Masterproef industriële ingenieurswetenschappen

Manufacture of lightweight (structured cellular) polymeric parts

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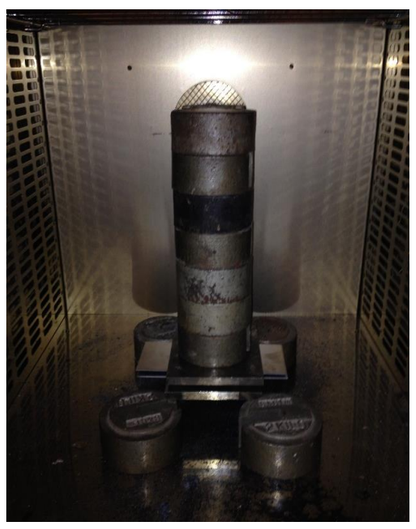
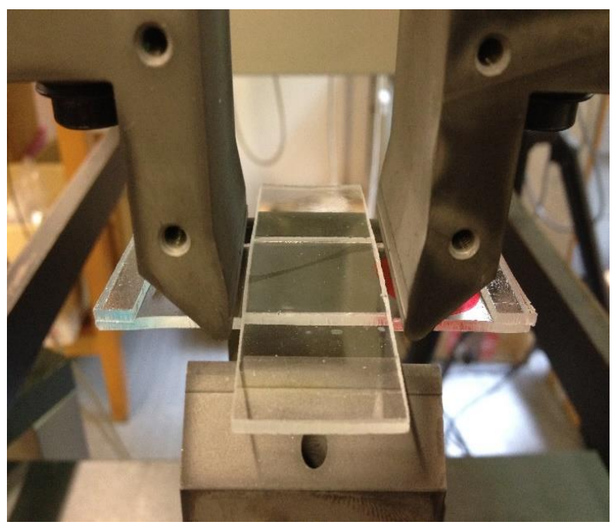
The aim of the thesis is to investigate diffusion bonding of polymeric materials and to find an effective way to inhibit bonding at predetermined places in order to achieve a selective bond.

