

November 30, 2015

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Letter of the test results – fire resistance test on a hinged single leaf steel door

A fire resistance test on two single leaf steel doors (doors were mounted so that door A opened towards fire and door B opened away from fire) was carried out in the vertical furnace of the VTT Expert Services Ltd fire laboratory in Espoo, Finland on April 17, 2015. Test method was standard SFS-EN 1634-1:2014 *“Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware – Part 1: Fire resistance test for door and shutter assemblies and openable windows”*

Construction of the hinged single leaf steel door in brief

Test specimens were two hinged single leaf steel doors. The size of the door frame was 1010 x 2110 mm (width x height) and the size of the clear opening 870 mm x 1970 mm (width x height). The dimensions of door leaves were 890 mm x 2000 mm x 70 mm (w x h x t). Door leaves were manufactured from 0.5 mm thick steel sheets and frame of 1.5 mm thick steel sheets. Frame and door leaves were constructed by welding. Door leaves were insulated with 50 mm thick SPU FS. There was a 6 mm thick MgO-sheet on both sides of SPU. Sheets were glued together with Kiilto KESTOPUR FP35-25, with the amount of 2 kg/m² (amount given by the customer). Around the door leaves were two parallel sealing, Joints Fire Quad Seal Pro+, with the size of 20 mm x 4 mm.

Both doors were equipped with 3 x hinges 2008.16.1 PL4 (Polar Metall Oy), lock case Finlox R4190M, key cylinder HEF 6600 CR LTK and handle M.H.L 10270 40200.

Test results relate only to the sample tested.

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Test results

The test was terminated 133 minutes after the start of the test. The test specimen A (door which opened towards fire) met criteria for integrity (E) for 133 minutes and for insulation (I₁) for 38 minutes and for insulation (I₂) for 61 minutes. The test specimen B (door which opened away from fire) met criteria for integrity (E) for 133 minutes and for insulation (I₁) for 45 minutes and for insulation (I₂) for 62 minutes.

The test results and detailed description of the test specimen are presented in test report No VTT-S-03423-15 by VTT Expert Services Ltd.

Espoo, November 30, 2015


Ville Grönvall
Expert, Fire Safety

APPENDICES	Appendix 1. Photos of the test specimen
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Test results relate only to the sample tested.

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APPENDIX 1

Photographs of the test specimen

**Fire resistance test on April 17, 2015
– fire resistance test on a hinged single leaf steel door**



Figure 1. Exposed side of the test specimen prior to the fire test.

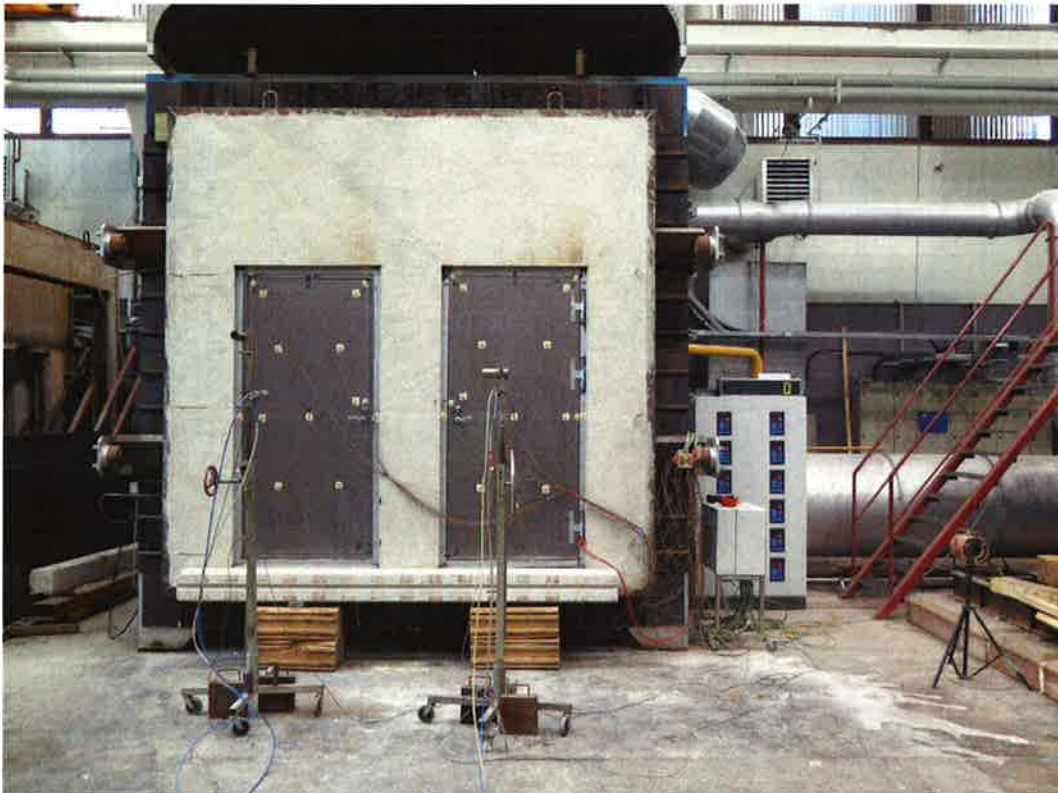


Figure 2. Unexposed side of the test specimen prior to the fire test.



Figure 3. Unexposed side of the test specimen after the fire test.



Figure 4. Exposed side of the test specimen after the fire test.