

Swedwire AB
Box 170
432 24 Varberg

Tensile strength test

1 Introduction

By commission of Swedwire AB tensile strength test on galvanized road barrier ropes were performed.

Place of testing: SP Safety in Borås.

2 Test objects

Designation: Galvanized road barrier ropes, 3 x 7 with wire diameter of 3 mm.
Test objects with a length of 1.5 m and nominal diameter 19 mm,
see Figures 1-2



Figure 1. Test objects



Figure 2. Test object

Selection of test objects: Performed by the client without SP's assistance.

Arrival of test objects: November 21, 2016

SP Technical Research Institute of Sweden

Postal address
SP
Box 857
SE-501 15 BORÅS
Sweden

Office location
Brinellgatan 4
SE-501 15 BORÅS

Phone / Fax / E-mail
+46 10 516 50 00
+46 33 13 55 02
info@sp.se

This document may not be reproduced other than in full, except with the prior written approval of SP.

3 Test equipment

Test equipment: 750 kN Alpha testing machine.

4 Test method

Test date: November 21, 2016

Performance: The tests were performed in a constant deformation control with a speed of 20 mm/min until fracture occurred. The test object was mounted in a testing machine, see Figure 3.

Measurements: The maximum tensile load was registered.



Figure 3. Testing machine.

5 Measurement uncertainty

The total calculated measurement uncertainty for the force $< 1\%$. Reported uncertainty corresponds to an approximate 95 % confidence interval around the measured value. The interval has been calculated in accordance with EA-4/16 (EA guidelines on the expression of uncertainty in quantitative testing), which is normally accomplished by quadratic addition of the actual standard uncertainties and multiplication of the resulting combined standard uncertainty by the coverage factor $k=2$.

6 Test results

The test results are shown in Table 1. The locations of fractures see Figures 4-6. The test results shown in this report refer only to the tested objects.

Table 1. Test results tensile strength tests.

Test object No.	Ultimate tensile load F_m [kN]	Ultimate tensile load F_m [ton]	Remarks
1	190	19.4	Fracture occurred in the road barrier rope, in the grips see Figure 4. Fracture in 7 wires of 21.
2	188	19.2	Fracture occurred in the road barrier rope, in the grips see Figure 5. Fracture in all 21 wires.
3	184	18.7	Fracture occurred in the road barrier rope, in the grips see Figure 6. Fracture in 7 wires of 21.



Figure 4. Test object No. 1, location of fracture.

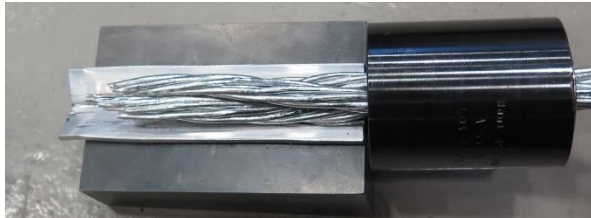


Figure 5. Test object No. 2, location of fracture.



Figure 6. Test object No. 3, location of fracture.

**SP Technical Research Institute of Sweden
Safety - Mechanics Research**

Performed by

Examined by

Jukka Holappa

Lars Boström