



Type approval of safety nets for protection against rockfall

Test Certificate No. 08-21

System description

• System designation	ISOSTOP 250 kJ ES		
• Address of manufacturer	isofer ag, Industriequartier, 8934 Knonau, Switzerland		
• System description			
– Energy class		250 kJ	
– Posts:	profile	HEA 100	
	length a_l	2.2 m	
	interval a_s	10 m	
– Support ropes:	type	DIN 3058	
	diameter	16 mm	
– Net:	type	Twisted cable net 8/10/300 mm	
	diameter	8 mm, peripheral cable 10 mm	
	mesh	300 x 300 mm	
	height h_v	2.00 m	
– System drawings			
	Description	No.	Date
	Safety net für protection against rockfall; Type approval 250 kJ ES (general documentation)	-	July 2008

Basic documentation

• Field test			
WSL test report	Date 15 august 2008	Report no. 08-21	
• Overall assessment			
Overall assesement of the EKLS	Date 26 august 2008	Report no. 08-21	

Test results

• Preliminary test of outer part			
– Penetration of test body	yes <input type="checkbox"/> / no <input checked="" type="checkbox"/>		
– Additional observations	none		



• Preliminary energy test (50%)	125 kJ
– Penetration of test body	yes <input type="checkbox"/> / no <input checked="" type="checkbox"/>
– Braking time t_s	0.25 s
– Braking distance b_s	3.20 m
– Sum of the tensile forces in the upper cables	69 kN
– Sum of the tensile forces in the lower cables	75 kN
– Maximum of the tensile forces in a stay cable	28 kN
– List of damaged elements	No damage to load bearing structural members. Four of the 4 breaking elements were deformed and 4 were replaced prior to the main test.
– Assessment of repairs	The extent of repairs necessary following the test is ascertained to be slight. The time required was 8.5 man-hours.
• Main energy test (100%)	250 kJ
– Penetration of test body	yes <input type="checkbox"/> / no <input checked="" type="checkbox"/>
– Braking time t_s	0.27 s
– <i>Maximum permissible braking distance b_s</i>	5.0 m
– Measured braking distance b_s	4.20 m
– <i>Minimum permissible residual braking height h_n</i>	1.0 m
– Measured residual braking height h_n	1.1 m
– Sum of the tensile forces in the upper cables	88 kN
– Sum of the tensile forces in the lower cables	85 kN
– Maximum of the tensile forces in a stay cable	51 kN
– List of damaged elements	Four of the 4 breaking elements were deformed.
• Assessment of special criteria	
– Comments on assembly and on the assembly instructions	The system is very easily assembled.
– Comments on adaptability to the terrain	Adaptability to the terrain is normal.
– Comments on design complexity	The design is very simple. Damaged elements are easy to replace.
– Comments on anticipated service life	The anticipated life cycle of the standard version is ascertained to be adequate.



Overall assessment

Test passed

Test passed with reservations

Tested according to the following guidelines: GERBER, W. 2001: Guideline for the approval of rockfall protection kits. Environment in practice. Swiss Agency for the Environment, Forests and Landscape (SAEFL), Swiss Federal Research Institute WSL. Berne, 39 pages. Revised June 2006.

RESERVATION: Should deficiencies arise following certification of the safety net, FOEN may revoke product release and delete it from the type approval list.

Date

Name, position

Signatures

23.09.08

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