DANISH
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INSTITUTE

Test Report

carried out for:

Dolle A/S
Vestergade 47
7741 Frøstrup

Attn.: Flemming Olsen

4C 1302213 – 217562(B) MVJ/BBJ 2007.11.26

Materials Testing
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Client:

Dolle A/S
Vestergade 47
7741 Frøstrup

Attn. Flemming Olsen

Test specimen:

The following loft ladder has been tested:

- Eurobest, non insulated (prod. no. 19127)

This test report also cover the following loft ladder:

- Eurobest (prod. no. 19327)

The loft ladders are identical besides the thickness of the trapdoor. The thinnest trapdoor has been selected for testing as this is considered to have the smallest load bearing - and fatigue capacity.

Test date:

The specimens have been tested in the period from the 2nd to the 29th of August 2007.

Test procedure:

The test procedure described in DS/EN 14975:2006 "Loft ladders – Requirements, marking and testing" section 5 have been used.

The test rig at Dolle A/S has been used for all the tests.

For the static load, rung bending and fatigue test a hydraulic cylinder fitted with a HBM 20 kN U2A load cell have been used. The compressive pressure of the cylinder is electronically controlled. The load cell has been calibrated by means of a HBM 50 kN load cell (MATP 08-12) at a compressive load of 1000 N, 1500 N and 2600 N.

Deformations have been recorded by means of an ASM WS10 cable actuated position sensor.

For the torsion test of rungs the deformation has been recorded by means of an Inogon inclinometer (MATP 02-26).

For the handrail test an Interface 2000 lbs load cell has been used. An ASM WS10 cable actuated position transducer has been used to record deformations.

Test results:

Test results are shown in table 1 to 5.

Design sketches of the ladders are listed in appendix 1.

Specifications of the materials used to construct loft ladders and its components are shown in appendix 2, table A2-1.

Validity:

It must be noted, that if any alterations are made in design of the ladder or its components this report is considered to be invalid. The report is also invalid, if other materials are used besides the ones listed in appendix 2.

Table 1: Static load test.

Prod. No.	Title	Permanent deflection mm	Maximum deflection mm	Damages	Operational
19127	Eurobest	5.12	15.06	None	Yes

After testing the ladder has to able to be stowed and un-stowed. Maximum permissible deflection, f, are 0.005 × extended length of stile.

Table 2: Fatigue test.

Prod. No.	Type	Permanent deflection mm	Damages	Operational
19127	Eurobest	1.70	None	Yes

After testing the maximum permissible permanent deflection is 20 mm per metre length.

Table 3: Torsion of rungs.

Prod. No.	Type	Rung angle x°		Deformation x°	Damage on joint
		Before	After		
19127	Eurobest	1	1	0	None

The maximum permanent deformation shall be ±1°.

Table 4: Handrail test.

Location	Permanent deformation mm	
	Perpendicular	Parallel
A	0.3	0.9
B	0.2	0.3
C	0.1	1.0
D	-	0.0

The handrail was intact and undamaged after the test.
The maximum permissible deformation is 15 mm.

Table 5: Bending of rungs.

Prod. No.	Type	Permanent deformation mm	Damages
19127	Eurobest	1.32	None

The maximum permanent permissible deflection shall be less or equal to 3 mm.

Aarhus, 26th November 2007
Materials Testing

Michael V. Jensen
M.Sc. Eng.

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Mech. Eng.

