Supplementary info:

Surface hardness and flammability of Na$_2$SiO$_3$ and nano-TiO$_2$ reinforced wood composites

Edita Garskaite$^1$, Olov Karlsson$^1$, Zivile Stankeviciute$^2$, Aivaras Kareiva$^2$, Dennis Jones$^1$ and Dick Sandberg$^1$

$^1$Wood Science and Engineering, Department of Engineering Sciences and Mathematics, Luleå University of Technology, Forskargatan 1, SE-931 87 Skellefteå, Sweden

$^2$Institute of Chemistry, Faculty of Chemistry and Geosciences, Vilnius University, Naugarduko 24, Vilnius LT-03225, Lithuania

SI. Fig. 1. FT-IR spectrum of TiO$_2$ nano-powders.

SI. Fig. 2. FE-SEM images of the surface of (a) 20% and (b) 10%-WG-TiO$_2$-modified Scots pine sapwood; (c) EDS analysed area and (d) EDS spectrum of the surface of 10%-WG-TiO$_2$-modified wood (marked characteristic peaks of Ti $L\alpha$ (0.452 keV), Ti $L\beta$ (0.458 keV), Ti $K\alpha$ (4.52 keV), Ti $K\beta$ (4.93 keV).
SI. Fig. 3. FTIR spectrum of Na-O-Si gel dried for 24 h at 103°C.

SI. Fig. 4. XRD of dried water-glass (WG) powders at 103 °C for 24 h.

SI. Fig. 5. XRD pattern of TiO$_2$ nano-powders.
SI. Fig. 6. Untreated and pressure treated specimens of Scots pine sapwood used for the LOI test (dimensions of specimens followed according to user’s guide for the LOI (11309-850-3) to BS 2782: Part 1: Method 141 and ISO 4589 (form of the specimens II (form of materials that are self-supporting)).

SI. Video: Flammability test of wood reinforced with aqueous 20% sodium silicate solution. The video can be found online at the following DOI: 10.1039/C9RA05200C