

### ERDOX JUNIOR NEVE Dk (200/250 cm)

ERDOX JUNIOR NEVE represents the fastest and safest solution for works of active consolidation of the snowpack. The active defense works are those made in the avalanche release area. The function, therefore, of the snow barriers is to stabilize the snowpack in the release area, containing the potentially dislocable volumes, effectively reducing the avalanche risk.

ErdoX Junior Neve is characterized by an extremely rapid installation, which, together with the easy transportation, make it particularly suitable for works on potentially dangerous slopes. These barriers guarantee an optimal corrosion resistance as they are supplied with hot dip galvanizing EN 1461 with steel wire meshes protected with eutectic alloy Zn – Al5% class A (UNI EN 12385-2-4, UNI EN 10244-2, UNI EN 10264-2).



#### Technical standards on the materials used:

**UNI EN 10219** "Cold formed welded structural sections of non alloy and fine grain steels";

**UNI EN 10025-2** "Hot rolled products of structural steels – Technical delivery conditions ";

**UNI EN ISO 1461** "Hot dip galvanized coatings on fabricated steel and iron articles—Specifications and test methods";

**UNI EN 12385** "Steel wire ropes—Safety";

**UNI EN 10264 -2** "Steel wire and wire products—Steel wire for ropes—Part 2: Cold drawn non alloy steel wire for ropes for general applications";

**UNI EN 10223-3** "Steel wire and wire products for fencing and netting—Part 2: Hexagonal steel wire mesh products for civil engineering purposes";

**UNI EN 10244-2** "Steel wire and wire products—Non ferrous metallic coating on steel wire—Part 2: Zinc or zinc alloy coating".

#### System technology

ErdoX Junior Neve is a pyramidal isostatic structure. The frontal cross-shaped structure consists of a 90x90x3 mm square tubular profile beams, in support of a double twisted mesh. The stresses are transmitted to the foundation through a tubular profile connected to the central node and a system of steel bracing cables. The snowpack retaining is made through a double twisted mesh positioned inside the structure, with the function of load distribution on the main cross element of the structure. The anchoring of the ErdoX Junior Neve is made with a Diwidag like bar to counteract the horizontal forces. Normally, ErdoX Junior Neve barriers are installed at a distance of about 25 cm from each other. The alignments of barriers are therefore not an obstacle for small animals, as are other types of snow barriers; furthermore, the fact that the single alignment is made up of a certain number of independent elements, allows the possible displacement and, consequently, allows larger passages (even 1.5 / 2.0 m) for ungulates, prevented by other types of barriers. This type of structure is therefore aimed at an advantageous and very limited environmental impact.

#### Main features

- Structures factory pre-assembled that facilitate the barriers assembly operations, such operations can in fact be easily made in a yard at lower heights installation point;
- Works at height minimised (tracking for drilling and making anchors, one for each structure);
- Low weight that allows easy transport at height. The positioning at height consists simply of inserting the connecting bolt between the avalanche barrier and the previously made foundation bar;
- Extremely reduced workforce and equipment at height (reducing costs and execution times);
- Low environmental impact (the spacing between the structures guarantee vertical passages for the fauna);
- Possibility to keep the elements separated and the consequent remarkable adaptability of the structures to the morphology, often very tormented and articulated, of the mountain slopes;
- Possibility to displace the structures avoiding, most of the time, the cutting of plants (when the interventions border on wooded areas);
- The ErdoX Neve elements are spaced at least about 20 cm from each other, and this allows an economic saving with the same linear meters of work compared to traditional barriers.



*Load distribution plate.*

#### Design

These structures are verified according to structural calculations carried out in accordance with the provisions of the technical standards in force relating to reinforced concrete and geotechnical works, and more precisely:

**D.M. 22.03.2018** "Technical standards for constructions";

**UNI EN 1993-1-1** "Eurocode 3" – Design of steel structures Part 1 – 1: General rules and rules for buildings";

**UNI EN 1993-1-8** "Eurocode 3" – Design of steel structures Part 1 – 8: Design of joints";

**UNI EN 12385-4** "Steel wire ropes—Safety";

**EN 10204:2004** "Metallic products – Types of inspection documents".

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The snow pressure on the barriers is calculated referring to "Defense structures in avalanche starting zones" (Bern, 2007) and it depends on the following factors:

**P** = average density of snow;

**H** = vertical snow height at site of structure;

**K** = creep factor, dependent on density and inclination of the slope;

**N** = glide factor, dependent on vegetation, roughness and solar exposure of the ground (see art. 25);

**fc** = altitude factor, characterizing the dependency of the density on altitude;

**fR** = end-effect factor, dependent on the lateral distance between structures (and on the arrangement of the structures) and on the glide factor.

The ERDOX snow barriers are therefore calculated on the basis of the "Guidelines for the construction of defense structures in avalanche starting zones" 2007 edition issued by the FOEN, Federal Office for the Environment, WSL Swiss Federal Institute for Snow and Avalanche Research, Davos (Switzerland).



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