

Pipeline & Utilities



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 **TERRAM**
Geosynthetics you can trust



Protecting, marking and locating pipelines and utilities

Underground pipes and cables are key to infrastructure and protecting these assets is essential. TERRAM solutions help protect from impact damage, help warn future excavators and allow the future detection of underground pipes and cables.

TERRAM pipeline and utilities products are used extensively within the civil engineering industry to protect, identify, warn and locate pipes, cables and other buried services.

TERRAM solutions include pipeline rock protection mesh, detectable tapes for marking buried underground utility pipes and cables, underground warning tapes and cable protection covers. TERRAM ancillary items include water valve and fire-hydrant marker plates, electrical identification signage systems and street lighting ID plates.

TERRAM Detectamesh has led the market in the design and innovation of detectable underground warning tapes for over 25 years.

TERRAM products, manufacturing and laboratory capability

TERRAM brand products are manufactured by PGI, the world's top producer of nonwovens and the UK's largest manufacturer of geotextiles. The TERRAM geotextiles, geocells and geocomposites along with other related materials such as geonets, pavers and grass protection materials are proven and trusted throughout the UK and abroad. The UK manufacturing capability, based in Maldon, Essex, has been expanded and updated to a state-of-the-art facility which includes a comprehensive testing, research and development laboratory.

The TERRAM team provides a unique range of value engineered solutions for the construction of highways, railways, landfills, pipelines, coastal/ waterways defences and in landscape engineering.

With unrivalled expertise and experience in geosynthetics, accumulated over a 40 year period since the first TERRAM products were launched, the Company remains committed to the development of innovative and cost-effective geosynthetic solutions.

Pipe protection from rock backfill



Flexible mesh products are used in major pipeline projects to replace the thick sand collar that would traditionally have been placed to cushion the protective coating around a steel pipe.

Sand is a primary resource and is not always available locally to an overland project. Even when it is, its bulk means there is a heavy environmental price to pay for its transportation. Sand requires plant for installation and it is difficult to place consistently around a pipe. A polymeric mesh is more compact to transport and it can be installed relatively quickly and with consistency. As with sand, the mesh prevents stone in the backfill from abrading and puncturing the pipe's coating which would otherwise interrupt the cathodic protection system.

Once the trench has been backfilled Protectamesh HD continues to provide protection against abrasion by sharp stones during geological movements.

TERRAM Protectamesh HD

TERRAM Protectamesh HD is a thick diamond mesh extruded from low density polyethylene designed to protect pipeline coatings. It cushions against the impact of rocks which could puncture the coating during backfilling and cause corrosion.

- Low-temperature flexibility for ease of handling
- Chemically inert
- Apertures allow water flow
- High impact resistance to ASTM G13 MOD
- High tensile strength
- Up to half the weight of alternatives
- Can be supplied in rolls or in pads (cut pieces) for easy installation



TERRAM Rockshield BRS

TERRAM Rockshield BRS mesh products are manufactured from high density polyethylene and, once wrapped around a coated steel pipe, the mesh shields the coating against impact damage from rocks during backfilling.

There's a wide range of mesh widths available up to 2.5m. Rockshield products can be manufactured in cut pieces, with widths up to 2.5m wide and in various lengths. Custom mesh structures and roll sizes can be manufactured to suit individual requirements subject to minimum order quantities.

- Up to half the weight of alternatives
- High resistance to compression, tearing and abrasion
- Adaptable to all pipeline sizes
- Chemically inert
- Light, flexible and easy to install longitudinally, transversely and as a spiral
- Unaffected by temperature extremes and wet weather



Grade	Roll size m (ft)	Unit weight g/m ² (lb/ft ²)	Max pipe diameter for longitudinal wrapping mm(“)	Colour
Roll Width	1.54 x 30.48 (5 x 100)	500 (0.112)	440 (17.3)	Black
Roll Length	1.84 x 30.48 (6 x 100)	500 (0.112)	535 (21)	Black

TERRAM product specifications can be downloaded freely from www.terram.com



Marking underground buried services



Installed halfway between the service and the surface, warning tapes clearly alert future excavators of the danger beneath.

