by 753 persons) and the ceramic industry increased by 0.18 % (by 7 persons). The inter-year development of workers number differs in individual branches. Low increase of workers number in spite of necessity and interest of companies to engage new employees is given by shortage not only of qualified working force but also by general shortage of free employees on the labour market.

The workers number decrease in flat glass production is dependent on the up-to-date situation on labour market. The workers number decreased by 192 persons.

The workers number in container glass production is stable for a long time. In the production of glass fibres and products made of the workers number increased by 5.62 %.

The workers number in utility glass production is stable in this time. Companies have to solve a great job-switching of workers and often also their deficit. The workers number is influenced by permanent decline of demand for glass semiproducts for fashion jewellery and reduction the assortment with prevailing share of manual work.

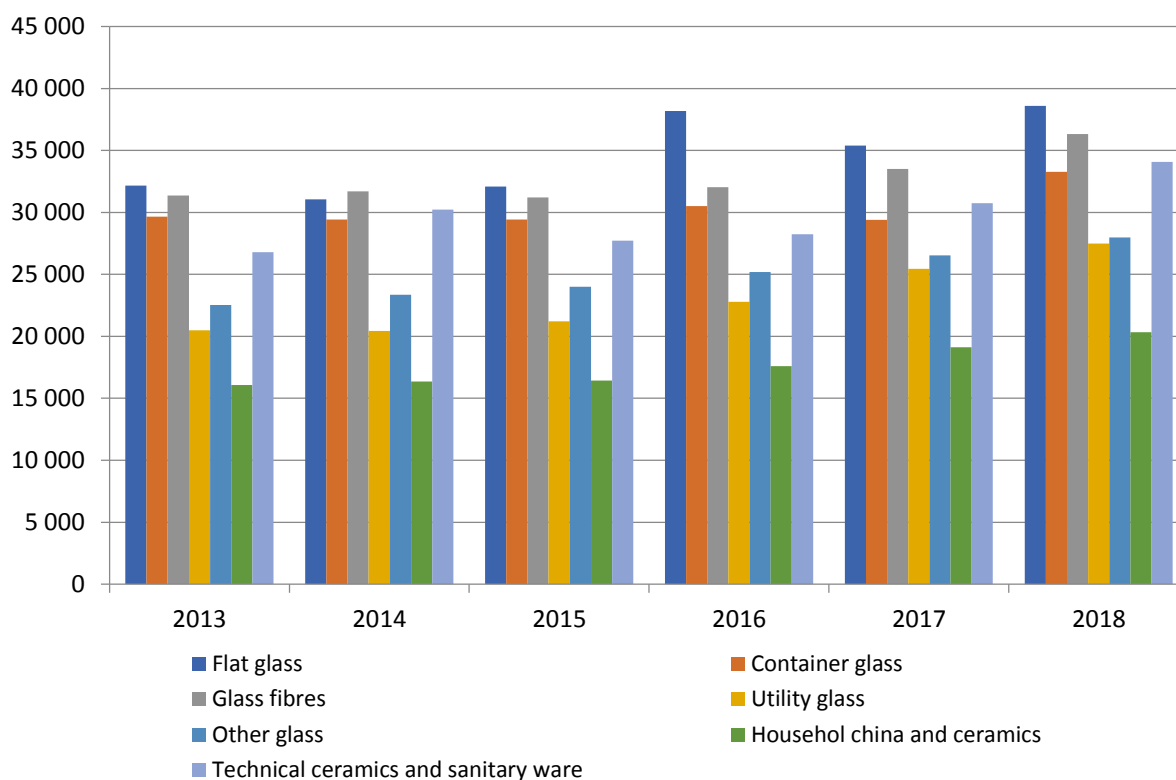
The workers number in household china and ceramics production shows a decline, which is directly connected with a lack of workers on labour market and with the development of this branch. It is possible to say that the situation is stable.

Average month-wages

Average month-wages (CZK)

	2013	2014	2015	2016	2017	2018	index 18/17
							(%)
Flat glass	32 164	31 056	32 093	38 172	35 394	38 587	109,0
Container glass	29 645	29 418	29 431	30 509	29 403	33 275	113,2
Glass fibres	31 355	31 702	31 216	32 041	33 507	36 310	108,4
Utility glass	20 498	20 442	21 207	22 773	25 456	27 494	108,0
Other glass	22 527	23 354	23 997	25 192	26 531	27 968	105,4
Househol china and ceramics	16 066	16 365	16 440	17 606	19 128	20 344	106,4
Technical ceramics and sanitary ware	26 802	30 230	27 721	28 224	30 734	34 074	110,9
Glass and ceramics, total	25 382	25 382	26 042	27 788	28 593	31 150	108,9

Development of average month-wages (CZK)



The development of average month-wages within 2018 and 2017 documents the economic situation of glass and ceramic industry companies.

The average wages increased in the most of production branches.

More and more noticeable tendency in differentiation of wages in mass and practically full-automatized production continues. It means production of flat glass and its processing (38,587 CZK), glass fibres and products made of and container glass. Further on, it applies to branches with more often changes (shorter production series) in the regime of automatized production lines and also a certain share of manual production. Significantly above the wage median in the Czech Republic (29,247 CZK; Source: Czech Statistical Office, 4th quarter) there are average wages reached in the branches of glass fibres and products made of, flat and container glass. The average wage reached in

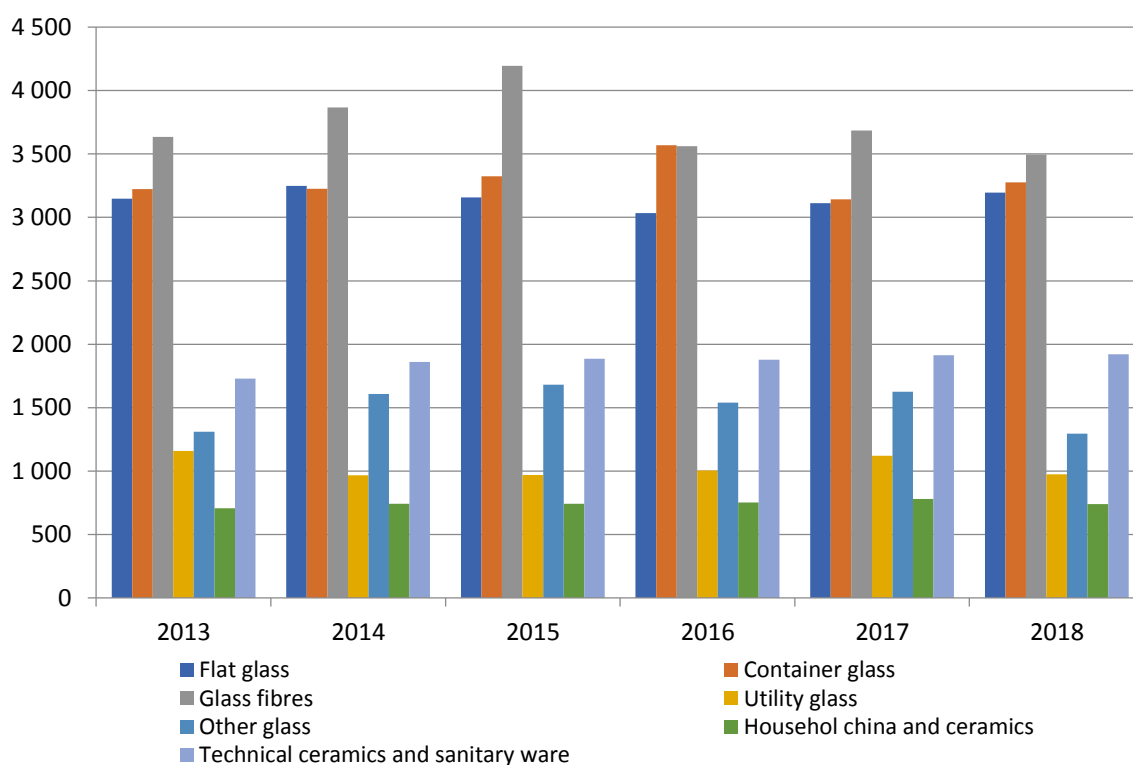
the technical ceramics and sanitary ware (34,074 CZK) is higher than the average wage in the Czech Republic, while the average wage in the sanitary ware is 36,420 CZK. The level of the average wage in other glass is influenced on one side by strengthening the share of more qualified work (a group of technical glass production), and low wages in the production of glass semiproducts for fashion jewellery on the other side. Average wages in utility glass and, especially, in household china stay deeply below the average wage in the Czech Republic.

Productivity of labour

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

	2013	2014	2015	2016	2017	2018	index 18/17
							(%)
Flat glass	3 148	3 249	3 158	3 034	3 112	3 196	102,7
Container glass	3 223	3 226	3 324	3 570	3 142	3 276	104,3
Glass fibres	3 634	3 866	4 195	3 561	3 685	3 496	94,9
Utility glass	1 160	967	970	1 005	1 122	975	86,9
Other glass	1 310	1 608	1 681	1 539	1 627	1 295	79,6
Househol china and ceramics	708	743	743	753	781	739	94,6
Technical ceramics and sanitary ware	1 730	1 860	1 886	1 877	1 914	1 922	100,4
Glass and ceramics, total	2 130	2 217	2 280	2 191	2 198	2 128	96,9

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



The above-mentioned information (development of revenues, workers number and production character) is 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 3.18 % in comparison with previous year.

In 2018 the productivity of labour in flat glass increased by 2.70 %, in container glass it increased by 4.26 %. The productivity of labour in household china and ceramics decreased. The productivity of labour decreased by 13.10 % in utility glass. The productivity of labour in comparison with previous year increased a little by 0.42 % in technical ceramics and sanitary ware.

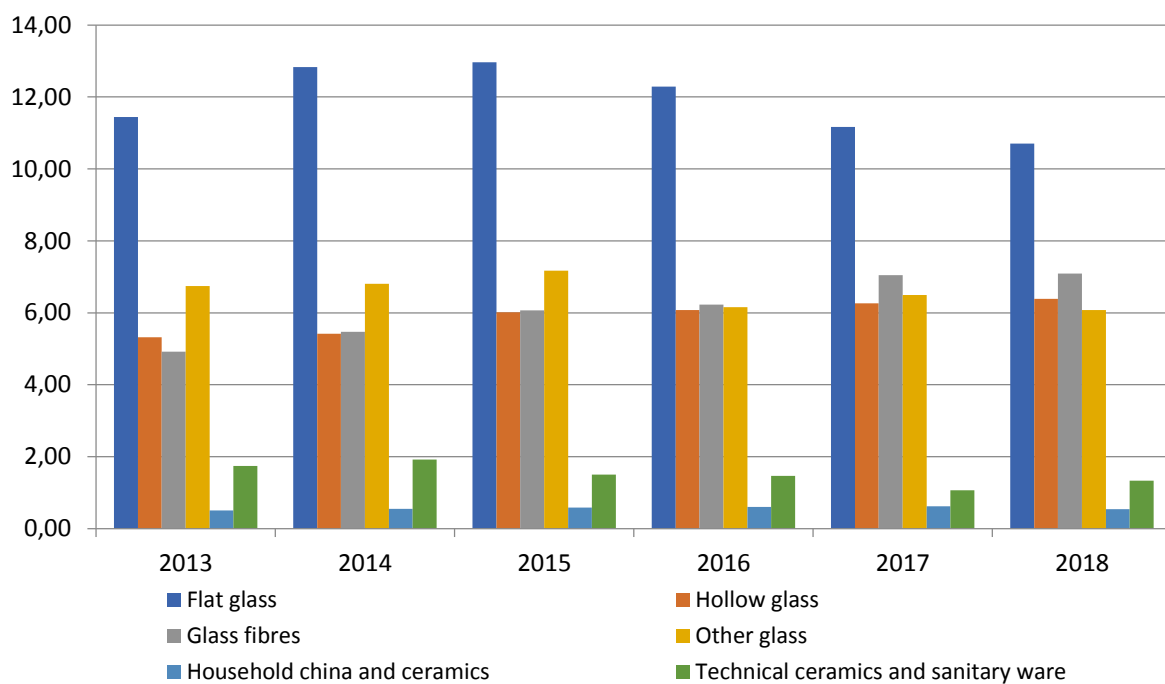
Export

Further on, the export is stated in revenues from direct export in current prices (hereinafter direct export) and total export (i.e. direct export, indirect export).

