INDEPENDENT RESEARCH

SHR

Test report: Additional testing on a Faraone PLS ladder to fulfil the requirements given in the ‘Warenwet’

Report code: 24.0232 **Date:** June 20, 2024

SHR
Nieuwe Kanaal 9e
6709 PA Wageningen, The Netherlands
Tel: + 31 317 467366
If not stated otherwise the tests have been performed at this address.

E-mail: t.houben@shr.nl

Principal: Faraone Poland Sp. Z o.o.
Ul. Prosta 32, Lozienica
72-100 Goleniow
Poland

Appendices: 1

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Authors:

T.W.C. Houben MSc
Project Manager

A.A.J. van Hunnik
2nd author

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1 Assignment

On April 26, 2024, Faraone Poland Sp. Z o.o. commissioned SHR to perform additional tests on their Faraone PLS ladder to fulfil the requirements given in the Dutch 'Warenwet'.

Ladders traded on the Dutch market must comply with the 'Warenwet' so they comply to the Dutch law. These requirements are set out in 'Warenwetregeling methoden van onderzoek draagbaar klimmaterieel'. The 'Warenwet' requires a higher safety level than the European standard EN 131 has set. For ladders that already have been tested according to EN 131, some additional requirements have been drawn up. These additional requirements are based on NEN 2484 and are described in appendix B of EN 131-2.

2 Execution of the test

2.1 Identification and description of the samples

For the test, the samples mentioned in table 1, were delivered at SHR on May 3, 2024.
The selection of the test pieces is carried out by the principal.

Table 1. Delivered samples.

Amount	Code	Type	Description
1	24.0232-A	Faraone PLS3	3 rung ladder, with platform
1	24.0232-B	Faraone PLS3.7	3 rung ladder, with platform and telescopic stabiliser
1	24.0232-C	Faraone PLS5	5 rung ladder, with platform
1	24.0232-D	Faraone PLS5.7	5 rung ladder, with platform and telescopic stabiliser
1	24.0232-E	Faraone PLS6.7	6 rung ladder, with platform and telescopic stabiliser

2.2 Method

Ladders that already have been tested by third parties in accordance with EN 131, but without taking into account the additional requirements from the 'Warenwet', can be additional tested according appendix B of EN 131-2. These additional requirements are based on NEN 2484 and take the following three parts into account:

A. Preparation & resistance to static load - based on §7.1.3 and §7.3.1 of NEN 2484
B. Height of the baluster - based on §4.3.2 of NEN 2484
C. Resistance to torsion - based on §7.2.3 of NEN 2484

2.3 Apparatus

Tape-measure (calibrated)	SHR/763
Load cell 50 kN (calibrated)	SHR/419 with SHR/474
Load cell 100 kN (calibrated)	SHR/337 with SHR/474
Set with various weights (calibrated)	SHR/551

2.4 Period of the test

The tests were executed from June 3, to June 10, 2024.

3 Results of the test

The results of the tested ladders are given in Appendix 1.

4 Conclusion

The tested PLS ladders, supplied by Faraone Poland Sp. Z o.o., meet the technical requirements as set in annex B in EN 131-2, so the ladders meet, on the following three requirements given in the Warenwet:

A. Preparation & resistance to static load - based on §7.1.3 and §7.3.1 of NEN 2484
B. Height of the baluster - based on §4.3.2 of NEN 2484
C. Resistance to torsion - based on §7.2.3 of NEN 2484

Literature

EN 131-2:2010 +A2:2017 Ladders – Part 2 : Requirements, testing, markings.

NEN 2484:1989+C1:1990 Draagbaar klimmaterieel - Ladders en trappen, Termen, definities, eisen, beproevingsmethoden, gebruik en onderhoud.

Warenwetregeling methoden van onderzoek draagbaar klimmaterieel, d.d. 31-01-2020.

