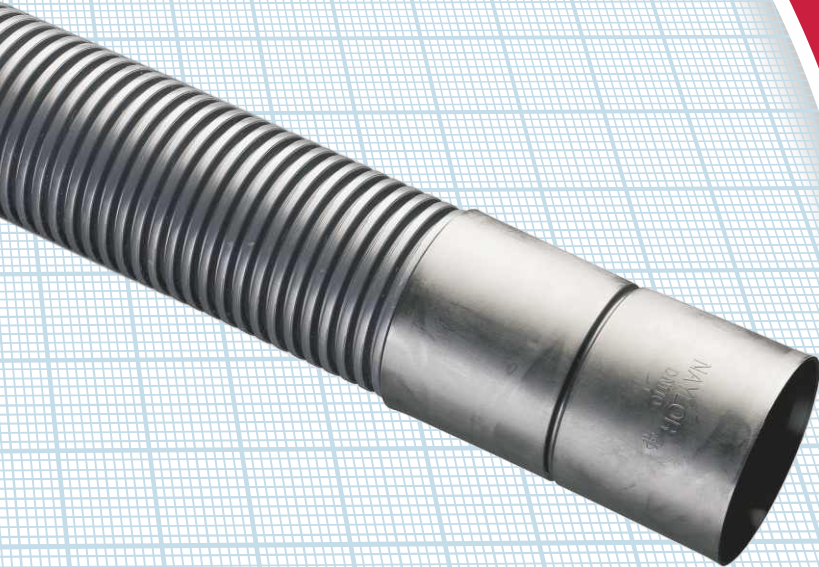




NAYLOR
DRAINAGE



Naylor MetroDuct Class 1 & 2 applications

Technical
Information

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Introduction

Naylor offer a technically advanced and comprehensive range of ducting systems. Alongside our Utility range of products aim our product offer now includes both Class 1 and Class 2 systems suitable for high temperature installations* and applications in the power industry. The extension to our range is fully compatible with the range of fittings and accessories already available.

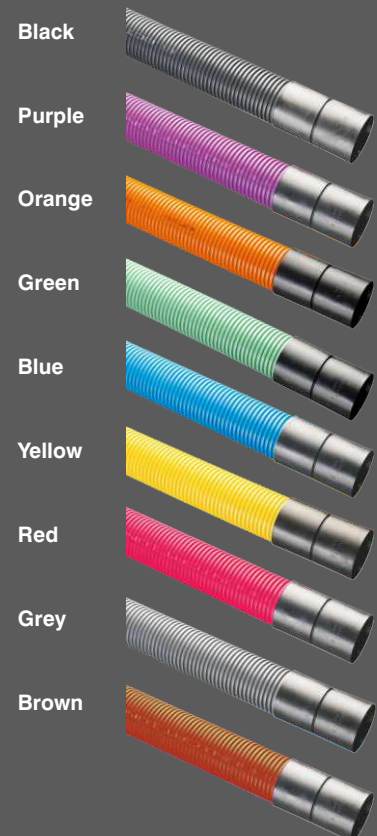
The MetroDuct cable protection system consists of both single and twin wall ducting and is available in sizes ranging from 50mm ID through to 600mm ID. With ducting facilities in both England and Scotland we are well placed to meet the needs of civils, utility, telecom and power markets.

Features and benefits

- Full system available including couplers, bends and access boxes
- Sealed system available for minimising the ingress of dirt and roots
- Kitemarked to BS EN 61386 where applicable
- Fully compliant with ENA TS 12-24 Class 1 and 2 where applicable
- BBA certified in accordance with HAPAS requirements, certificate number 08/H131
- Available in strengths lengths of 3 and 6 metres and coils up to 100 metres in length
- Where possible MetroDuct contains recycled materials up to 70% content without compromising on performance

Applications

The MetroDuct cable protection system consists of both single wall and twin wall ducting for use in power, communications, street lighting and traffic signals. We also have a range of products for use in the protection of utilities such as gas and water supplies. Colour coding of MetroDuct is in accordance with the National Joint Utilities Group (NJUG) guidelines and product is available in a colour range of:



Developments



Telecoms



Highways



Rail



Power & Energy



Ports



Agriculture

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MetroDuct Cable Protection Ducts for Utilities and the Power Industry