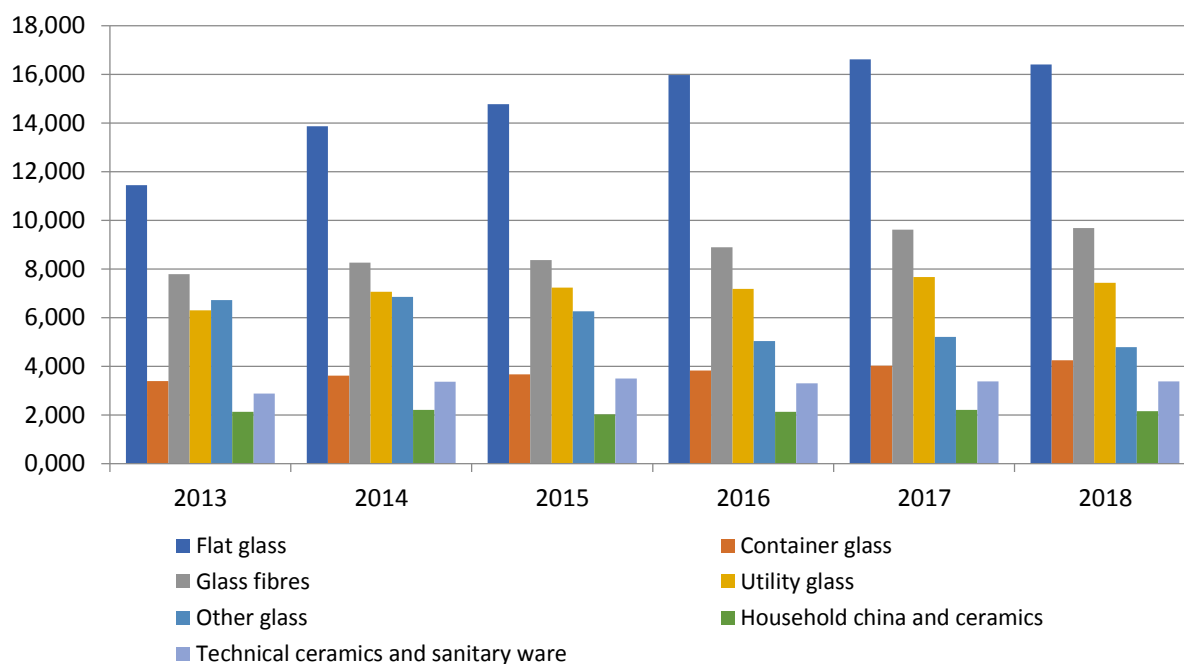
The development of direct export is given in the following table. The hollow glass production includes utility and container glass. Due to the statistical investigation it is not possible to divide hollow glass to above mentioned production branches.

Direct export (bill. CZK)

	2013	2014	2015	2016	2017	2018	index 18/17 (%)
Flat glass	11,44	12,83	12,96	12,29	11,17	10,70	95,8
Hollow glass	5,32	5,42	6,01	6,08	6,26	6,39	102,1
Glass fibres	4,92	5,47	6,07	6,22	7,05	7,09	100,6
Other glass	6,74	6,81	7,17	6,15	6,49	6,08	93,7
Glass total	28,42	30,53	32,21	30,74	30,97	30,26	97,7
Household china and ceramics	0,51	0,55	0,59	0,60	0,62	0,54	86,6
Technical ceramics and sanitary ware	1,74	1,92	1,50	1,47	1,07	1,33	124,3
Ceramics, total	2,25	2,47	2,09	2,07	1,69	1,87	110,5
Glass and ceramics	30,67	33,00	34,30	32,82	32,66	32,13	98,4

Development of direct export (bill. CZK)**Export (bill. CZK)**

	2013	2014	2015	2016	2017	2018	index 18/17
							(%)
Flat glass	11,450	13,866	14,778	15,980	16,624	16,415	98,7
Container glass	3,391	3,613	3,667	3,829	4,031	4,245	105,3
Glass fibres	7,786	8,266	8,374	8,897	9,614	9,692	100,8
Utility glass	6,298	7,065	7,240	7,181	7,678	7,433	96,8
Other glass	6,730	6,851	6,266	5,036	5,214	4,784	91,8
Glass, total	35,655	39,661	40,325	40,923	43,161	42,569	98,6
Household china and ceramics	2,137	2,209	2,019	2,132	2,212	2,152	97,3
Technical ceramics and sanitary ware	2,882	3,364	3,501	3,307	3,382	3,387	100,1
Ceramics, total	5,019	5,573	5,520	5,439	5,594	5,539	99,0
Glass and ceramics, total	40,674	45,234	45,845	46,362	48,755	48,108	98,7

Development of export (bill. CZK)

The glass and ceramic industry of the Czech Republic is oriented to export, i.e. it is directly influenced by economic changes in the world, especially in the European Union where 74.5 % of export of investigated production branches are directed.

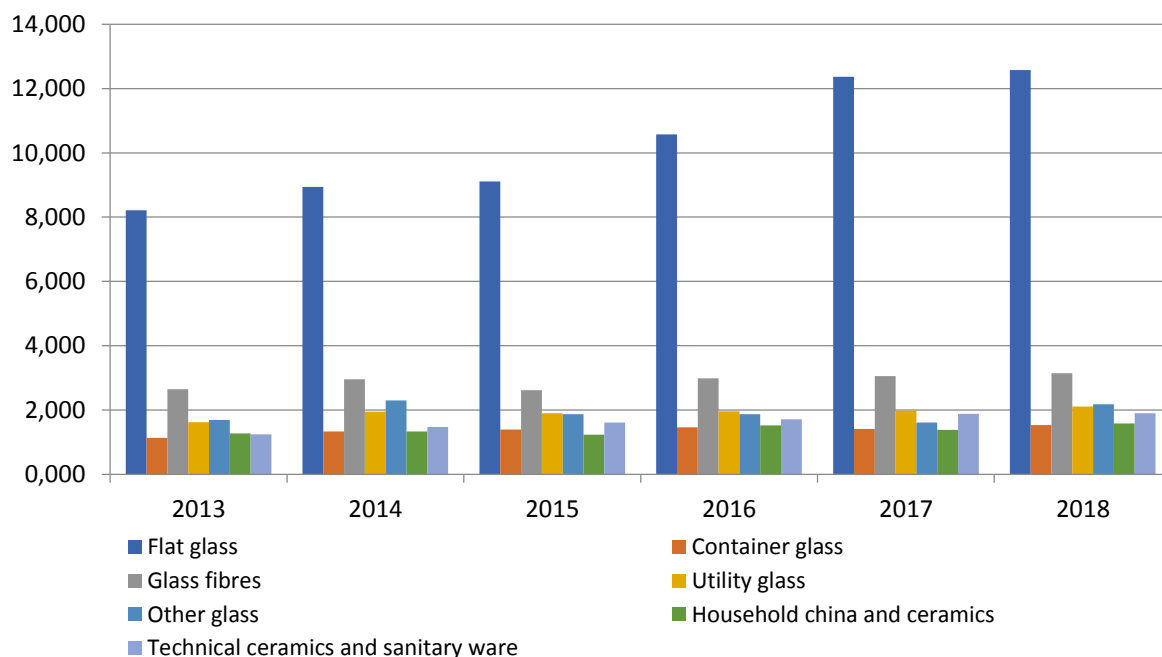
After the decline of this branch export within years 2008 and 2009, the export has been increasing since 2010. However, in comparison with 2017 the direct export in 2018 decreased a little by 1.62 %. The total export decreased by 1.33 %. The direct export of investigated branches in 2018 was 32.13 bill. CZK, total export was 48.11 bill. CZK.

The export development in 2018 in individual branches is given in more details in Chapter 5, which analyses the export and import.

Import**Import (bill. CZK)**

	2013	2014	2015	2016	2017	2018	index 18/17 (%)
Flat glass	8,212	8,937	9,111	10,57	12,367	12,573	101,7
Container glass	1,129	1,334	1,397	1,459	1,409	1,532	108,7
Glass fibres	2,646	2,960	2,617	2,982	3,054	3,149	103,1
Utility glass	1,624	1,953	1,897	1,956	1,978	2,106	106,5
Other glass	1,693	2,295	1,875	1,868	1,616	2,183	135,1
Glass, total	15,304	17,479	16,897	18,835	20,424	21,543	105,5
Household china and ceramics	1,270	1,33	1,232	1,518	1,385	1,582	114,2
Technical ceramics and sanitary ware	1,245	1,47	1,615	1,716	1,879	1,902	101,2
Ceramics, total	2,515	2,800	2,847	3,234	3,264	3,484	106,7
Glass and ceramics, total	17,819	20,279	19,744	22,069	23,688	25,027	105,7

Import development (bill. CZK)



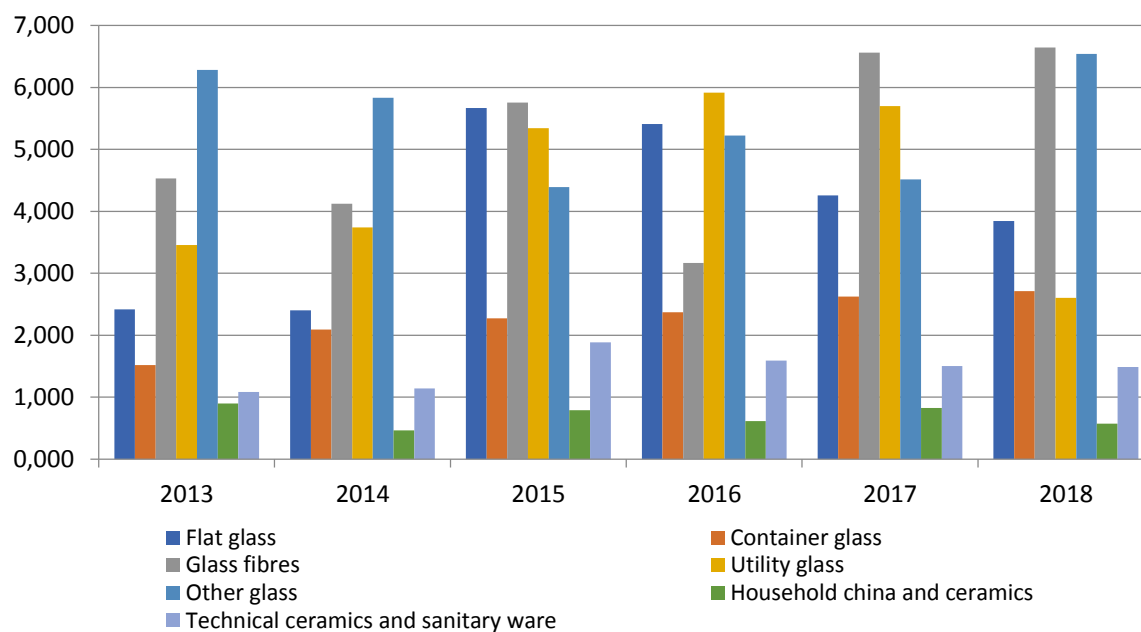
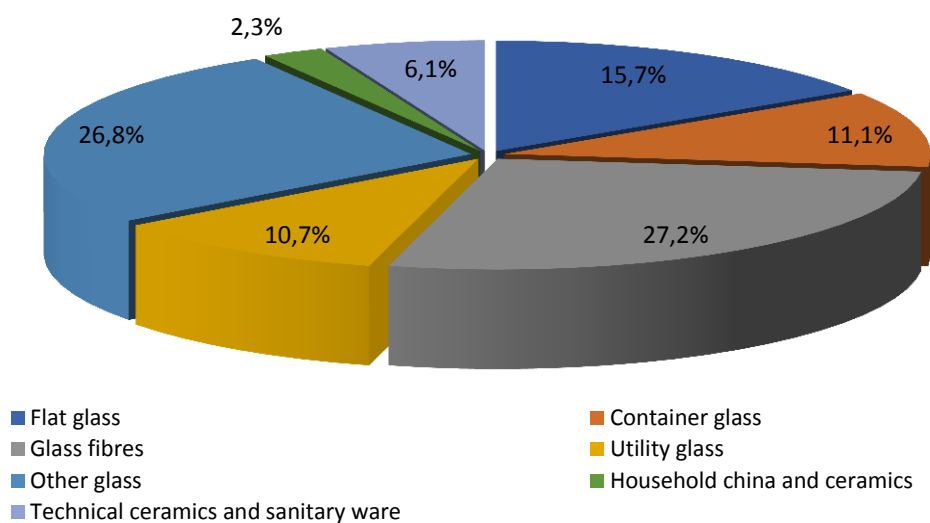
The total import of the glass and ceramic industry products has been decreasing since 2011. An increase appeared in 2014. In 2015 the inter-year decrease was by 2.6 % (2.03 bill. CZK), but in 2017 and 2018 it increased again, in 2018 it was by 5.65 %.

