

Swed Wire AB
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Tensile strength test

1 Introduction

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

Test place: RISE Safety – Mechanics Research laboratory 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: RISE did not take part in the sampling of the test material.

Arrival of test objects: November 27, 2017.

RISE Research Institutes of Sweden AB

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3 Test method and implementation

Test method: 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.

Equipment: 750 kN Alpha testing machine.

Measurements: The maximum tensile load was registered.

Test date: December 7, 2017.



Figure 3. Testing machine.

4 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 $k=2$.

5 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	180	18.3	Fracture occurred in the road barrier rope, in the grips see Figure 4. Fracture in 7 wires of 21.
2	189	19.2	Fracture occurred in the road barrier rope, in the grips see Figure 5. Fracture in 14 wires of 21.
3	187	19.0	Fracture occurred in the road barrier rope, in the grips see Figure 6. Fracture in 14 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.

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