TERRAM Protectamesh HD

TERRAM Utilitape is a brightly-coloured underground warning tape manufactured from polyethylene film and can be produced to your specifications: printed with any text in any language, any colour and any size.

- Standard texts are available ex-stock (see examples opposite)
- Premium and Economy grades available (Premium manufactured in accordance with ENATS 12-23 Issue 2 : 2004)
- High quality linear low density polyethylene
- Lead-free pigments used with Premium and Economy grades
- Soil ph tolerance: 2.5 to 11.0 inclusive
- Other film thicknesses can be supplied
- Custom manufacture available any colour size or language



Warning tapes alert future rogue excavations of the potential danger of the pipe or cable beneath.



Special manufacture is available, with tapes printed in many colours, roll sizes, printed texts and languages.

Common examples of tape colours and messages

Premium grades (150mm x 0.1mm x 365m)

CAUTION CAUTION CAUTION WATER PIPE BELOW CAUTION
CAUTION CAUTION CAUTION ELECTRIC CABLE BELOW
CAUTION CAUTION CAUTION GAS MAIN BELOW
CAUTION CAUTION CAUTION STREET LIGHTING CABLE BELOW
CAUTION CAUTION CAUTION STREET LIGHTING CABLE BELOW
CAUTION CAUTION CAUTION FOUL SEWER BELOW
CAUTION CAUTION CAUTION FIBRE OPTIC CABLES
تنبهوا كابل بصرية تحت الارض CAUTION ELECTRIC CABLE BELOW

Economy grades (150mm x 0.05mm x 365m)

CAUTION CAUTION CAUTION WATER PIPE BELOW
CAUTION CAUTION CAUTION ELECTRIC CABLE BELOW
CAUTION CAUTION CAUTION GAS MAIN BELOW
CAUTION CAUTION CAUTION STREET LIGHTING CABLE BELOW
CAUTION CAUTION CAUTION FIBRE OPTIC CABLES
CAUTION CAUTION CAUTION TELEPHONE CABLE BELOW
CAUTION CAUTION CAUTION STREET LIGHTING CABLE BELOW
CAUTION CAUTION CAUTION FOUL SEWER BELOW



Making underground buried services



Underground buried pipes and cables can be marked with a warning mesh, designed to provide a visible warning to excavators, minimising potential damage to the services below.

Underground warning mesh

Utilitape underground warning net is brightly coloured, has a central strip that can be printed with a warning message for easy recognition during excavation and is manufactured and tested in compliance with BS EN12613:2009.

- Manufactured from virgin polypropylene
- Standard texts available ex-stock
- Can be manufactured to custom requirements including text, size, colour or language (subject to minimum order quantities)

BS EN 12613:2009 is a European-wide directive that specifies the warning characteristics for all underground warning devices. This scope covers electric cables and pipelines containing pressurised or non-pressurised fluids.



Manufactured to order in any colour, warning message, roll size and plastic mesh grade.

Underground warning mesh is manufactured to this European Norm and has been independently tested and approved. Our own in-house crate test and laboratory ensures consistent quality and standards are maintained to conform to BS EN 12613:2009.

Copies of test reports are available.

Detectable marking of underground buried services



Plastic pipes, fibre optic cables and unenergised cables cannot be located using standard cable avoidance tools. A detectable underground warning tape allows traceability of the buried service, while warning of the danger beneath to future rogue excavators.

Detectable warning tape

Wavelay is a detectable warning tape with embedded steel tracer wires that can be located using standard cable and pipe locators used with non-metallic pipes and un-energised cables. As a backup, the highly-visible, printed tape will also show within the spoil during any subsequent excavation.

Wavelay is laid at half depth in the trench above a pipe or a cable.