The import development in individual production branches in 2018 is given in more details in Chapter 5.

Balance of foreign trade

Balance of foreign trade (bill. CZK)

	2013	2014	2015	2016	2017	2018	index 18/17
							(%)
Flat glass	2,415	2,402	5,667	5,410	4,257	3,842	90,3
Container glass	1,517	2,089	2,270	2,370	2,622	2,713	103,5
Glass fibres	4,532	4,120	5,757	3,168	6,560	6,643	101,3
Utility glass	3,457	3,739	5,343	5,915	5,700	2,601	45,6
Other glass	6,282	5,830	4,391	5,225	4,513	6,543	145,0
Glass, total	18,203	18,180	23,428	22,088	22,088	21,026	95,2
Household china and ceramics	0,899	0,466	0,787	0,614	0,827	0,570	68,9
Technical ceramics and sanitary ware	1,082	1,143	1,886	1,591	1,503	1,485	98,8
Ceramics, total	1,981	1,609	2,673	2,205	2,205	2,055	93,2
Glass and ceramics, total	20,184	19,789	26,101	24,293	24,293	23,081	95,0

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 2013 till 2018 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 significantly important export orientation of this industry. The balance of foreign trade was 23.081 bill. CZK in 2018, it decreased by 4.99 % in comparison with 2017.

Effective home demand

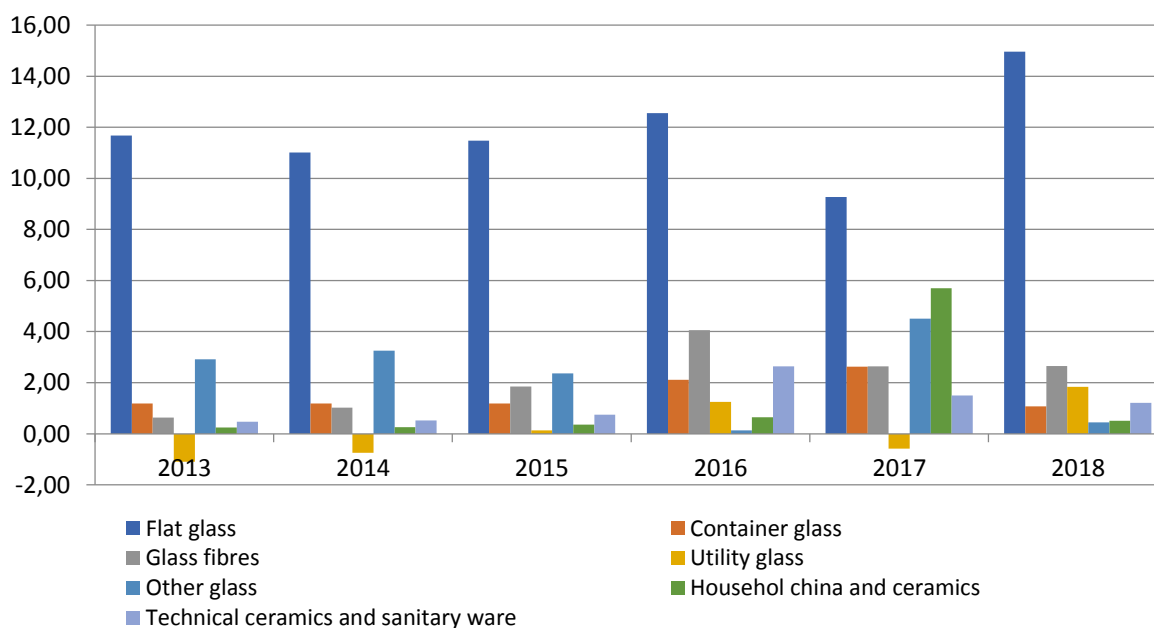
The effective home demand index is defined by the formula:

(The revenues from industrial activities + Import – Export)

Effective home demand (bill. CZK)

	2013	2014	2015	2016	2017	2018
Flat glass	11,67	11,01	11,47	12,56	9,27	14,95
Container glass	1,19	1,18	1,18	2,12	2,62	1,08
Glass fibres	0,64	1,02	1,85	4,06	2,64	2,65
Utility glass	-1,10	-0,75	0,13	1,25	-0,58	1,83
Other glass	2,92	3,25	2,36	0,13	4,51	0,45
Househol china and ceramics	0,25	0,26	0,36	0,64	5,70	0,51
Technical ceramics and sanitary ware	0,47	0,52	0,75	2,64	1,50	1,21

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.

Conclusions

In a global standard the world trade and also the processing industry increases and indices of confidence in a private sector strengthen their position decisively. On the other side the economic and political uncertainties in the world act negatively.

Czech economy slightly slows down, especially, due to global outer and inner conditions. In 2018 the growth of revenues slightly decreased, but in spite of this it had not reached the level of 2016 and previous years. The main reason was an increase of demand for automotive industry products, positive development in the building industry in the Czech Republic and a success of producers in sales on new markets. The revenues for sale of the own products and services decreased (by 2.23 %) in comparison with 2017 and, as a result of this, the productivity of labour from sales slightly decreased by 3.18 %. In comparison with previous year the revenues for the direct export decreased by 1.62 %. The total export decreased by 1.33 %, as well. Both values reached higher values than in the fault year 2008. The balance of foreign trade decreased by 4.99 %.

The results in 2018 and the development in 2019 are dependent on the development of economy of the Czech Republic and on the development on foreign markets.

In the summary of prediction of the Ministry of Finance from July 2019 there is stated:

The reduction of global economic expansion, which started in 2018, continues also in this year. It becomes evident that protectionism and escalation of tension increases in international trade relations, and so connected uncertainties of entrepreneurs and consumers as far as future economic development. In addition, risks significantly expand. The economy of the European Union is supported by a strong home demand and by a situation on labour market. Activities oriented to export are less successful. A basic source of uncertainties is the culmination of the process of terminating the United Kingdom' membership of the European Union.

In the framework of current account of balance of payment, it is possible to expect an increase of a positive balance of goods balance in 2019. Economic growth in the 1st quarter of 2019 overcame expectations. However, it was caused to a large extent by temporary factors, e.g. by creation of stocks in the United Kingdom before the initial terminating of the European Union or by mild winter. The outlook for the remaining part of this year is less favourable.

From the point of view of inter-year sight the most dynamic was the growth of investments to the fixed capital in amount of 3.0 %, in spite of expected significant slowdown caused by lower investments of private sector co-financed by funds of the European Union.

The economic growth should be henceforth pull by consumption of households, which should reflect permanently strong wage dynamics at extremely low rate of unemployment and also a decisive increase of old age pensions. Investments to a fixed capital and a consumption of a sector of government institutions should positively contribute, however less than in 2018. The contribution of foreign trade should also reach slightly positive values.

Prediction of the development of main macroeconomic indices

((Source: Ministry of Finance, July 2019))

		2017	2018	2019
Gross domestic product	increase %, s.c.	4,4	3,0	2,5
Average inflation rate	%	2,5	2,1	2,5
Unemployment rate	average %	2,9	2,2	2,2
Wages and salaries	increase %, b.c.	8,3	9,5	7,4
CZK / EUR	average per year	26,3	25,6	25,6

For a favourable development of the glass and ceramic industry the above mentioned facts are good news, however, it cannot be overestimated. The export orientation and dependence on a great number of related industrial branches, for which it delivers its products, make the glass and ceramic industry very vulnerable. Not only development of home demand but also future economic development, especially in Europe - the greatest export territory of the Czech glass and ceramic industry - will be important. However, exporters will have to face up also loosing markets in regions stricken with war conflicts. The increasing competition of countries of the Third World, and mainly from the Far East, is permanently a great problem. This competition impinges without exceptions all branches of the glass and ceramic industry investigated in this Annual Report.

Glass and ceramic industry is a traditional branch of the processing industry of the Czech Republic. During its long-term existence this branch went through periods of prosperity and also recessions. It is possible to say, that it has never face up to such uncertainty and unpredictability of development on markets like in the last years. For companies' owners and managers, it is necessary not only to predict at the very least development on markets but also to search new markets and strengthen their marketing activities. Also a consistent orientation to the production with high added value must be carried out. At the same time the product innovations and related services must be strengthen as much as possible.



EXPORT AND IMPORT DEVELOPMENT ACCORDING TO PRODUCTION BRANCHES IN THE PERIOD FROM 2013 TILL 2018

Export

In the following text 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 2018 reached an amount of 16,414.9 mill. CZK. In comparison with 2017 the export decreased by 1.3 %.

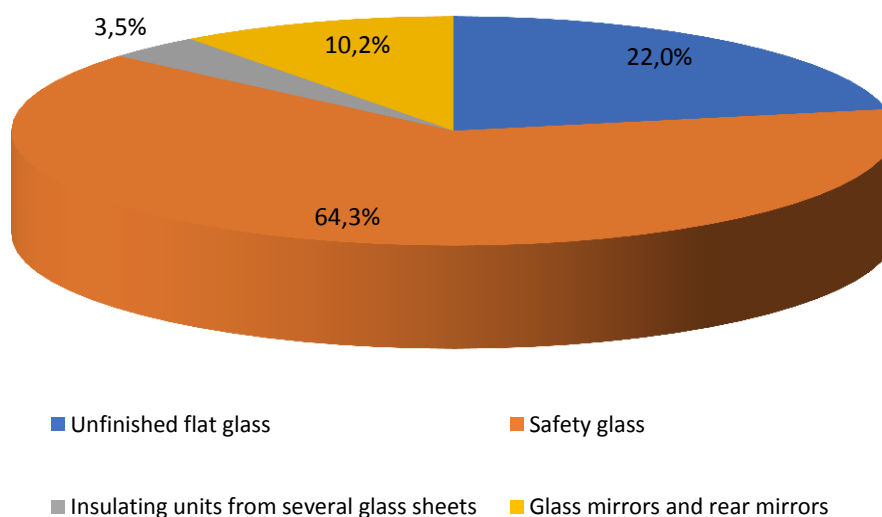
Export of flat glass according to the assortment

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Unfinished flat glass	274 751,1	3 103,5	27,1	294 228,3	3 228,5	23,3	315 500,0	3 522,0	23,8
Safety glass	101 128,6	6 694,0	58,5	109 563,2	8 743,2	63,1	110 371,1	9 144,3	61,9
Insulating units from several glass sheets	8 717,7	318,0	2,8	13 727,3	474,6	3,4	14 039,3	479,7	3,2
Glass mirrors and rear mirrors	30 233,5	1 334,1	11,7	32 984,8	1 419,3	10,2	40 159,6	1 632,3	11,0
Totally	414 830,9	11 449,6	100,0	450 503,6	13 865,6	100,0	480 070,0	14 778,3	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Unfinished flat glass	337 721,7	3 836,2	25,2	339 093,6	3 419,8	20,6	350 230,9	3 609,8	22,0
Safety glass	125 758,2	9 144,3	60,1	143 574,6	10 827,5	65,1	149 221,8	10 557,2	64,3
Insulating units from several glass sheets	14 756,7	538,8	3,5	17 068,4	632,7	3,8	14 956,7	575,4	3,5
Glass mirrors and rear mirrors	47 306,7	1 687,2	11,1	51 384,0	1 744,3	10,5	51 971,1	1 672,5	10,2
Totally	525 543,3	15 206,5	100,0	551 120,6	16 624,3	100,0	566 380,5	16 414,9	100,0

Structure of export of flat glass according to the assortment in 2018 (CZK)

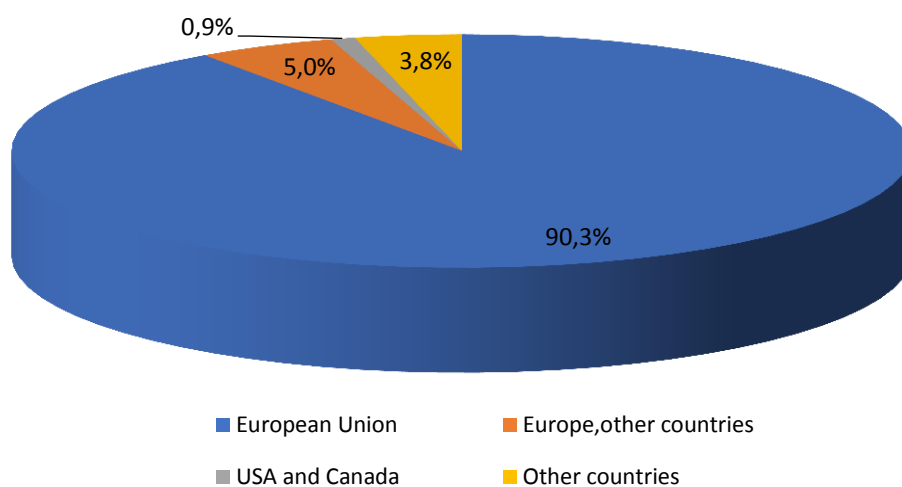
The greatest share of export in weight units had the unfinished flat glass in 2018 with 62 % (88 % was created by float glass), followed by the safety glass export with 26 %. As far as the export in CZK, the situation was contrary. The greatest share had the export of safety glass with 64.3 %. The share of the unfinished flat glass export was 22 %.



