

Processing of Input Material as a Way to Improve the Efficiency of the Glass Production Process

Authors : Joanna Rybicka-Łada, Magda Kosmal, Anna Kuśnierz

Abstract : One of the main problems of the glass industry is the still high consumption of energy needed to produce glass mass, as well as the increase in prices, fuels, and raw materials. Therefore, comprehensive actions are taken to improve the entire production process. The key element of these activities, starting from filling the set to receiving the finished product, is the melting process, whose task is, among others, dissolving the components of the set, removing bubbles from the resulting melt, and obtaining a chemically homogeneous glass melt. This solution avoids dust formation during filling and is available on the market. This process consumes over 90% of the total energy needed in the production process. The processes occurring in the set during its conversion have a significant impact on the further stages and speed of the melting process and, thus, on its overall effectiveness. The speed of the reactions occurring and their course depend on the chemical nature of the raw materials, the degree of their fragmentation, thermal treatment as well as the form of the introduced set. An opportunity to minimize segregation and accelerate the conversion of glass sets may be the development of new technologies for preparing and dosing sets. The previously preferred traditional method of melting the set, based on mixing all glass raw materials together in loose form, can be replaced with a set in a thickened form. The aim of the project was to develop a glass set in a selectively or completely densified form and to examine the influence of set processing on the melting process and the properties of the glass.

Keywords : glass, melting process, glass set, raw materials

Conference Title : ICG 2024 : International Conference on Glass

Conference Location : Prague, Czechia

Conference Dates : September 05-06, 2024