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Determination of Resistance to Freezing of Bonded Façade Joint

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Abstract : Verification of vented wooden façade system with bonded joints is presented in this paper. The potential of bonded joints is studied and described in more detail. The paper presents the results of an experimental and theoretical research about the effects of freeze cycling on the bonded joint. For the purpose of tests spruce timber profiles were chosen for the load bearing substructure. Planks from wooden plastic composite and Siberian larch are representing facade cladding. Two types of industrial polyurethane adhesives intended for structural bonding were selected. The article is focused on the preparation as well as on the subsequent curing and conditioning of test samples. All test samples were subjected to 15 cycles that represents sudden temperature changes, i.e. immersion in a water bath at (293.15 ± 3) K for 6 hours and subsequent freezing to (253.15 ± 2) K for 18 hours. Furthermore, the retention of bond strength between substructure and cladding was tested and strength in shear was determined under tensile stress. Research data indicate that little, if any, damage to the bond results from freezing cycles. Additionally, the suitability of selected group of adhesives in combination with timber substructure was confirmed.

Keywords : adhesive system, bonded joints, wooden lightweight façade, timber substructure
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