Export of flat glass according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	379 311,4	9 967,2	87,1	401 568,6	12 449,3	89,8	444 096,7	13 289,0	89,9
Europe,other countries	20 395,2	800,4	7,0	17 517,6	749,0	5,4	19 012,2	561,8	3,8
USA and Canada	1 341,1	51,9	0,5	2 647,5	128,2	0,9	3 066,2	243,9	1,7
Other countries	13 783,2	630,1	5,5	28 769,9	539,1	3,9	13 895,0	683,6	4,6
Totally	414 830,9	11 449,6	100,0	450 503,6	13 865,6	100,0	480 070,1	14 778,3	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	489 230,4	14 406,7	94,7	278 313,2	13 068,5	78,6	518 396,6	14 824,1	90,3
Europe,other countries	19 886,3	534,8	3,5	31 523,5	696,1	4,2	27 125,8	817,6	5,0
USA and Canada	2 265,2	163,9	1,1	3 446,0	246,1	1,5	3 354,5	144,3	0,9
Other countries	14 161,4	101,0	0,7	237 838,8	2 613,6	15,7	17 503,7	628,9	3,8
Totally	525 543,3	15 206,4	100,0	551 121,5	16 624,3	100,0	566 380,6	16 414,9	100,0

Structure of export of flat glass according to territories in 2018 (CZK)

A substantial part of flat glass export was directed to the European Union countries. In 2018 the share on export was 90.3 %. The greatest customers were France, Germany, Italy, Spain and the Netherlands. The greatest customers out of the European Union were the USA and Bosnia and Herzegovina.

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

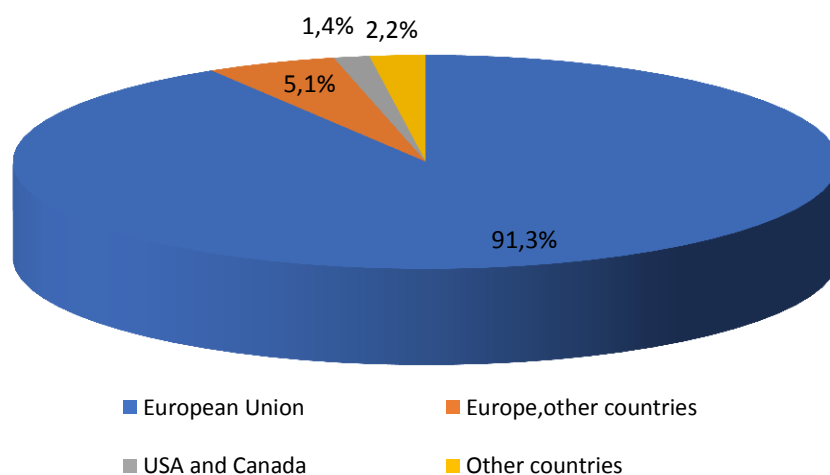
Container glass export in 2018 was 4245.0 mill. CZK. In comparison with 2017 the export slightly increased.

Export of container glass according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	280 335,3	2 993,9	88,3	286 545,4	3 244,0	89,8	313 740,1	3 514,7	90,9
Europe,other countries	23 225,2	286,4	8,4	17 468,5	236,0	6,5	11 019,4	168,1	4,3
USA and Canada	1 430,8	30,8	0,9	3 809,5	85,0	2,4	3 587,3	79,8	2,1
Other countries	4 302,6	80,0	2,4	2 129,6	47,9	1,3	5 026,7	104,8	2,7
Totally	309 293,9	3 391,1	100,0	309 953,0	3 612,9	100,0	333 373,4	3 867,4	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	287 631,7	3 344,9	87,3	308 571,3	3 647,3	90,5	324 197,6	3 875,3	91,3
Europe,other countries	11 595,8	183,7	4,8	14 316,0	208,2	5,2	14 883,5	216,9	5,1
USA and Canada	2 177,7	84,1	2,2	2 365,4	76,5	1,9	1 740,1	59,8	1,4
Other countries	9 080,8	217,2	5,7	3 565,2	99,2	2,5	4 049,7	93,0	2,2
Totally	310 486,0	3 829,9	100,0	328 817,9	4 031,2	100,0	344 870,9	4 245,0	100,0

Structure of export of container glass according to territories in 2018 (CZK)



The export is determined by the character of use of a substantial part of container glass assortment. It is not economical to deliver bottles and preserve jars to long distances. In 2018 a 91.3 % of export was intended to the European Union countries. The greatest customers were Germany, Poland, Slovakia, Austria and Italy. The 5.1 % of export was directed to other European countries. The greatest customers from these countries were Switzerland and Russia.

Glass fibres and products made of

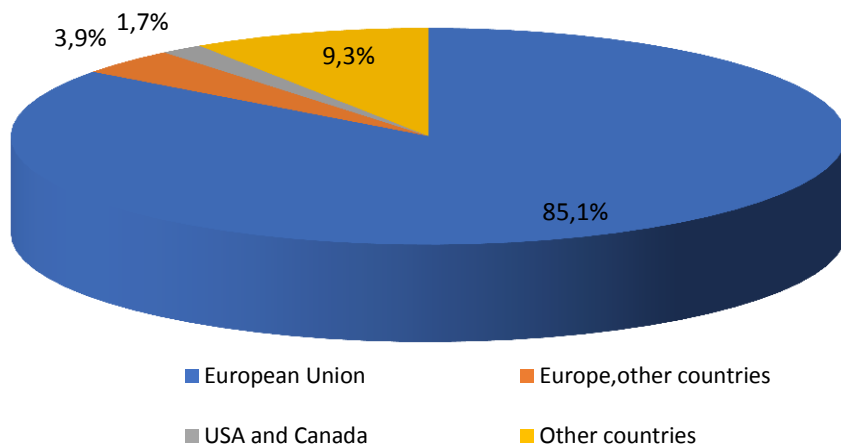
The export of glass fibres and products made of in 2018 was 9692.5 mill. CZK. In comparison with 2017 it increased slightly.

Export of glass fibres and products made of according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	134 110,3	6 785,8	87,1	131 985,5	6 544,6	79,2	143 555,7	7 240,3	86,5
Europe,other countries	8 404,4	252,0	3,2	4 546,7	231,7	2,8	4 392,0	233,0	2,8
USA and Canada	1 163,9	75,2	1,0	1 870,1	5,3	0,1	3 405,5	169,0	2,0
Other countries	15 697,0	673,5	8,6	14 273,1	1 484,7	18,0	13 727,9	732,2	8,7
Totally	159 375,6	7 786,5	100,0	152 675,4	8 266,3	100,0	165 081,0	8 374,5	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	149 212,2	7 689,1	86,4	165 292,0	8 080,6	84,0	168 406,1	8 250,1	85,1
Europe,other countries	3 032,1	198,0	2,2	4 761,5	267,1	2,8	6 995,0	382,6	3,9
USA and Canada	2 202,7	94,3	1,1	5 725,5	262,1	2,7	3 048,6	162,6	1,7
Other countries	16 751,7	916,2	10,3	19 512,4	1 004,8	10,5	17 832,4	897,2	9,3
Totally	171 198,8	8 897,6	100,0	195 291,4	9 614,6	100,0	196 282,2	9 692,5	100,0

Structure of export of glass fibres and products made of according to territories in 2018 (CZK)



A substantial part of export (85.1 %) was realized in the European Union countries. The greatest customers in 2018 were Germany, Poland, France, Slovakia, Italy and Great Britain. As far as countries out of the European Union it was Serbia, Bosnia and Herzegovina, and the USA.

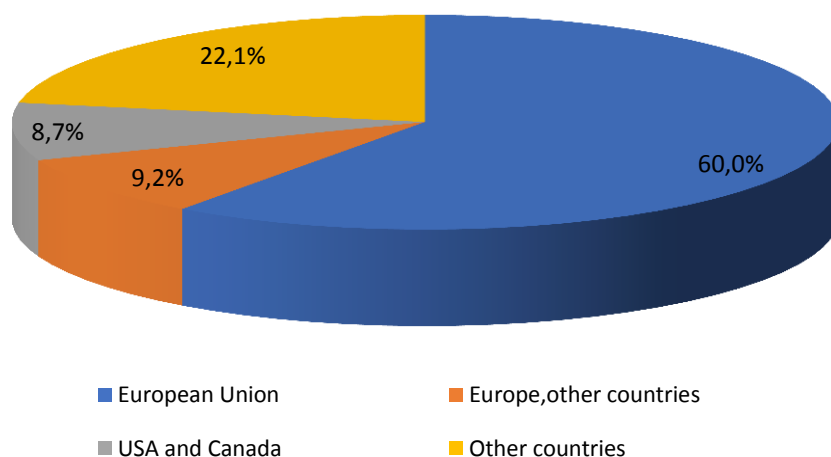
Utility glass

The export of utility glass belongs to traditional export branches of the Czech processing industry. In 2018 the export was in amount of 7433.2 mill. CZK. In comparison with 2017 it decreased a little.

Export of utility glass according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	46 550,5	3 044,2	48,3	53 136,5	3 651,4	51,7	52 511,3	3 913,3	54,0
Europe,other countries	9 418,2	978,2	15,5	8 921,2	962,5	13,6	5 985,7	611,1	8,4
USA and Canada	2 485,6	420,3	6,7	2 898,4	489,7	6,9	4 111,2	671,9	9,3
Other countries	12 470,9	1 855,5	29,5	13 749,4	1 961,0	27,8	14 805,8	2 044,0	28,2
Totally	70 925,2	6 298,2	100,0	78 705,5	7 064,5	100,0	77 413,9	7 240,3	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	57 024,5	4 069,3	56,7	60 368,8	4 359,2	56,8	66 074,9	4 458,5	60,0
Europe,other countries	6 354,4	626,6	8,7	6 371,4	599,2	7,8	8 698,2	685,9	9,2
USA and Canada	4 645,5	673,0	9,4	5 175,7	699,0	9,1	4 775,1	645,1	8,7
Other countries	13 604,2	1 812,5	25,2	15 788,6	2 020,9	26,3	13 541,8	1 643,7	22,1
Totally	81 628,6	7 181,4	100,0	87 704,5	7 678,2	100,0	93 089,9	7 433,2	100,0

Structure of export of utility glass according to territories in 2018 (CZK)

It is possible to say that the utility glass assortment is exported to the whole world. The share of export in 2018 to the European countries was 60 %. The greatest customers were Germany, Bulgaria, Poland, France, Slovakia, Austria, Italy, and Slovenia. The share on export directed to the Other countries (export to 80 countries) and to the USA and Canada was in amount of 30.8 %. The greatest customers were China, Russia, Egypt, Turkey, the USA, and Indonesia.

