



Type approval of safety nets for protection against rockfall

Test Certificate No. S 14-5

System description

- **System designation**

RXE-500

- **Address of manufacturer**

Geobrugg AG, Aachstrasse 11, 8592 Romanshorn

- **System description**

– Energy class		500 kJ
– Posts:	profile	HEA 120 (S355JRG)
	length a_l	3.40 m
	interval a_s	10 m
– Support ropes:	type	6x36 W-S + SE, 1770 N/mm ²
	diameter	18 mm
– Stop ropes:	type	6x19 W-S + SE, 1770 N/mm ²
	diameter	18 mm
– Net:	type	ROCCO 7/3/350 ring net (7 windings)
	diameter	Ring diameter 350 mm, wire diameter 3 mm
	mesh	-
	height h_v	3.6 m

- System drawings

Description	No.	Date
System handbook RXE 500	EKLS/01	31.07.2014
Maintenance handbook RXE-1000-RXE-8000	EKLS/01	10.04.2013
Technical documentation RXE-500		15.08.2014

Basic documentation

- **Field test**

WSL test report (EOTA) Date 08.12.2014 Report no. 14-14

- **Overall assessment**

Overall assessment of the Date 18.12.2014 Report no. S 14-5
EKLS (FECAR)

Test results

- **Preliminary test of outer part**

– Penetration of test body yes / no

– Additional observations See test S 03-4 (same type)



• Preliminary energy test (50%)	250 kJ
– Penetration of test body	yes <input type="checkbox"/> / no <input checked="" type="checkbox"/>
– Braking time t_s	0.18 s
– Braking distance b_s	3.04 m
– Sum of the tensile forces in the 4 upper cables	236 kN
– Sum of the tensile forces in the 3 lower cables	158 kN
– Maximum of the tensile forces in a stay cable	67 kN

– List of damaged elements

– Assessment of repairs

The net was completely replaced. The work took 33 man hours.

• Main energy test (100%)	500 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>	6.0 m
– Measured braking distance b_s	4.6 m
– <i>Minimum permissible residual braking height h_n</i>	1.5 m
– Measured residual braking height h_n	1.77 m
– Sum of the tensile forces in the 4 upper cables	272 kN
– Sum of the tensile forces in the 3 lower cables	196 kN
– Maximum of the tensile forces in a stay cable	91 kN

– List of damaged elements

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• **Assessment of special criteria**

– Comments on assembly and on the assembly instructions

The assembly cost is standard for a system of this energy class.

– Comments on adaptability to the terrain

Adaptability to the terrain is normal.

– Comments on design complexity

The system has one U-shaped rope (top and bottom) for each of the support ropes and two stop ropes. An intermediate retaining rope is required every 60 m in accordance with the regulations. 9 ropes must be anchored there.

– Comments on anticipated service life

The anticipated service life is ascertained as 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

23.02.2015

Name, position

Dr. Josef Hess, Vice-Director

Signatures

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