DYWIDAG-SYSTEMS
INTERNATIONAL

DELTAX®

Slope Protection Mesh
Drape Mesh

DYWIDAG-SYSTEMS
INTERNATIONAL

Slope Protection Mesh - Soil Nails

DELTAX slope protection mesh is a high strength facing used to retain loose material, or superficial instabilities, between soil nail positions. Its chainlink construction enables the mesh to follow the contours of the slope face and offers rapid installation without springing or roll-back. The superior stiffness (limited strain) of DELTAX mesh ensures greater restraint for soil nailed slopes, resulting in less displacement at the face.

DELTAX slope protection mesh offers superior performance over conventional meshes, as follows:

- **Superior Strain Stiffness:** 6% as compared to 12% (Hex Meshes). *Tensile forces are distributed across the face,* as opposed to the mesh deforming.
- **Drilling Through Mesh in-Situ:** Large mesh aperture ensures standard soil nailing drill bits (Ø 76 and 100mm) can pass through the mesh, *without the need to cut a wire.*
- **High Strength, Low Visual Impact:** 53 kN/m (width), 2mm wire, grade 1770 N/mm².
- **Durability:** Ultracoat protection coating offers superior durability to Galfan coatings as well as providing greater lifespans than PVC coated meshes.

DELTAX mesh and soil nails with re-established growth

Installation of soil nails through Deltax mesh, laid on existing slope face

Anchor trench at the crest of the slope

Installation:
Roll widths of 3.5m or 3.9m and low weights (68, 76kg), ensures quick installation of Deltax on slope faces, ideal for rail possession work.

Deltax mesh must be laid against the face, with all slack pulled out, in order that the full restraint of the mesh can be mobilised. Therefore, any soil nails with exposed bar should be trimmed back to 80mm from the face, to prevent the mesh snagging and bulging.

Erosion Control:
Deltax is available with a range of erosion control mats, see Data Sheet D.303. In temperate zones (UK and Ireland), a simple polypropylene monofilament mat (10 or 20mm thick), laid beneath the Deltax mesh, is normally sufficient to retain the soil particles at the slope face, prior to the vegetation re-establishing itself. Moisture retention within the slope face is generally not a problem.

DYWIDAG-SYSTEMS
INTERNATIONAL

Drape Mesh - Rock Bolts

DELTAX drape mesh provides effective restraint to loose material and small rocks caused by ravelling at the slope face. Its higher strength, compared to standard Hex meshes, provides additional restraint in loose areas or on steep slopes. The mesh is easily attached to top border ropes by using T2 rope clips, then rolled down the face.

- **Larger Roll Widths:** Larger roll widths of 3.5m or 3.9m, ensures large areas of slope faces are rapidly covered, together with reduced wastage and less seams.
- **Low Visual Impact:** The high strength 2mm wire with increased aperture of 92 / 170mm reduces the visual impact. Double twist meshes are by their construction more visible.
- **Contouring on Slope Face:** The chainlink configuration of DELTAX mesh enables it to mould to the contours of the slope face without springing, therefore providing additional confinement to loose material.
- **Speed of Installation:** Installation rates up to twice as fast as conventional Hex Meshes, without roll-back. Ideal for limited working schedules and rail possessions.

Railway cutting, face stabilisation with DELTAX

Drape mesh with top border rope

Large roll widths and chainlink construction, ensures ease and speed of installation.

DELTAX drape mesh with GEWI rock bolts

DYWIDAG-SYSTEMS INTERNATIONAL

Deltax Mesh - Technical Data

Roll Sizes:	3.5 x 30 m (105 m²), 3.9 x 30 m (117 m²)	
Roll Weights:	68 kg,	76 kg
Internal Diameter of Mesh (PCD)	82mm (+/- 3%)	
Mesh Aperture (internal)	170mm h x 92mm w (+/- 3%)	
Mesh Height (flat)	8 mm	

Mesh Strength	53 kN/m (width)
E Value	800 kPa
Wire Angle (at bend)	53°
Wire Ø	2 mm
Wire Strength (Ultimate)	1770 N/mm²

Punching Shear Comparison:

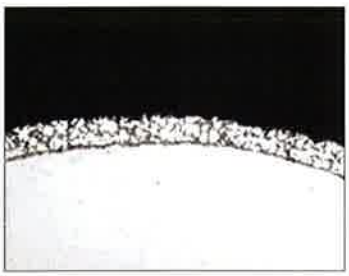
Plate Size	Hex Mesh 60/80 (2.2 mm wire)	Hex Mesh 80/100 (2.7 mm wire)	Hex Mesh 80/100 (3 mm wire)	DELTAX Mesh 100/180 (2 mm wire)
150 x 150 mm	19.2 kN	14.5 kN	18 kN	25.7 kN
200 x 200 mm	21.2 kN	29 kN	36 kN	39 kN
250 x 250 mm	28.8 kN	33 kN	40 kN	51 kN
300 x 300 mm	36 kN	40 kN	49 kN	64 kN
350 x 350 mm	41.8 kN	51 kN	63 kN	77 kN

Punching Shear Calculation - This calculation is dependent on the plate size, i.e. the number of wires within the mesh that are bisected by the plate edges.

Resistance of Wire to Breaking or Shear, Comparison (falling rocks or debris)

	Hex Mesh 60/80 (2.2 mm wire)	Hex Mesh 80/100 (2.7 mm wire)	Hex Mesh 80/100 (3 mm wire)	DELTAX Mesh (2 mm wire)
Wire Grade (ultimate)	550 N/mm²	550 N/mm²	550 N/mm²	1770 N/mm²
Tensile Strength (wire)	2.2 kN	2.7 kN	3.9 kN	5.6 kN
Shear Strength (wire)	1.2 kN	1.8 kN	2.2 kN	3.2 kN
Tensile Strength (mesh / m width)	37 kN	50 kN	-	53 kN

Corrosion Protection: Deltax mesh is supplied with Ultracoat Protection (Galvanizing with Aluminium and additional corrosion inhibitor) applied to wire prior to drawing. Following drawing, the coating is further consolidated on the wire by re-drawing (see L/H image below), offering additional abrasion resistance and increased corrosion protection.



Zinc and Aluminium coated wire (DELTAX)

Zinc coated wire (typically Hex meshes)

Lifespan of Deltax with Ultracoating: 60+ years, depending on aggressivity levels in accordance with EN ISO 12944-2 and EN 12500, see Data Sheet D.301

PVC coatings are not used, due to their poor abrasion resistance and durability, reduced corrosion protection and limited adhesion to the wire. They are easily damaged by bearing plates, tensioned border ropes and rocks or debris. See Data Sheet D.302

Unravelling resistance of DELTAX: Unravelling is the effect on the mesh where one wire is cut. For DELTAX, this effect is limited to a width of two chainlinks, due to the stiffness of bend at each link. Also unravelling remains localised around a circle on DELTAX, whereas Hex meshes tend to tear.

Top Border rope: Ø10.5-12mm Galvanized Rope. Connection of DELTAX to top border rope, use either T2 rope clip or 6mm galvanized lacing rope, see data sheet CD.102.

Deltax Plates:
Available as circular or square, with flat or formed profiles. Also supplied with welded loops or punched and folded corners.

Plain or hot dipped galvanized to EN 1461

Deltax Claw Plate:

Hexagonal claw plate, for load transfer to mesh

Deltax Connection Clips:

T3 Mesh Clip
(Ø4mm, 40mm link)

T2 Rope Clip
(Ø6mm, 14mm throat x 40mm)

CE Deltax ETA Approval
Certificate No. 1301-CPD-0818

Issue 4 September 2013