

Laminated Safety Glass Produced From Reclaimed Insulated Glass Units

Hans I. Scholz ^a, Miriam Schuster ^a, Michael Kraus ^a, Sebastian Wernli ^b, Martien Teich ^b

- a. TU Darmstadt, Darmstadt, Germany, scholz@ismd.tu-darmstadt.de
 b. Hochschule München, München, Germany

Abstract

The demand for sustainable resource recovery and repurposing of construction materials is growing as part of urban mining initiatives aimed at reducing waste, CO₂ emissions, and the extraction of raw materials. With many European buildings due for renovation to meet current energy standards, the recovery of insulating glass units (IGUs) presents a valuable opportunity to reclaim valuable glass panes at reduced environmental impact. However, especially the outer surfaces of the IGUs were exposed to environmental influences such as weathering and mechanical impacts which may have introduced surface defects or glass corrosion. These may have an influence on the processability and remanufacturing processes. This study evaluates the feasibility of remanufacturing reclaimed double-glazed IGUs without coatings into laminated safety glass (LSG). First, the properties of the outer glass surfaces of a reclaimed IGU are analysed in terms of corrosion, visual quality and surface roughness. Next, laminated glass is manufactured in two configurations of the glass surfaces (P1-P1 and P4-P4), using only the reclaimed glass, to determine how positioning and combination will affect the performance of LSG according to European product standards. Adhesion resistance is tested under the influence of temperature, humidity, and mechanical bonding through standardized tests. Comparative tests are conducted with LSG made entirely of new glass produced equally as the LSG with aged glass.

The full paper will be published in the [Glass Performance](#) collection of the [Glass Structures & Engineering](#) journal (Springer).

Keywords

Laminated Safety Glass, reclaimed IGU, Insulated Glass Units, Remanufacturing

Article Information

- Published by [Glass Performance Days](#), on behalf of the author(s)
- Published as part of the Glass Performance Conference Proceedings, June 2025
- Editors: Jan Belis, Christian Louter & Marko Mökkönen
- This work is licensed under a [Creative Commons Attribution 4.0 International](#) (CC BY 4.0) license.
- Copyright © 2025 with the author(s)