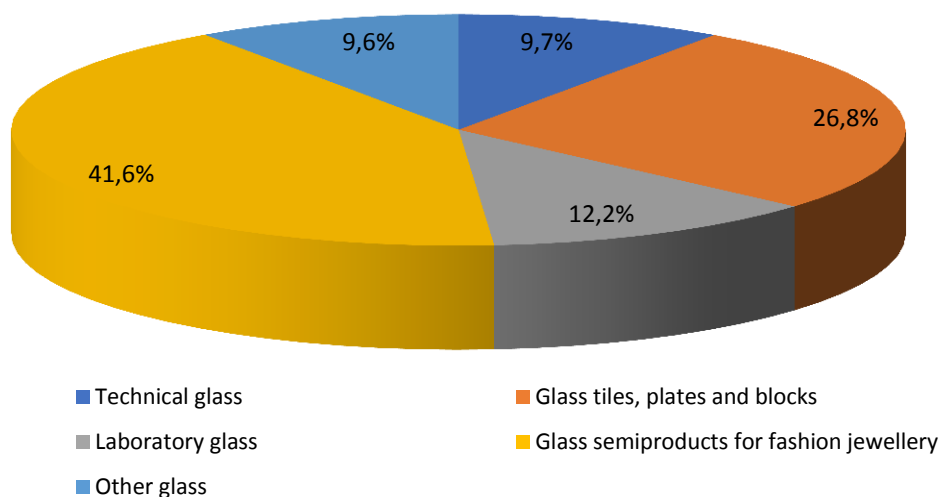
Other glass

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 production of lighting glass, is incorporated.

The other glass export in 2018 reached amount of 4784 mill. CZK. In 2018 lighting glass which is not stated in codes for the export and import of glass (Products for electrical lighting devices made of glass, except reflectors and facet glass etc., glass decorations for electrical chandeliers, approx. 300 mill. CZK) was not included to the export.

Export of other glass according to assortment

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical glass	3 813,5	405,6	6,0	3 936,5	464,2	6,8	4 176,8	500,0	8,0
Glass tiles, plates and blocks	71 226,7	1 422,2	21,1	58 463,5	1 497,5	21,9	57 652,5	1 444,9	23,1
Laboratory glass	3 012,4	442,3	6,6	3 095,1	508,9	7,4	3 140,2	556,9	8,9
Glass semiproducts for fashion jewellery	5 075,4	4 293,7	63,8	4 889,6	4 168,8	60,8	4 606,9	3 546,1	56,6
Other glass	10 235,6	166,5	2,5	16 434,0	211,6	3,1	20 982,5	217,9	3,5
Totally	93 363,6	6 730,3	100,0	86 818,7	6 851,0	100,0	90 558,9	6 265,8	100,0
	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical glass	4 816,8	543,9	10,8	4 251,5	511,4	9,8	3 963,7	464,4	9,7
Glass tiles, plates and blocks	57 249,9	1 368,4	27,2	64 013,4	1 493,2	28,6	57 281,5	1 281,9	26,8
Laboratory glass	2 789,3	555,3	11,0	2 851,4	562,2	10,8	3 007,4	585,0	12,2
Glass semiproducts for fashion jewellery	3 755,4	2 319,3	46,0	3 565,6	2 216,4	42,5	3 477,8	1 992,1	41,6
Other glass	41 079,0	249,7	5,0	32 414,5	430,8	8,3	25 781,0	460,6	9,6
Totally	109 690,4	5 036,6	100,0	107 096,4	5 214,0	100,0	93 511,5	4 784,0	100,0

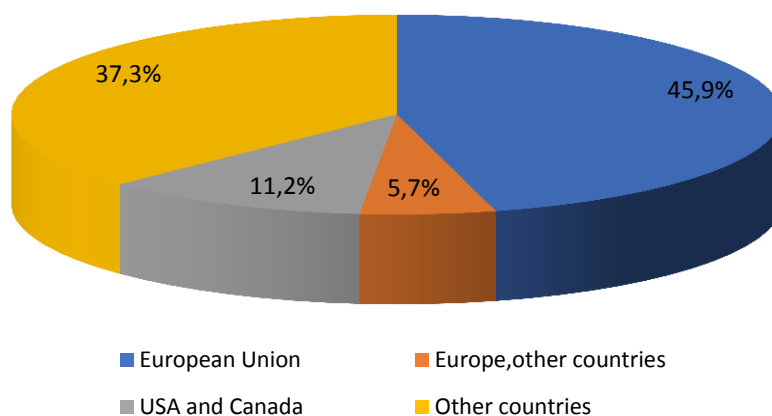
Structure of other glass export according to assortment in 2018 (CZK)

The greatest share with 41.6 % has 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 2017 the share of glass tiles, plates and bricks (26.8 %) decreased, and the share of glass fashion jewellery semiproducts decreased again (41.6 %).

Export of other glass according to territories

	2013			2014			2015		
	Netto	mil.Kč	share	Netto	mil.Kč	share	Netto	mil.Kč	share
	(t)		(%)	(t)		(%)	(t)		(%)
European Union	50 455,9	2 415,2	29,5	53 380,2	2 477,6	36,2	52 508,5	2 394,6	38,2
Europe,other countries	4 600,3	410,0	5,0	5 536,7	455,7	6,7	3 364,8	323,9	5,2
USA and Canada	7 106,4	466,1	5,7	6 314,0	490,5	7,2	5 998,9	599,3	9,6
Other countries	31 201,0	3 439,0	42,0	21 587,9	3 427,1	50,0	28 686,6	2 948,0	47,0
Totally	93 363,6	8 187,2	82,2	86 818,8	6 850,9	100,0	90 558,8	6 265,8	100,0

	2016			2017			2018		
	Netto	mil.Kč	share	Netto	mil.Kč	share	Netto	mil.Kč	share
	(t)		(%)	(t)		(%)	(t)		(%)
European Union	66 729,1	2 025,3	40,2	56 595,1	2 228,1	42,7	47 180,6	2 194,9	45,9
Europe,other countries	5 215,7	346,7	6,9	5 298,0	317,5	6,1	4 434,8	271,0	5,7
USA and Canada	9 537,4	598,8	11,9	11 916,4	634,5	12,2	11 159,8	534,1	11,2
Other countries	28 208,3	2 065,9	41,0	33 187,0	2 033,9	39,0	30 736,2	1 784,0	37,3
Totally	109 690,5	5 036,7	100,0	106 996,5	5 214,0	100,0	93 511,4	4 784,0	100,0

Structure of export of other glass according to territories in 2018 (CZK)

In contrast with flat, container and fibre glass export and products made of, the most of the other glass export (37.3 %) 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 2018 the share of export of glass tiles, plates and blocks assortment (55.4 %), laboratory glass (69 %) and technical glass (55.9 %) to the European Union prevailed. On the other side the export of glass semiproducts for fashion jewellery assortment (74.8 %) prevailed 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, China, Hongkong, the USA, Japan, and India.

Household china and ceramics

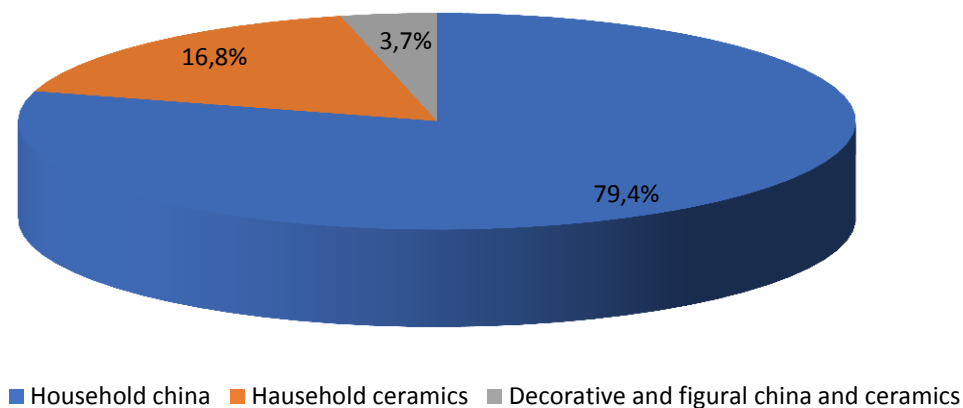
The household china export similarly as the utility glass export belongs to the traditional export branches of the Czech processing industry. In 2018 the export was 2152.3 mill. CZK. In comparison with 2017 the export increased by 2.69 %.

Export of household china and ceramics according to the assortment

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Household china	17 763,6	1 890,4	88,5	15 730,9	1 909,7	86,4	14 470,7	1 739,7	86,2
Household ceramics	1 637,8	154,3	7,2	1 967,2	225,0	10,2	1 799,5	202,2	10,0
Decorative and figural china and ceramics	369,7	91,9	4,3	323,7	74,5	3,4	303,3	77,3	3,8
Totally	19 771,1	2 136,6	100,0	18 021,8	2 209,2	100,0	16 573,5	2 019,2	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Household china	13 449,6	1 720,4	80,7	13 260,5	1 733,3	78,4	13 173,1	1 710,0	79,4
Household ceramics	1 940,1	352,8	16,5	2 118,7	408,2	18,5	1 905,9	362,2	16,8
Decorative and figural china and ceramics	283,6	59,2	2,8	920,8	70,2	3,2	363,1	80,1	3,7
Totally	15 673,3	2 132,4	100,0	16 300,0	2 211,7	100,0	15 442,0	2 152,3	100,0

Structure of export of household china and ceramics according to the assortment in 2018 (CZK)

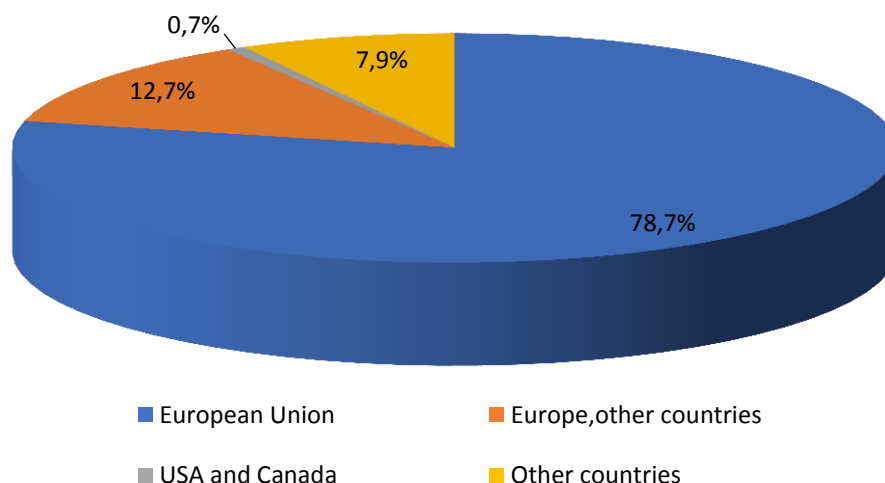


The share of household china in the branch household china and ceramics is 79.4 %.

Export of household china and ceramics according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	15 499,8	1 277,8	59,8	14 201,3	1 353,2	61,3	13 662,1	1 426,9	70,7
Europe,other countries	3 054,4	539,0	25,2	2 473,0	492,2	22,3	1 569,4	363,7	18,0
USA and Canada	114,8	27,0	1,3	120,0	24,3	1,1	134,8	22,1	1,1
Other countries	1 102,1	292,8	13,7	1 227,5	339,6	15,4	1 207,2	206,5	10,2
Totally	19 771,1	2 136,6	100,0	18 021,8	2 209,3	100,0	16 573,5	2 019,2	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	13 111,4	1 578,2	74,0	13 705,1	1 682,8	76,1	13 252,9	1 694,9	78,7
Europe,other countries	1 745,0	349,9	16,4	1 517,4	322,0	14,6	1 324,1	272,6	12,7
USA and Canada	109,1	19,8	0,9	167,7	27,8	1,3	101,9	14,5	0,7
Other countries	707,8	184,5	8,7	909,8	179,1	8,1	763,0	170,3	7,9
Totally	15 673,3	2 132,4	100,0	16 300,0	2 211,7	100,0	15 441,9	2 152,3	100,0

Structure of export of household china and ceramics according to territories in 2018 (CZK)

As follows from the above given table and graph, there is visible that export to all investigated territories is relatively stable without significant decreases and increases.

The greatest customers in the European Union countries were Germany, Slovakia, Sweden and Austria. In the other European countries, it was Russia 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 2018 were the USA and Korea.