- Unique design allows wires to elongate by over 25% before breaking
- Coloured tape with printed message
- Wires in constant contact with earth
- Top Printguard layer protects the wires and the warning message
- Crimping tool and crimps are available for joining detectable wires
- Available widths from 50mm – 300mm

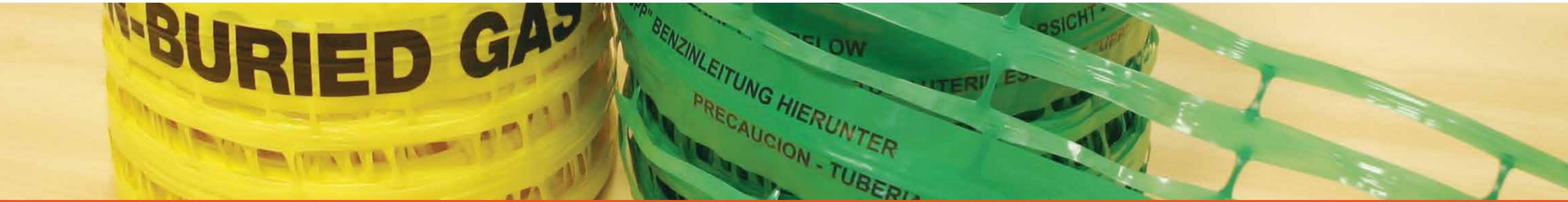
Can be manufactured in any colour, size, text or language to suit the project.



Typical tape colour and warning message	Dimensions
CAUTION COMMUNICATIONS POWER CABLE BELOW	150mm x 100m



Detectable marking of underground buried services

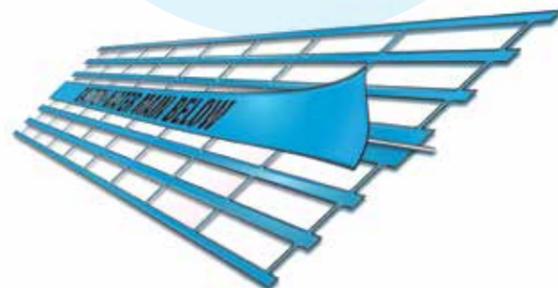
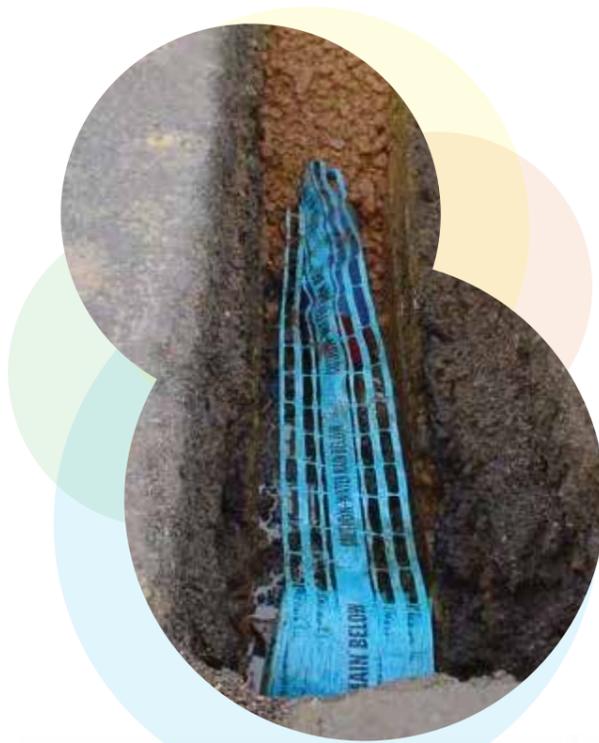


With a traceable stainless steel wire laminated between a printed underground warning tape and plastic mesh, underground services can be located using a CAT & Genny while providing a clearly visible warning of the danger below.

Detectable mesh

TERRAM Detectamesh is a high-strength, rot-resistant polypropylene mesh incorporating a traceable stainless steel wire or aluminium foil, and overprinted with a warning message in black. It can be located using standard cable and pipe locators used with non-metallic pipes and unenergised cables. The highly-visible mesh will show within the spoil during any subsequent excavation. TERRAM Detectamesh is laid at half depth in the trench above a pipe or a cable.

- Mesh manufactured to BS EN 12613:2009
- 100mm-1000mm widths (subject to MOQ's)
- Bagged for storage and protection
- Various colours available
- Customised text can be printed to order subject to a minimum order
- Crimps and crimping tool available to purchase
- Wire variations available: Copper, Insulated, Stainless steel etc.



Special manufacture available in various colours, widths, mesh sizes with either wire or aluminium foil.