ENATS Approved Ducting for the Power Industry

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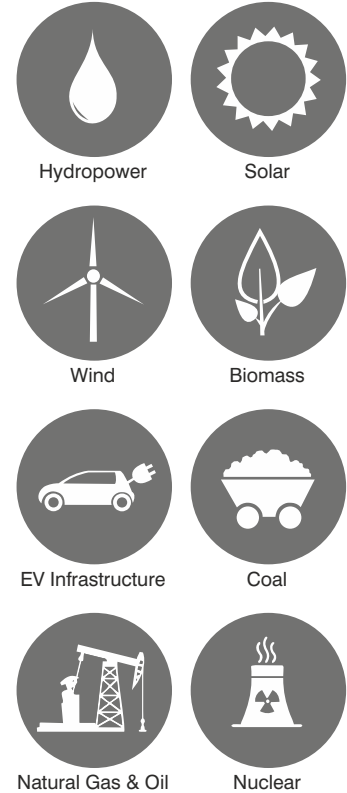
Design & Installation



ENATS Approved Ducting for the

Market and applications

- The market for ducting for power cables is estimated at a value of £50 to £60 million per annum at manufacturers selling price.
- Applications include Hydro, Solar, Wind and Biomass as well as EV infrastructure.
- Ducting for power applications is specified on the basis of the classification in the Energy Networks Association Technical Specification 12-24 (ENATS 12-24).
- The class of ducting is defined by its compressive strength at given temperatures.
 - Class 1 power ducting is for high voltage applications (33kV, 66kV & 132kV with 450kN compression performance at operating temperatures of 75°C).
 - Class 2 power ducting is for low voltage applications (230v/11kV & 20kV with 450kN compression performance at operating temperatures of 50°C).
 - Class 3 power ducting is for general applications (450kN compression performance at operating temperatures of 23°C). This includes the requirements of BS EN 61386 as required by the Highways Agency and other asset owners.
- Naylor now offer
 - Class 1 twin wall duct manufactured from polypropylene and Class 2 twin wall duct manufactured in HDPE in sizes 100mm, 125mm, and 150mm
 - Both ranges of product meet the requirements of ENATS 12-24.
 - To enhance of product range Naylor will shortly be launching a Class 1 single wall system manufactured from PVC.
- To enhance our product range in the power sector we are launching a Class 1 compliant duct in 3 sizes, 100mm, 125mm and 150mm.



MetroDuct Class 1

- MetroDuct Class 1 is a twin wall polypropylene duct that meets the Energy Networks Association Technical Specification 12-24 (ENATS 12-24) Class 1.
- Complies with Class 1 performance satisfying BS EN 61386-24 and ENATS 12-24 Clause 10 to give minimum 450 N compression strength at 75°C.
- Suitable for use with high voltage power cables especially in wind power, solar power and EV distribution network
- Rated IP4X in accordance with BS EN 60529.
- MetroDuct Class 1 is available in 3 sizes: 100mm ID (120mm OD), 125mm ID (145mm OD) and 150mm ID (178mm OD) with black inner and outer layers.
- MetroDuct Class 1 has a corrugated outer layer for strength and stiffness and a smooth inner layer for easy, trouble-free cable insertion.



Black inner/outer available as standard



Red inner / black outer available on request

Testing and approvals

- Our polypropylene ducting has been tested in accordance with Technical Specification for plastic ducts for buried electric cables ENATS 12-24 Issue 2021 and is covered by (certificate number A3002).
- All our Class 1 ducts are marked "ELECTRIC CABLE DUCT C1 NAYLOR".



Compression test



Impact test



Static friction coefficient test

Range - Class1

ID/OD (mm)	Length (m)	Colour	Pack Qty.	Code
100/120	6	Black & Black/Red	85	29526
125/145	6	Black & Black/Red	72	29626
150/178	6	Black & Black/Red	33	29726

MetroDuct Class 1 Ducting Couplings

Product Description	Colour	Code
100mm Couplings	Black	29101
125mm Couplings	Black	29100
150mm Couplings	Black	29098