Appendix 1 – Individual results

24.0232-A – Type: PLS3						
	weight [N]	Based on paragraph no. of NEN 2484 requirement	method	result	requirement	Pass/ fail
Part A – Strength test						
1 Test preparation	1000	-	7.1.3	-	-	-
2 Resistance to static load	3500	6.3.1	7.3.1.1	0	no permanent change in shape	Pass
length L_2 1,340 mm			7.3.1.2	1	max 1/1000xL_2= 1.3 mm	Pass
Part B – Handrails						
Height baluster	-	4.3.2		1,120	min 600 mm	Pass
Part C- Torsion on ladder length						
Resistance to torsion	100/250	6.3.3	7.3.3 f_1	11	$f_1 - f_2 \leq 0.07\ b_u$ = 40 mm	Pass
			f_2	3		
external width b_u: 572 mm			f_1-f_2	8		

24.0232-B – Type: PLS3.7						
	weight [N]	Based on paragraph no. of NEN 2484 requirement	method	result	requirement	Pass/ fail
Part A – Strength test						
1 Test preparation	1000	-	7.1.3	-	-	-
2 Resistance to static load	3500	6.3.1	7.3.1.1	0	no permanent change in shape	Pass
length L_2 1,340 mm			7.3.1.2	0.2	max 1/1000xL_2= 1.3 mm	Pass
Part B – Handrails						
Height baluster	-	4.3.2		1,110	min 600 mm	Pass
Part C- Torsion on ladder length						
Resistance to torsion	100/250	6.3.3	7.3.3 f_1	12	$f_1 - f_2 \leq 0.07\ b_u$ = 39.9 mm	Pass
			f_2	4		
external width b_u: 570 mm			f_1-f_2	8		

24.0232-C – Type: PLS5						
	weight [N]	Based on paragraph no. of NEN 2484 requirement	method	result	requirement	Pass/ fail
Part A – Strength test						
1 Test preparation	1000	-	7.1.3	-	-	-
2 Resistance to static load	3500	6.3.1	7.3.1.1	0	no permanent change in shape	Pass
length L_2 2,400 mm			7.3.1.2	0	max 1/1000xL_2= 2.4 mm	Pass
Part B – Handrails						
Height baluster	-	4.3.2		1,110	min 600 mm	Pass
Part C- Torsion on ladder length						
Resistance to torsion	100/250	6.3.3	7.3.3 f_1	26	$f_1 - f_2 \leq 0.07\ b_u$ = 39.9 mm	Pass
			f_2	13		
external width b_u: 570 mm			f_1-f_2	13		

24.0232-D – Type: PLS5.7						
	weight [N]	Based on paragraph no. of NEN 2484 requirement	method	result	requirement	Pass/ fail
Part A – Strength test						
1 Test preparation	1000	-	7.1.3	-	-	-
2 Resistance to static load	3500	6.3.1	7.3.1.1	0	no permanent change in shape	Pass
length L_2 2,450 mm			7.3.1.2	2	max 1/1000xL_2= 2.5 mm	Pass
Part B – Handrails						
Height baluster	-	4.3.2		1,110	min 600 mm	Pass
Part C- Torsion on ladder length						
Resistance to torsion	100/250	6.3.3	7.3.3 f_1	26	$f_1 - f_2 \leq 0.07\ b_u$ = 39.9 mm	Pass
			f_2	11		
external width b_u: 570 mm			f_1-f_2	15		

24.0232-E – Type: PLS6.7						
	weight [N]	Based on paragraph no. of NEN 2484 requirement	method	result	requirement	Pass/ fail
Part A – Strength test						
1 Test preparation	1000	-	7.1.3	-	-	-
2 Resistance to static load	3500	6.3.1	7.3.1.1	0	no permanent change in shape	Pass
length L_2 2,730 mm			7.3.1.2	2	max 1/1000xL_2= 2.7 mm	Pass
Part B – Handrails						
Height baluster	-	4.3.2		1,105	min 600 mm	Pass
Part C- Torsion on ladder length						
Resistance to torsion	100/250	6.3.3	7.3.3 f_1	37	$f_1 - f_2 \leq 0.07\ b_u$ = 39.9 mm	Pass
			f_2	3		
external width b_u: 570 mm			f_1-f_2	34		