Accessories

Use a crimping tool and wire crimps to ensure a continuous signal along the mesh. If it is not installed correctly then the signal may not pass from length to length. Crimping also provides the joint with sufficient strength to cope with most back fills.

Product Code	Quantity per pack
Crimping Tool	1
Stainless Steel Wire Crimps	100

Common tape colours and warning messages

CAUTION WATER MAIN BELOW
CAUTION BURIED GAS PIPE
CAUTION ELECTRIC CABLE BELOW
CAUTION FIBRE OPTIC CABLES
CAUTION SEWER BELOW
CAUTION FIRE MAINS BELOW
CAUTION SEWERAGE PUMPING MAIN BELOW
CAUTION GRAVITY SEWER BELOW
CAUTION PRESSURE SEWER BELOW
CAUTION NON POTABLE WATER MAIN BELOW
CAUTION TELEPHONE CABLE BELOW
CAUTION STREET LIGHTING CABLE BELOW

200mm x 100m rolls. Other colours, sizes or languages can be manufactured.



TERRAM product specifications can be downloaded freely from www.terram.com



Detectable marking of underground buried services

Protecting cables and pipes underground



Underground tapes with an aluminium foil tape are used to mark, warn and allow the detection of buried underground pipes and cables.

TERRAM Ultrastrong detectable tape

Ultrastrong is a polyethylene laminate with a strip of detectable aluminium foil at the centre.

- Available in any colour and text
- Aluminium foil with no less than 99.5% purity
- High tensile strength
- Lamination prevents corrosion



TERRAM Aluminium foil detectable tapes

Aluminium tape is a printed, coloured strip of detectable, aluminium-foil tape, permanently laminated between two layers of polymer to prevent corrosion.

Available in many colours

- All 50mm tapes are boxed in dispenser cartons
- Easily located by direct connection
- Continuous metallic tracer element

Accessories

Use a crimping tool and wire crimps to ensure a continuous signal along the tapes. If it is not installed correctly then the signal may not pass from length to length. Crimping also provides the joint with sufficient strength to cope with most back fills.

Product Code	Quantity per pack
Crimping Tool	1
Ultra Crimps	5



Protecting cables and pipes from impact damage while warning future rogue excavators of the service line beneath is essential to protect these vital assets.

TERRAM Tapetile protection warning tape

Tapetile is the next step up from a basic warning tape, not only warning operators but affords a level of protection to the underlying service.



Manufactured from low density polyethylene and with a pre-printed warning tape bonded to one side.

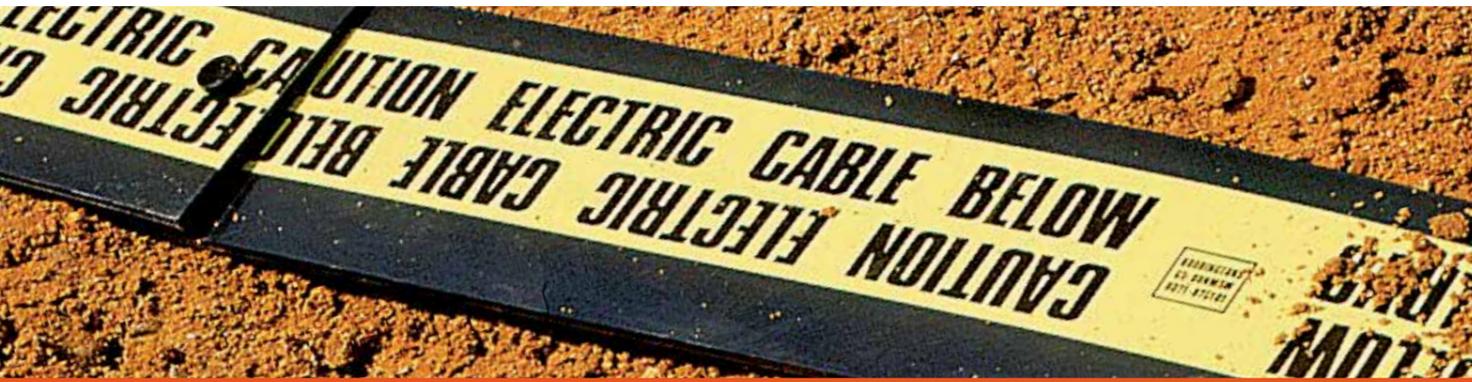
- Manufactured in accordance with ENATS 12-23 Issue: 2004
- Different thickness grades to suit the level of protection
- Tensile strength >10N/mm²
- Elongation at break >300%

Tapetile can be manufactured in various thicknesses depending on the level of protection required. The colour of the tape and the warning message can also be varied to suit the application.

