Annexure-II

ENERGY EFFICIENT PROCESS TECHNOLOGY FOR MANUFACTURING OF SODA LIME SILICATE GLASS USING BORAX PENTAHYDRATE AND COLEMANITE

Description of Technology

The offer comprises of an energy efficient process technology to use borax pentahydrate and colemanite in manufacturing soda lime silicate glasses (SLS) as alternate minerals to substitute soda ash (Na_2CO_3) and limestone ($CaCO_3$) respectively. The process consists of addition of B_2O_3 in soda lime silicate glass composition at an optimal level leading to superior thermal, optical and mechanical properties and reduction in glass melting temperature by at least 150˚C.

This is a patented technology (Granted: 11 Foreign, 2 Indian, Pending: 1 Foreign), laboratory scale technology demonstration and training will be offered as part of the technology transfer.

ABSTRACT

The process technology comprises of energy efficient technique for manufacturing of soda lime silicate glass using cheaper varieties of borax pentahydrate and colemanite by substituting Na_2O and CaO respectively from the original SLS glass composition. The evaluated thermal, optical and mechanical properties of these glasses indicate that the invented glasses are suitable for manufacturing superior quality container glasses and float glasses for different applications. With this process the glass melting temperature has been significantly reduced by 150-200˚C. It eliminates the use of soda ash and limestone in glass, thus reduces carbon dioxide (CO_2) emission substantially and thereby global warming. Further, it offers a great benefit to the glass industry and opens up a new application of borax pentahydrate and colemite. The use of borax pentahydrate and colemanite and incorporation of B_2O_3 at its optimum level for manufacturing container and float glasses resulted in an energy efficient, cost effective and environment friendly glass melting process.