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

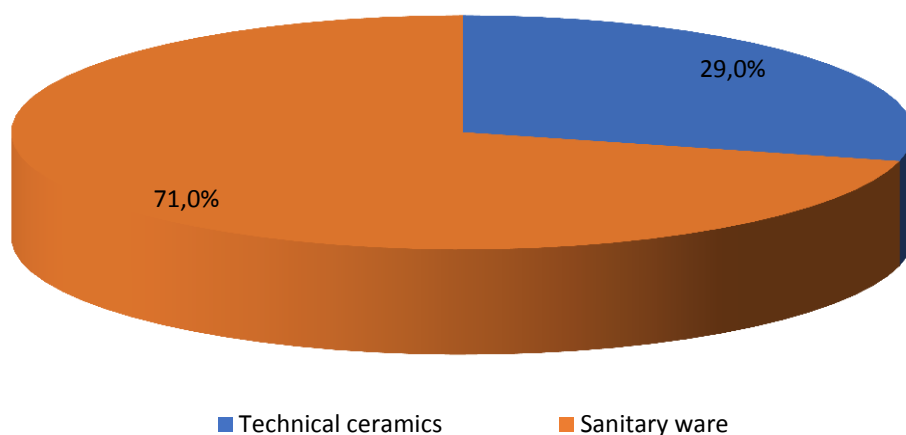
Technical ceramics and sanitary ware

The technical ceramics and sanitary ware export was 3387.2 mill. CZK in 2018. In comparison with 2017 the export increased.

Export of technical ceramics and sanitary ware according to the assortment

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical ceramics	7 524,0	1 014,5	35,2	6 582,5	1 251,5	37,2	4 751,1	1 215,3	34,7
Sanitary ware	31 904,4	1 868,4	64,8	33 045,4	2 112,2	62,8	35 532,6	2 286,0	65,3
Totally	39 428,4	2 882,9	100,0	39 627,9	3 363,7	100,0	40 283,7	3 501,3	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical ceramics	4 740,6	971,2	29,4	4 665,5	992,7	29,3	3 847,1	981,3	29,0
Sanitary ware	35 346,9	2 336,2	70,6	36 128,2	2 389,7	70,7	35 431,5	2 405,9	71,0
Totally	40 087,5	3 307,4	100,0	40 793,7	3 382,4	100,0	39 278,6	3 387,2	100,0

Structure of export of technical ceramics and sanitary ware according to the assortment in 2018 (CZK)

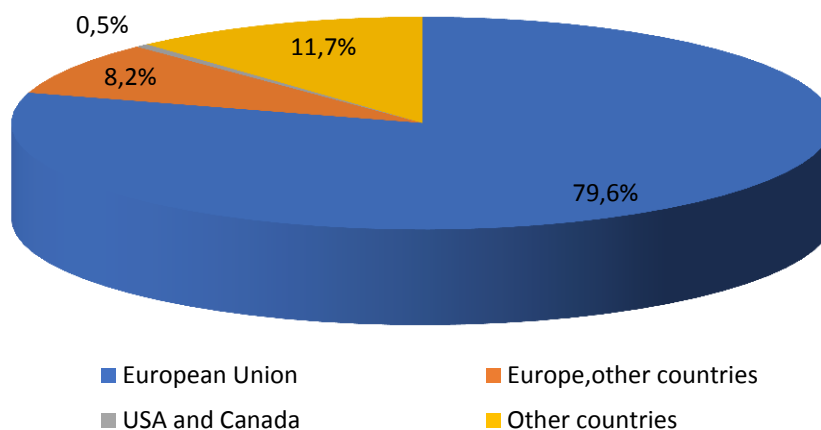
In 2018 the sanitary ware shared with 71 % and the technical ceramics with 29 % on export.

Export of technical ceramics and sanitary ware according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	31 605,5	1 983,9	68,8	31 635,0	2 248,6	66,8	32 075,2	2 502,1	71,5
Europe, other countries	3 781,8	270,8	9,4	4 542,2	320,8	9,5	4 100,5	299,2	8,5
USA and Canada	119,7	20,7	0,7	212,2	34,6	1,0	244,2	36,1	1,0
Other countries	3 921,4	607,5	21,1	3 238,5	759,7	22,6	3 863,8	663,9	19,0
Totally	39 428,4	2 882,9	100,0	39 627,9	3 363,7	100,0	40 283,7	3 501,3	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	32 188,2	2 532,4	76,6	32 103,5	2 587,2	76,5	31 089,1	2 696,1	79,6
Europe,other countries	3 483,9	271,7	8,2	4 353,5	317,4	9,4	3 785,6	276,3	8,2
USA and Canada	116,6	23,0	0,7	122,0	24,6	0,7	107,0	17,9	0,5
Other countries	4 298,8	480,2	14,5	4 215,8	453,2	13,4	4 296,9	396,9	11,7
Totally	40 087,5	3 307,3	100,0	40 794,8	3 382,4	100,0	39 278,6	3 387,2	100,0

Structure of export of technical ceramics and sanitary ware according to territories in 2018 (CZK)



A substantial part of both assortments was exported to the countries of Europe. Sanitary ware shared on export to the European countries in 2018 with 85.7 % (from which 76.5 % to the European Union), technical ceramics shared on the export with 92.8 % (from which 87.2 % to the European Union). Germany, Great Britain, Slovakia, Austria, and France belong to the greatest customers of sanitary ware in Europe.

Due to an unpleasant development in the building industry in the European Union, sanitary ware producers look for new markets in the countries out of Europe. Sanitary ware is exported e.g. to China, the Republic of South Africa, Tunis, Oman, Nigeria and Mongolia.

Import

Flat glass

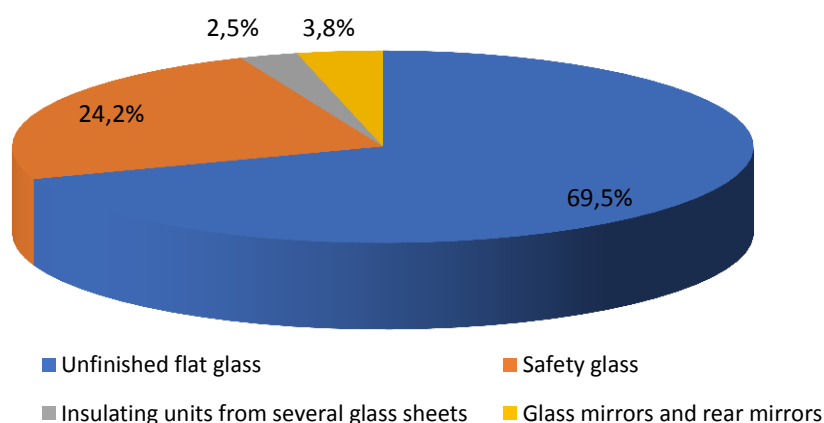
The import of flat glass assortment was in 2018 in amount of 12,573.5 mill. CZK. In comparison with 2017 it increased by 1.66 %.

Import of flat glass according to the assortment

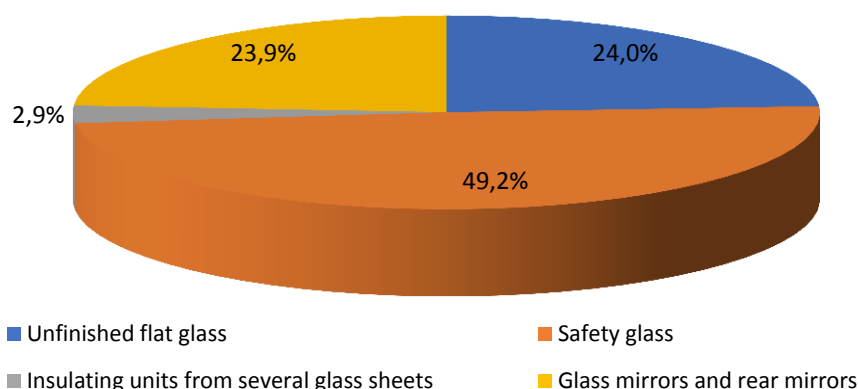
	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Unfinished flat glass	192 847,3	2 639,1	32,1	210 097,9	2 877,1	32,2	181 369,0	2 613,2	28,7
Safety glass	64 210,2	3 588,2	43,7	62 329,1	3 887,7	43,5	63 943,7	4 263,5	46,9
Insulating units from several glass sheets	8 146,9	263,4	3,2	6 977,3	247,5	2,8	6 181,3	217,7	2,4
Glass mirrors and rear mirrors	9 447,0	1 721,6	21,0	9 756,6	1 925,7	21,5	9 301,1	1 996,4	22,0
Totally	274 651,4	8 212,3	100,0	289 160,9	8 938,0	100,0	260 795,1	9 090,8	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Unfinished flat glass	206 741,3	2 869,6	27,2	229 361,8	3 112,6	25,2	247 582,1	3 017,2	24,0
Safety glass	69 987,7	5 124,2	48,5	81 744,7	5 983,9	48,4	86 285,4	6 184,8	49,2
Insulating units from several glass sheets	6 421,5	233,1	2,2	7 763,4	302,3	2,4	9 047,9	366,7	2,9
Glass mirrors and rear mirrors	9 791,2	2 336,2	22,1	10 964,6	2 969,1	24,0	13 364,5	3 004,8	23,9
Totally	292 941,7	10 563,1	100,0	329 834,5	12 367,9	100,0	356 279,8	12 573,5	100,0

Structure of import of flat glass according to the assortment in 2018 (t)



Structure of import of flat glass according to the assortment in 2018 (CZK)



As follows from the above stated table (expressed in CZK), the import of all investigated assortments increased. The share on the flat glass import in mass had the import of unfinished flat glass with 69.5 %, from which float glass shows 93.7 %. The amount of import is given by the processing capacities in the Czech Republic.

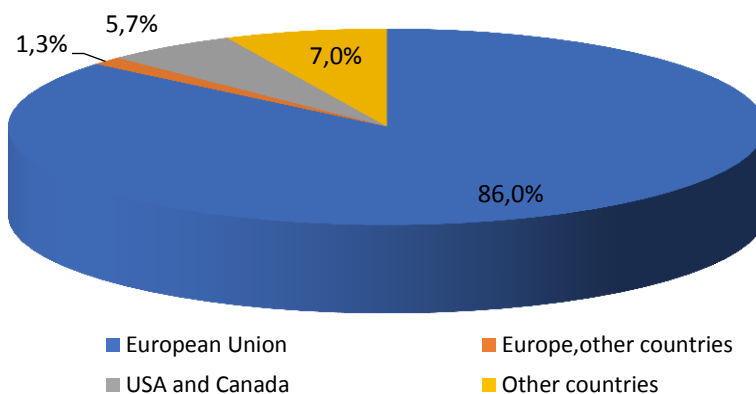
Toughened laminated safety glass shared with 49.2 % (expressed in CZK) on import. It is followed by unfinished flat glass with 24.0 %.

Import of flat glass according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	252 951,3	7 023,5	85,5	264 369,8	7 578,3	84,8	244 007,0	7 627,5	83,9
Europe,other countries	166,6	59,2	0,7	156,9	59,3	0,7	78,1	52,4	0,6
USA and Canada	420,7	352,8	4,3	418,7	400,6	4,5	417,9	531,9	5,9
Other countries	21 112,8	776,8	9,5	24 214,5	899,8	10,1	16 292,1	879,1	9,7
Totally	274 651,4	8 212,3	100,0	289 159,9	8 938,0	100,0	260 795,1	9 090,9	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	278 716,1	9 165,2	86,8	308 501,8	10 665,5	86,2	326 806,4	10 815,7	86,0
Europe,other countries	971,9	91,4	0,9	3 546,1	170,3	1,4	2 843,9	169,2	1,3
USA and Canada	410,2	571,4	5,4	520,7	673,3	5,4	580,9	712,6	5,7
Other countries	12 843,5	735,2	7,0	17 266,0	858,8	6,9	26 048,7	876,0	7,0
Totally	292 941,7	10 563,2	100,0	329 834,6	12 367,9	100,0	356 279,9	12 573,5	100,0

Structure of import of flat glass according to territories in 2018 (CZK)



In 2018 there was imported 86 % of flat glass (expressed in CZK) to the Czech Republic from the European Union countries. The greatest importers from the European Union were Poland, Germany, Bulgaria, and Belgium.