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Appendix 1

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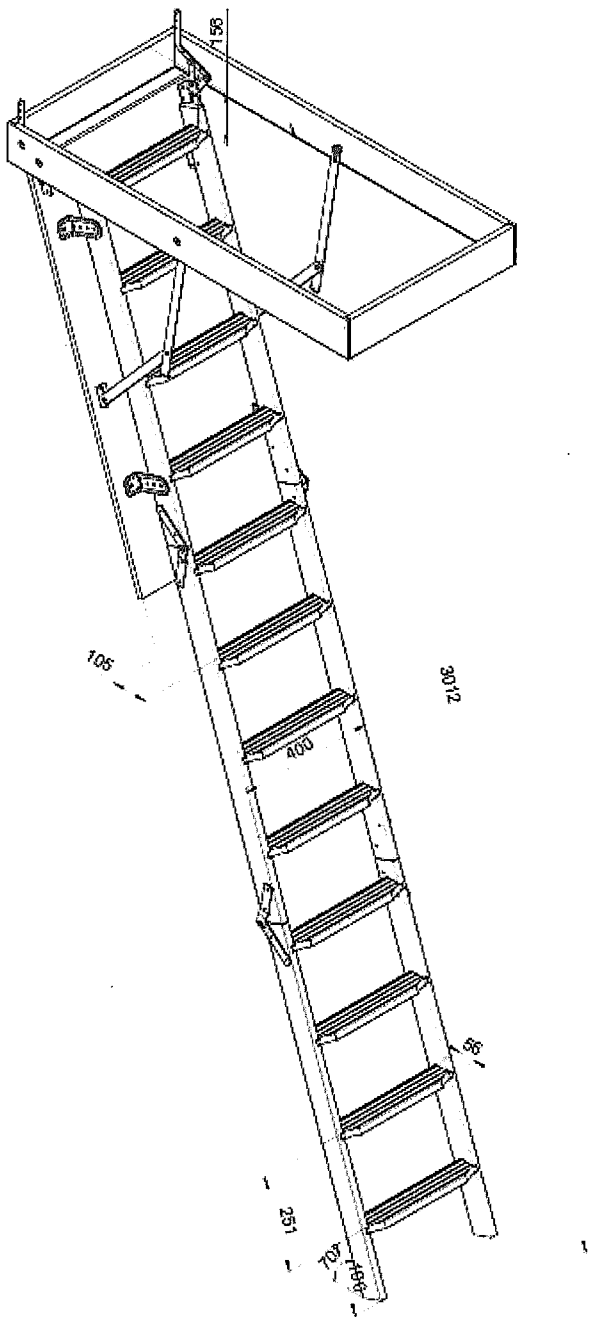

Fig. 1: Eurobest, non insulated (prod. no. 19127)

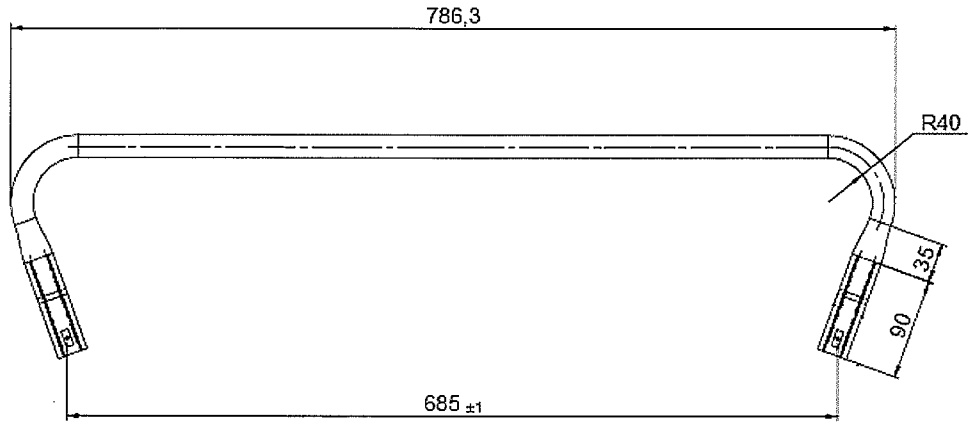

Fig. 2: Handrail.

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Appendix 2

The materials shown in table A2-1 have been used to construct the tested specimen

Table A2-1: Materials

Product no.	Type	Trapdoor	Material	Hinge	Material	Arm	Material	Ladder	Sections	Rung
19127	Eurobest, non insulated	16 mm	Pine	K1 03010	S235 JRG2/FE P01 AM	K1 03020	S235 JRG2	21,0 x 69,0 mm cross section Pine	3	17,5 x 69,0 x 383 mm Pine
19327	Eurobest	18 mm	Pine	K1 03010	S235 JRG2/FE P01 AM	K1 03020	S235 JRG2	21,0 x 69,0 mm cross section Pine	3	17,5 x 69,0 x 383 mm Pine

Glue for finger joints on stiles minimum D3 according to DIN/EN 204

The handrail is produced from a S235 JRG2 Ø20×1,2 mm steel tube.