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## Original

# Mechanical and sandblasting erosion resistance characterization of chemical strengthened float glass

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## ABSTRACT

The purpose of this work is to study the influence of the immersion temperature and the treatment time of the ion exchange of soda-lime glass in molten  $\text{KNO}_3$  bath on its mechanical properties, and in particular the erosion resistance using Sahara sand and alumina abrasives. EDX analysis showed that the depth of penetration of  $\text{K}^+$  into glass increases as temperature and treatment time increase. The effect of ion exchange temperature and time on mechanical reinforcement was studied by micro-indentation, scratch test, wear and erosion test. All of these mechanical properties are improved after ion exchange treatments; erosion and wear resistance behave the same, either by using natural abrasives such as Sahara sand or by using an aggressive abrasive as alumina grits.

The increase in the ion exchange time induces an increase in Vickers hardness of about 15–30% compared to annealed glass. Samples processed at 520 °C for a short period of 2 h show better mechanical properties compared to samples processed at 480 °C for longer times. In this case, the sample has a higher surface density which made the glass + in compression not only because the potassium ions occupy the ionic substitution spaces but also the free spaces.

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## Caracterización de la resistencia a la erosión mecánica por arenado de vidrio flotado templado químicamente

## RESUMEN

El propósito de este trabajo es estudiar la influencia de la temperatura y el tiempo de inmersión en un baño de nitrato de potasio ( $\text{KNO}_3$ ) fundido en el comportamiento mecánico de un vidrio sodocálcico.

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