Container glass

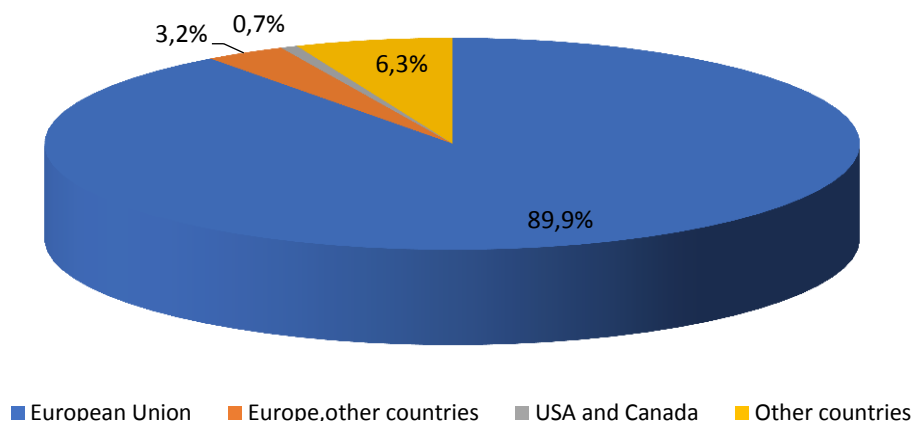
The container glass import in 2018 was in amount of 1532.3 mill. CZK, i.e. it was by 8.78 % more than in 2017.

Import of container glass according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	104 663,2	1 097,8	97,3	108 696,8	1 202,4	90,1	113 082,3	1 283,3	91,8
Europe, other countries	1 326,4	12,6	1,1	11 737,9	98,1	7,3	1 099,3	10,2	0,7
USA and Canada	14,5	3,7	0,3	69,4	17,8	1,3	5,8	5,0	0,4
Other countries	393,6	14,6	1,3	508,0	15,9	1,2	9 510,5	98,7	7,1
Totally	106 397,7	1 128,7	100,0	121 012,1	1 334,1	100,0	123 698,0	1 397,2	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	104 133,5	1 331,7	91,3	97 595,8	1 304,6	92,6	108 097,7	1 377,0	89,9
Europe, other countries	1 810,4	16,1	1,1	6 738,0	53,2	3,8	5 604,8	49,1	3,2
USA and Canada	7,0	3,6	0,3	14,4	3,5	0,2	220,6	10,3	0,7
Other countries	10 609,3	107,6	7,4	1 103,8	47,3	3,4	2 900,1	95,8	6,3
Totally	116 560,1	1 459,1	100,0	105 452,0	1 408,6	100,0	116 823,2	1 532,3	100,0

Structure of import of container glass according to territories in 2018 (CZK)



The import like the export is determined by the character of use of container glass assortment. In 2018 there was realized 89.9 % of import from the European Union countries. The greatest importers were Germany, Poland and Slovakia.

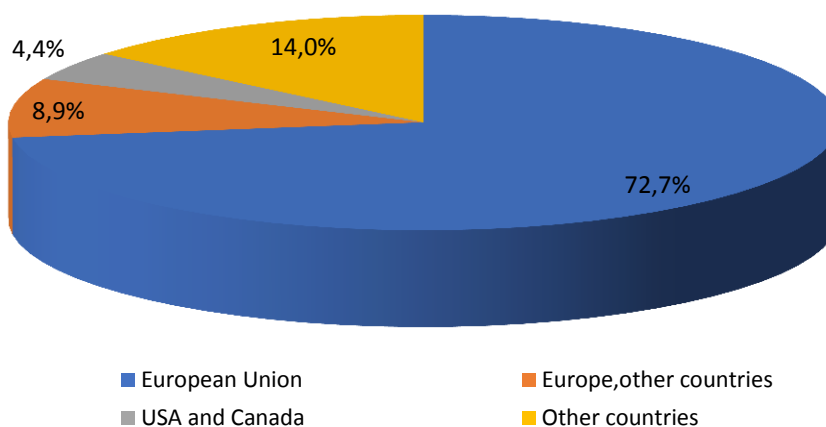
Glass fibres and products made of

The import of glass fibres and products made of to the Czech Republic was 3148.9 mill. CZK in 2018, what is by 3.10 % more than in 2017.

Import of glass fibres and products made of according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	41 449,5	2 054,6	77,7	46 610,1	2 253,6	76,1	41 265,1	2 053,3	78,5
Europe, other countries	1 426,1	94,7	3,6	1 786,6	129,0	4,4	1 862,6	82,1	3,1
USA and Canada	529,0	91,1	3,4	663,3	124,0	4,2	965,6	127,0	4,9
Other countries	9 936,8	405,2	15,3	10 272,2	453,3	15,3	6 504,6	354,6	13,5
Totally	53 341,4	2 645,6	100,0	59 332,2	2 959,9	100,0	50 597,8	2 617,0	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	45 534,0	2 275,3	76,3	45 703,2	2 288,9	74,9	48 427,8	2 290,3	72,7
Europe, other countries	3 223,4	102,3	3,4	9 159,8	250,6	8,2	11 161,5	279,1	8,9
USA and Canada	1 477,3	148,4	5,0	901,3	135,0	4,4	688,3	138,6	4,4
Other countries	9 558,3	456,6	15,3	7 526,2	379,5	12,4	8 528,2	440,8	14,0
Totally	59 793,0	2 982,5	100,0	63 290,5	3 054,1	100,0	68 805,8	3 148,9	100,0

Structure of import of glass fibres and products made of according to territories in 2018 (CZK)

The share of the European Union countries on import was 72.7 %. The greatest importers were Germany, Poland, Italy, Belgium, and Austria. The importers from the other European countries were Russia and Taiwan.

Utility glass

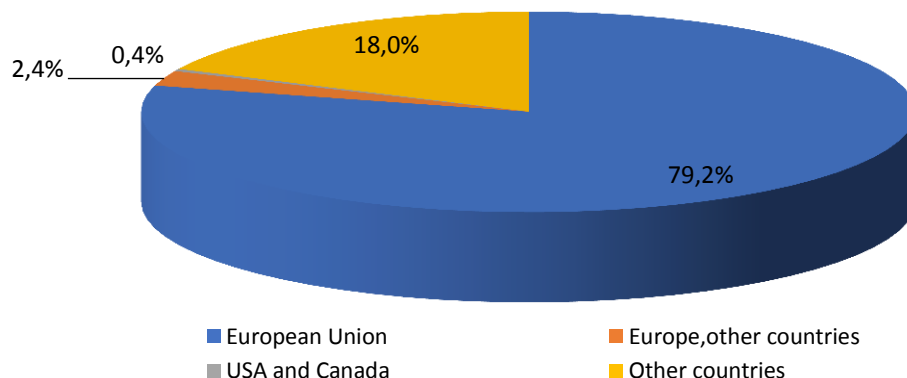
The utility glass import in 2018 was 2105.6 mill. CZK, i.e. by 6.47 % more than in 2017.

Import of utility glass according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	32 899,1	1 229,6	75,7	33 839,4	1 572,3	80,5	45 654,0	1 547,5	81,6
Europe, other countries	793,0	26,5	1,6	781,1	24,8	1,3	778,2	23,2	1,2
USA and Canada	15,1	3,3	0,2	11,1	4,7	0,2	70,5	0,5	0,0
Other countries	9 093,1	364,9	22,5	9 446,8	351,1	18,0	6 613,7	325,7	17,2
Totally	42 800,3	1 624,3	100,0	44 078,4	1 953,0	100,0	53 116,4	1 896,9	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	34 354,9	1 541,6	78,8	36 887,9	1 614,2	81,6	41 998,3	1 667,7	79,2
Europe, other countries	1 151,8	17,6	0,9	423,8	15,6	0,8	3 277,3	51,4	2,4
USA and Canada	39,1	7,6	0,4	38,9	7,5	0,4	29,4	7,8	0,4
Other countries	8 108,9	389,3	19,9	6 206,6	340,4	17,2	6 301,8	378,8	18,0
Totally	43 654,7	1 956,1	100,0	43 557,2	1 977,7	100,0	51 606,9	2 105,6	100,0

Structure of import of utility glass according to territories in 2018 (CZK)



The greatest share of import (79.2 %) was realized from the European Union countries. The greatest importers were Germany, Bulgaria, Poland, Portugal, France and Italy. From the Other countries (18 % of total import) the greatest importers in 2018 were China and Turkey. Both these countries totally created 88.77 % of import from the Other countries.

Other glass

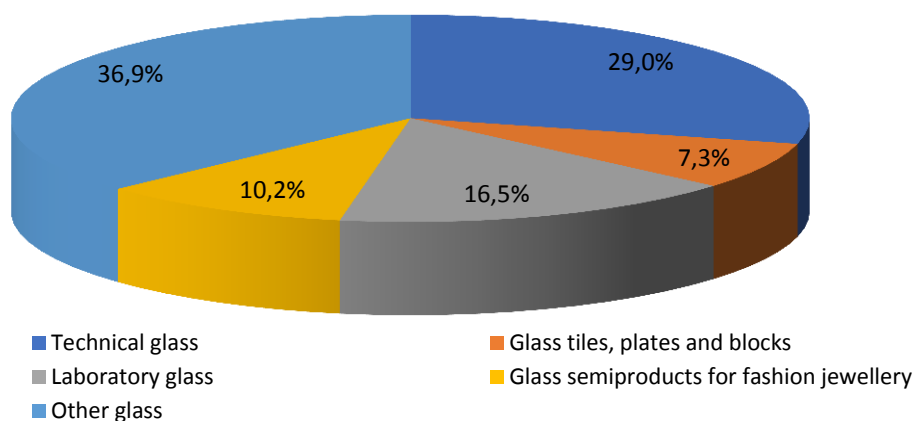
The import of other glass in 2018 was 2183,2 mill. CZK. The inter-year increase was by 35.14 % (1615.5 mill. CZK in 2017).

Import of other glass according to the assortment

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical glass	2 466,3	259,8	15,3	4 174,3	635,9	24,6	3 726,0	425,5	23,0
Glass tiles, plates and blocks	5 130,4	226,1	13,4	7 117,2	239,9	9,3	4 214,2	225,5	12,2
Laboratory glass	320,0	67,0	4,0	253,1	79,9	3,1	567,8	103,1	5,6
Glass semiproducts for fashion jewellery	2 614,7	555,3	32,8	2 863,7	968,1	37,5	3 088,0	446,6	24,2
Other glass	136 408,7	584,8	34,5	171 069,4	657,1	25,5	171 104,4	647,8	35,0
Totally	146 940,1	1 693,0	100,0	185 477,7	2 580,9	100,0	182 700,4	1 848,5	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical glass	3 658,6	451,6	28,2	8 552,0	494,8	30,6	4 916,2	632,7	29,0
Glass tiles, plates and blocks	3 971,0	160,3	10,0	2 665,9	132,6	8,2	3 516,6	160,2	7,3
Laboratory glass	260,7	91,2	5,7	262,5	92,6	5,7	6 634,9	360,5	16,5
Glass semiproducts for fashion jewellery	3 063,0	254,6	15,9	3 325,4	194,2	12,0	3 773,4	223,4	10,2
Other glass	175 633,8	644,6	40,2	207 270,2	701,3	43,4	213 169,6	806,4	36,9
Totally	186 587,1	1 602,3	100,0	222 076,0	1 615,5	100,0	232 010,7	2 183,2	100,0

Structure of import of other glass according to the assortment in 2018 (CZK)



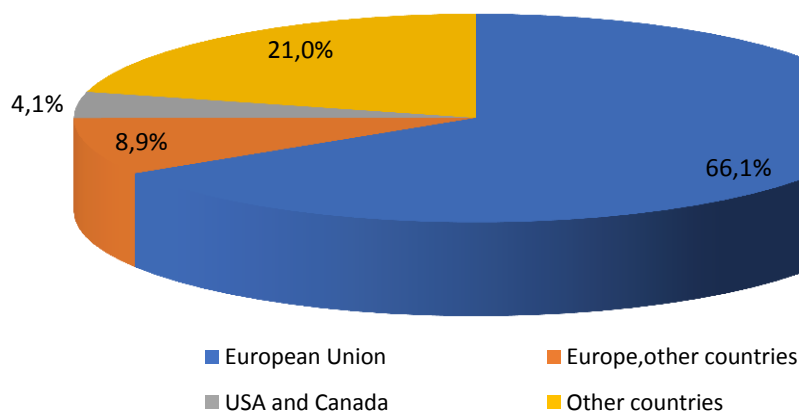
In the following table the other glass import according to territories is given.