Typical tape colour and warning message	Dimensions (w x t x l)
	150mm x 2.5mm x 40m



Protecting cables and pipes underground



Heavy-duty, cable covers manufactured from recycled polyethylene are suitable for use with high-voltage power cables or other buried services which require additional protection such as fibre-optic cables, water and gas pipes.

PE Cable protection covers

Lightweight PE cable covers can be laminated with coloured tape pre-printed with a suitable warning message on the top surface. The covers are pre-drilled and supplied with joining pegs for ease of connection. The effective length once overlapped and joined is 960mm (approx).

- High impact resistance, manufactured to BS 2484
- Rot resistant
- Lightweight for low transportation and installation costs
- Available from 6mm to 18mm thick
- Different colours and dimensions are available to order subject to a minimum order
- Water, Gas and Fibre Optic cable covers can be manufactured to order
- Other warning messages and cable cover sizes can be manufactured subject to quantity



Typical tape colour and warning message	Dimensions (w x t x l)	Polymer
	150mm x 12mm x 1m	Recycled LDPE
	244mm x 12mm x 1m	Recycled LDPE

Protecting cables and pipes underground

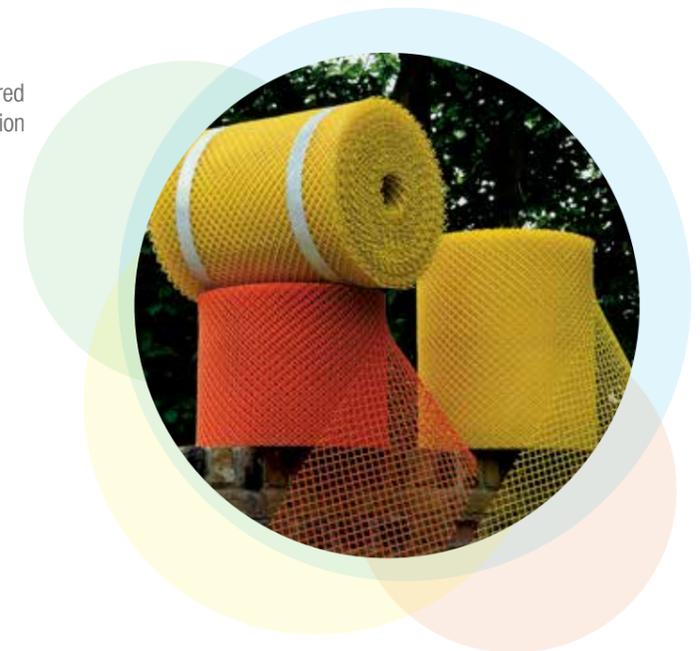


Plastic meshes can be used to protect underground cables and pipes where a highly visible wide width of protection is required against future impact damage.

Cable and pipe protection mesh

TERRAM cable and pipeline protection mesh is manufactured from high density polyethylene and offers excellent protection to buried services. The mesh is supplied in three standard dimensions and colours.

- High impact resistance
- Each roll is bagged for protection
- Average tensile strength -100N per filament
- Excellent chemical resistance



Other colours and sizes available.

Products and colours	Dimensions (w x t x l) - other widths are available	Colour
	400mm x 3mm x 50m	Orange
	600mm x 3mm x 50m	Yellow
	1500mm x 3mm x 50m	Red



Further market specific literature available:

- Railways
- Road and Highways
- Ground Reinforcement Solutions
- Forestry & Landscaping
- Fruit & Viticulture

www.tubex.com

Application specific literature, product data sheets, case studies and installation guides are available on request or can be freely downloaded from **www.terram.com**

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PGI excels in the innovative application of technology to create versatile, high-performance materials which are unique, cost-efficient and deliver significant added value.



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