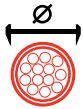
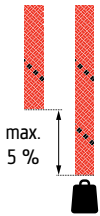
TESTING ROPES WITH LOW ELONGATION (STATIC ROPES) IN ACCORDANCE WITH EN 1891



DIAMETER

This quantity is measured with a 10 kg load on the rope. The ropes may have a minimum diameter of 8.5 mm and a maximum of 16 mm.



ELONGATION

Usable static elongation is measured by applying a test load of 150 kg (after 50 kg pretensioning). elongation may not exceed 5%.

STATIC STRENGTH

This is always stated on tags on the ropes. It varies according to the diameter of the rope and the kind of material used. EN 1891 requires that group A ropes have a minimum static strength of 22 kN, and that type B ropes have a minimum static strength of 18 kN.

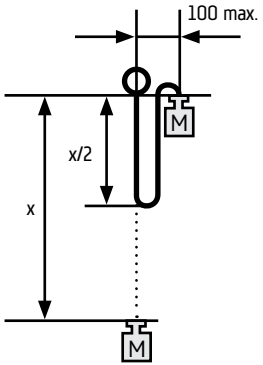
WARNING! *The maximum recommended load is 1/10 of the nominal strength stated on the product label.*

REQUIREMENTS WITH RESPECT TO MATERIAL PROPERTIES

According to EN 1981, static ropes must be manufactured from a material that has a melting point higher than 195 °C, so they may not be made using polyethylene and polypropylene. Ropes made for those materials for canyoning are not subject to that norm, although they fulfill the norm with respect to static strength and other parameters.

SHEATH SLIPPAGE RELATIVE TO THE CORE

This parameter is important mainly during rappelling on static ropes – if this parameter of a rope is insufficient, a safe descent could be endangered by the bunching of the rope's sheath in front of the rappelling brake.
For type A ropes, slippage may not exceed ca. 40 mm for a 2 m length of rope (this applies to ropes with a diameter of up to 12 mm). For type B ropes, slippage may not exceed 15 mm.



DYNAMIC PERFORMANCE

The testing equipment is similar to that used for testing climbing ropes, except that the rope is ca. 2 m long. At the ends it is tied in figure eight knots and it is tested with five falls with a fall factor of 1. During the test, the rope must withstand all five falls. Type A ropes are tested with a load of 100 kg. Type B ropes are tested with a load of 80 kg.

KNOTABILITY

This is tested in the same way as mountain climbing ropes: it must not be possible to insert a bar with a diameter greater than a multiple of 1.2 times the diameter of the rope into the opening in the knot tightened by the testing force.

Requirements of the norm EN 1891 - static ropes

	Required values	
Monitored Parameters	**Rope Type A**	**Rope Type B**
Rope diameter	8,5 - 16 mm	
Knotability coefficient	Max. 1,2	Max. 1,2
Sheath slippage	Max. 40 mm	Max. 15 mm
Elongation	Max. 5 %	Max. 5 %
Shrinkage	Undefined	Undefined
Impact force	Max. 6 kN	Max. 6 kN
No. of falls with a fall factor of 1	Min. 5	Min. 5
Strength without knots	22 kN	18 kN
Strength with knots	Min. 15 kN (3 minutes)	Min. 12 kN (3 minutes)

CHOOSING THE RIGHT STATIC ROPE FOR THE JOB

Type A ropes are stronger and provide better dynamic performance, so always prefer to use these ropes. An example of the use of **type B** would be a caving expedition, where it is necessary to minimize the weight of equipment and gear, and where a certain level of carefulness and experience of the users of the ropes is expected. Persons using static ropes should be trained, since ropes can be damaged relatively easily by mechanical wear or chemical exposure. Users must know about the risks that can damage ropes, and particularly must know when static ropes cannot be used.

WARNING! *In practice, fall factor is only important for static ropes when deciding how to anchor ropes, because one of the basic rules of their use is that the attaching of ropes must be done in such a way that the secondary securing point and all of the other elements of the safety chain are not subjected to an impact force of a fall with a factor greater than* ***f = 1****!*