Import of other glass according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	127 864,7	1 285,3	75,9	160 150,8	1 557,0	60,3	174 132,6	1 199,0	63,7
Europe,other countries	108,2	58,6	3,5	82,9	69,9	2,7	103,3	82,9	4,4
USA and Canada	341,0	42,8	2,5	345,4	39,9	1,5	496,7	74,1	3,9
Other countries	18 626,2	306,3	18,1	24 888,8	913,9	35,4	26 470,3	525,6	27,9
Totally	146 940,1	1 693,0	100,0	185 467,9	2 580,7	100,0	201 202,9	1 881,6	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	159 908,6	1 077,4	67,8	168 902,6	451,6	64,4	170 148,3	532,9	66,1
Europe,other countries	111,8	79,4	5,0	48,6	65,8	9,4	40 547,8	71,5	8,9
USA and Canada	375,8	52,1	3,3	8,0	28,2	4,0	9,3	32,8	4,1
Other countries	26 299,5	379,9	23,9	38 310,9	155,8	22,2	2 464,2	169,2	21,0
Totally	186 695,7	1 588,8	100,0	207 270,1	701,4	100,0	213 169,6	806,4	100,0

Structure of import of other glass according to territories in 2018 (CZK)



In 2018 the import from the European Union countries was 66.1 % and 21 % from the Other countries. The import was realized from various countries according to the assortment. In 2018 the greatest importers of technical glass were Germany, France, China, Malaysia, and Taiwan, laboratory glass Germany, Italy, the USA, Great Britain, and India, glass tiles, plates and blocks Belgium, Germany, the USA, Greece, France, and Brazil, and glass semiproducts for fashion jewellery Austria, Germany, France, the USA, China, Hongkong, and Japan.

Household china and ceramics

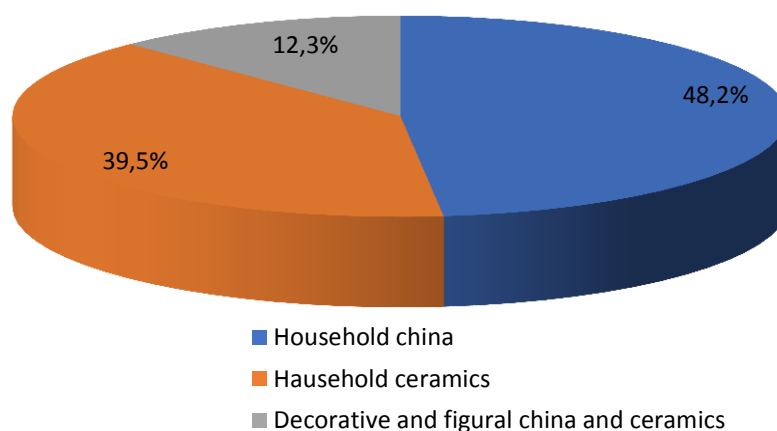
In 2018 the household china and ceramics were imported to the Czech Republic in a value of 1581.6 mill. CZK, i.e. by 14.24 % more than in 2017.

Import of household china and ceramics according to the assortment

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Household china	7 974,8	791,6	62,3	10 295,8	790,3	59,4	7 070,9	709,4	57,6
Household ceramics	5 429,8	304,5	24,0	6 805,2	398,5	30,0	5 574,8	377,7	30,6
Decorative and figural china and ceramics	3 095,9	174,1	13,7	2 226,7	141,7	10,6	2 248,5	145,2	11,8
Totally	16 500,5	1 270,2	100,0	19 327,7	1 330,4	100,0	14 894,2	1 232,3	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	podíl (%)	Netto (t)	mil.Kč	share (%)
Household china	11 253,9	740,2	48,8	7 189,9	721,0	52,1	21 373,6	762,7	48,2
Household ceramics	7 147,9	615,2	40,5	5 803,0	485,2	35,0	8 220,3	624,4	39,5
Decorative and figural china and ceramics	2 480,0	162,7	10,7	2 639,6	178,3	12,9	4 524,2	194,5	12,3
Totally	20 881,8	1 518,1	100,0	15 632,5	1 384,5	100,0	34 118,1	1 581,6	100,0

Structure of import of household china and ceramics according to the assortment in 2018 (CZK)

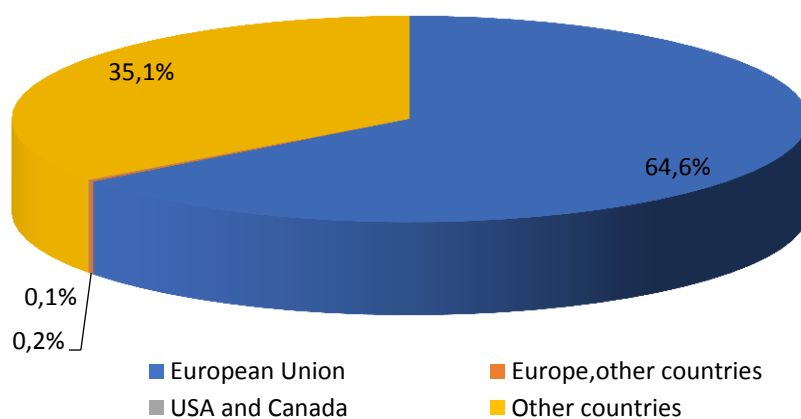


The household china shares with 48.2 %, household ceramics with 39.5 % and decorative and figural china and ceramics with 12.3 % on the import of this group assortment.

Import of household china and ceramics according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	9 170,7	824,3	64,9	10 678,9	798,7	60,0	7 486,3	722,7	58,7
Europe,other countries	53,6	3,1	0,2	36,8	5,0	0,4	33,7	1,2	0,1
USA and Canada	1,9	0,6	0,0	2,6	0,4	0,0	1,5	0,8	0,1
Other countries	7 274,3	442,2	34,8	8 609,5	526,4	39,6	7 372,6	507,5	41,2
Totally	16 500,5	1 270,2	100,0	19 327,8	1 330,5	100,0	14 894,1	1 232,2	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	9 878,1	1 035,0	68,2	8 924,3	908,1	65,6	13 290,1	1 015,1	64,6
Europe,other countries	9,6	0,8	0,1	7,2	1,3	0,1	33,7	3,9	0,2
USA and Canada	1,6	1,1	0,1	2,0	1,6	0,1	2,4	1,1	0,1
Other countries	10 992,6	481,2	31,7	6 698,9	473,7	34,2	7 314,0	551,0	35,1
Totally	20 881,9	1 518,1	100,0	15 632,4	1 384,7	100,0	20 640,2	1 571,1	100,0

Structure of import of household china and ceramics according to territories in 2018 (CZK)

The import from the European Union countries shared on total import with 64.6 %. The greatest importer was Germany, sharing on import from the European Union with 38.8 %, followed by Poland.

The Other countries shared on import of household china and ceramics with 35.1 %. The greatest importer was China, sharing on import from the Other countries with 29.5 % (162.3 mill. CZK).

Technical ceramics and sanitary ware

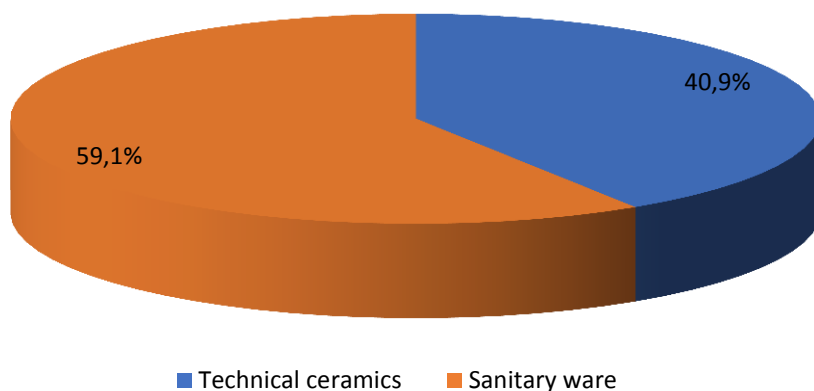
The technical ceramics and sanitary ware import was 1902.2 mill. CZK in 2018. The import increased in comparison with 2017 by 1.24 % (1878.9 mill. CZK).

Import of technical ceramics and sanitary ware according to the assortment

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical ceramics	3 616,7	339,5	27,3	3 670,6	487,1	33,1	3 838,0	642,0	39,7
Sanitary ware	13 457,2	905,5	72,7	13 981,6	982,5	66,9	14 548,2	973,1	60,3
Totally	17 073,9	1 245,0	100,0	17 652,2	1 469,6	100,0	18 386,2	1 615,1	100,0

	2016			2017			2018		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
Technical ceramics	3 758,6	655,9	38,2	4 144,7	710,5	37,8	4 032,7	778,3	40,9
Sanitary ware	15 251,0	1 060,2	61,8	16 612,5	1 168,4	62,2	15 664,5	1 123,9	59,1
Totally	19 009,6	1 716,1	100,0	20 757,2	1 878,9	100,0	19 697,2	1 902,2	100,0

Structure of import of technical ceramics and sanitary ware according to the assortment in 2018 (CZK)



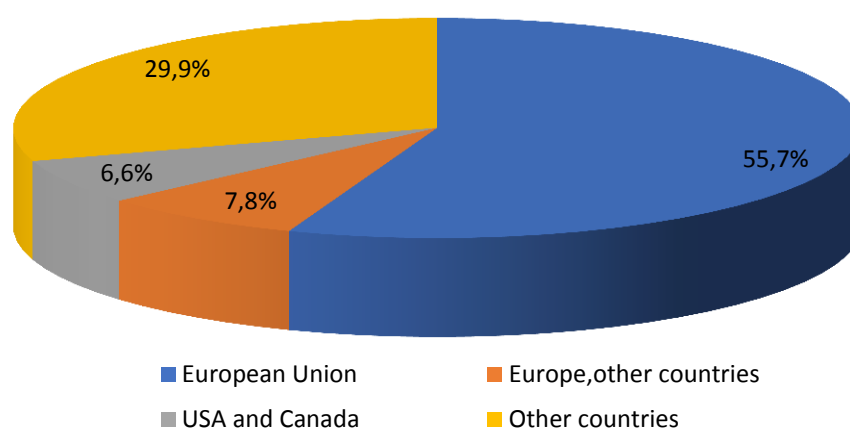
Sanitary ware shared on import in 2018 with 59.1 % and technical ceramics with 40.9 %.

Import of technical ceramics and sanitary ware according to territories

	2013			2014			2015		
	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)	Netto (t)	mil.Kč	share (%)
European Union	11 663,7	877,6	70,5	11 517,8	1 029,7	70,1	12 247,1	1 202,1	74,4
Europe, other countries	1 179,7	62,4	5,0	1 759,3	116,4	7,9	1 616,1	76,5	4,7
USA and Canada	14,9	8,9	0,7	5,5	80,2	5,5	5,9	75,7	4,7
Other countries	4 215,6	296,1	23,8	4 369,7	243,2	16,5	4 517,0	260,9	16,2

Totally	17 073,9	1 245,0	100,0	17 652,3	1 469,5	100,0	18 386,1	1 615,2	100,0
	2016			2017			2018		
	Netto	mil.Kč	share	Netto	mil.Kč	share	Netto	mil.Kč	share
	(t)		(%)	(t)		(%)	(t)		(%)
European Union	12 318,0	1 228,5	71,6	13 474,2	1 287,7	68,5	12 426,9	1 059,0	55,7
Europe,other countries	1 547,9	102,6	6,0	2 451,0	177,2	9,4	1 856,6	148,4	7,8
USA and Canada	7,8	74,6	4,3	22,1	100,2	5,3	23,7	126,0	6,6
Other countries	5 136,0	310,3	18,1	4 809,9	313,8	16,7	5 390,0	568,7	29,9
Totally	19 009,7	1 716,0	100,0	20 757,2	1 878,9	100,0	19 697,2	1 902,1	100,0

Structure of import of technical ceramics and sanitary ware according to territories in 2018 (CZK)



In 2018 the import from the European Union countries shared on technical ceramics import with 70.9 %. The greatest importer was Germany. As far as sanitary ware the share of import from the European Union countries was 45.1 %. The greatest importers were Poland, Austria, and Germany. From the Other countries the share on total import of sanitary ware of which was 42.6 %, the greatest importers of this assortment were China and Turkey.

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