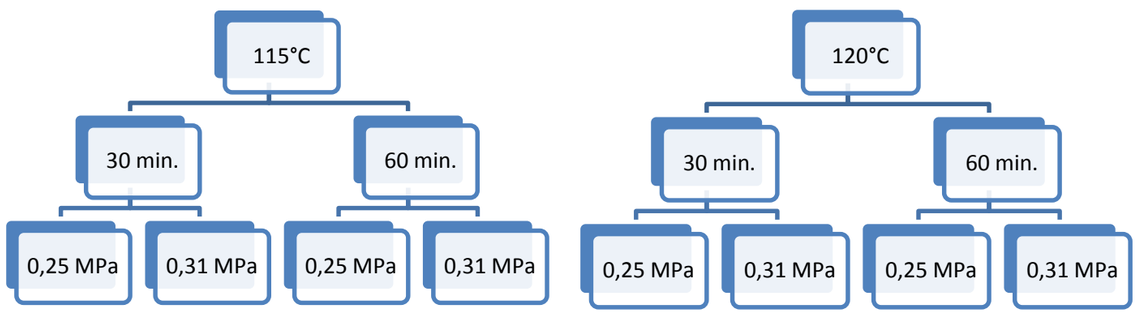
Methodology



Test setup for bonding



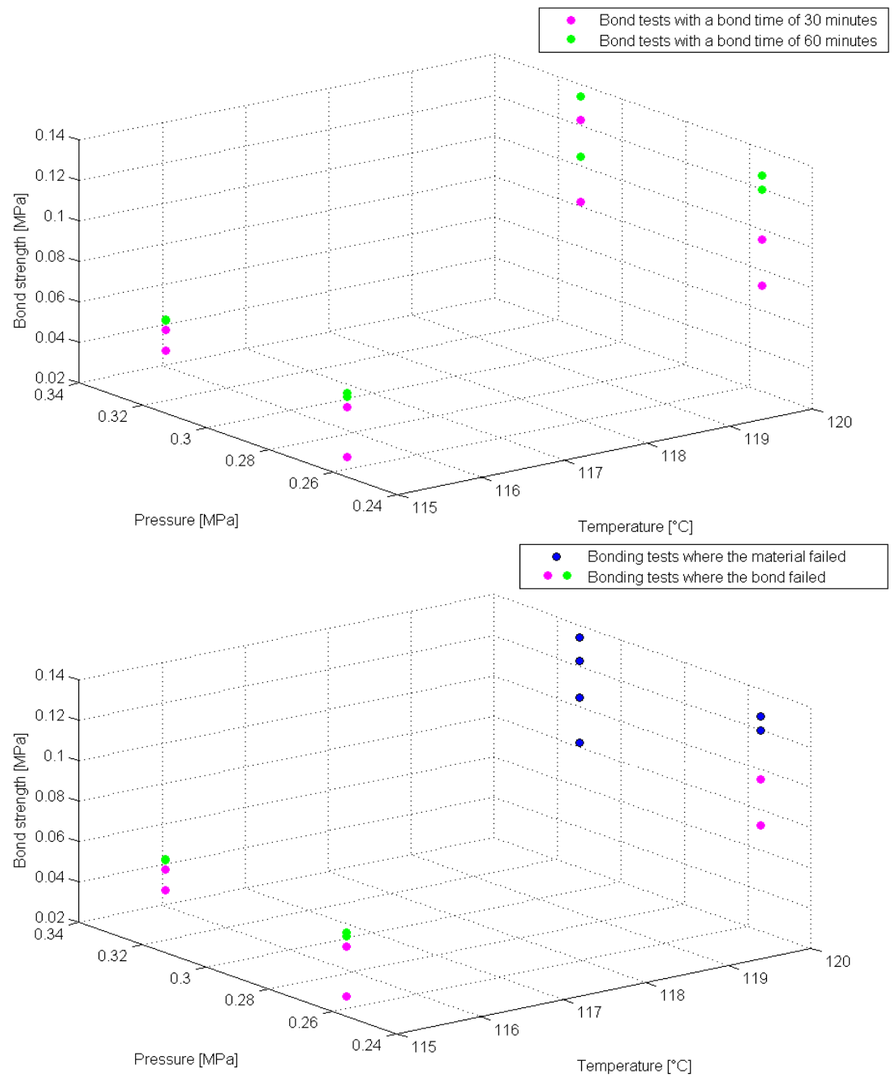
Novel strength test



Diffusion bonding parameters

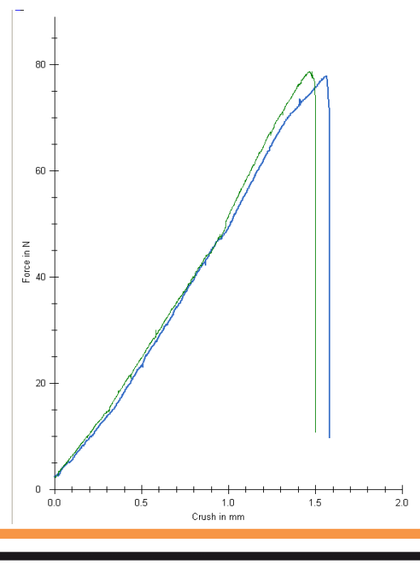
Presentation of the findings

Results for the regular bonding tests



Effects of surface modification

- Post-annealing did not show noticeable improvements
- The effect polishing did improve the repeatability



Selective bonding using a stop-off

- Chalk powder effectively inhibited bonding
- Silicone spray and surface roughening did not inhibit bonding

Simulations to verify strength test

Deformation of the sample

Promotoren / Copromotoren: dr. ir. VAN BAEL Albert
Mr. SPENCE Julian

MidSim Midland Simulation Group

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