Class 2 Twin Wall Cable Duct

Fully compliant with ENATS 12/24 Issue 2007/8

ID/OD (mm)	Length (m)	Pack Qty.	Code	Certification
100/120	6	85	29516	ENATS 12/24
100/120	3	85	29513	ENATS 12/24
100/120	2	85	29512	ENATS 12/24
100/120	1	85	29511	ENATS 12/24
125/145	6	72	29616	ENATS 12/24
125/145	3	72	29613	ENATS 12/24
125/145	2	72	29612	ENATS 12/24
125/145	1	72	29611	ENATS 12/24
150/178	6	33	29716	ENATS 12/24
150/178	3	33	29713	ENATS 12/24
150/178	2	33	29712	ENATS 12/24
150/178	1	33	25711	ENATS 12/24



Supplied with one coupling per length.

MetroDuct Size & Range

including weights & dimensions

MetroDuct Class 1 - Twin Wall Polypropylene

Size DN (mm)	Nominal OD (mm)	Length (mtrs)	Weight per mtr (kg)	Pack quantity	Colours
100	120	3 & 6	1.20	85	Black outer / red inner
125	145	3 & 6	1.40	72	
150	178	3 & 6	1.70	33	

MetroDuct Class 2 - Twin Wall HDPE

Size DN (mm)	Nominal OD (mm)	Length (mtrs)	Weight per mtr (kg)	Pack quantity	Colours
100	120	3 & 6	1.03	85	Black
125	145	3 & 6	1.44	72	
150	178	3 & 6	1.58	33	

MetroDuct Utility Class 3 - Twin Wall HDPE Coils

Size DN (mm)	Nominal OD (mm)	Length (mtrs)	Weight per mtr (kg)	Pack quantity	Colours
50	63	50	0.29	8	Black, purple, orange, green, blue, yellow, red, grey, brown
94	110	50	0.59	5	
137	160	50	0.99	4	

MetroDuct Utility Class 3 - Twin Wall HDPE Lengths

Size DN (mm)	Nominal OD (mm)	Length (mtrs)	Weight per mtr (kg)	Pack quantity	Colours
50	63	3 & 6	0.25	158	Black, purple, orange, green, blue, yellow, red, grey, brown
94	110	3 & 6	0.59	100	
100	120	3 & 6	0.63	85	
125	145	3 & 6	0.89	72	
137	160	3 & 6	0.99	33	
150	178	3 & 6	1.18	33	
225	267	6	2.48	14	
300	354	6	3.9	9	
375	433	6	5.9	5	
450	521	6	9.1	4	

MetroDuct Perforated Gas Pipe Ducting

Size DN (mm)	Nominal OD (mm)	Length (mtrs)	Weight per mtr (kg)	Pack quantity	Colours
50	60	50	0.18	8	Yellow
		150		5	
65	80	25	0.27	9	
		50		7	
		100		4	
185	100	25	0.37	7	
		50		6	
		100		4	
135	160	50	0.79	4	

MetroDuct Accessories

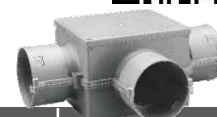


Duct Spacer

Description	Size (mm)	Code
4 Way	110	29230
4 Way	120	29375
4 Way	150 (178)	29399
6 Way	110	29228
6 Way	150 (178)	29231
8 Way	150 (178)	29235

MetroCoil Fittings

Junction Boxes - Scotland



OD (mm)	Colour	Code
105	Black	M68132

End Caps



Diameter (mm)	Code
63	29131
90*	29130
110	29129
120	29128
145	29127
160	29126
178	29168

*Subject to minimum order quantity and lead time.

Connectors - Scotland



OD (mm)	Colour	Code
63	Black	M29343
105	Black	M29345

Reducers - Scotland



OD (mm)	Colour	Code
105x63	Black	68008

Lubricant



Size (Kg)	Code
1.0	50001
2.5	50002

Suitable for all types of push fit gravity pipe systems. We cannot guarantee the performance of the product if Naylor Lubricant is not used.

Sitework Equipment

Draw Cord



Description	Code
220 Metre Coil	29264
500 Metre Drum	29191

Nominal 5kN Breaking Strength. 6mm cord.

Marker Tape



Service	Colour	Code
Electric Cable	Yellow	34036
Water Main	Blue	34037
Gas Main	Yellow	34038
Telephone Cable	Green	34039
Foul Sewer	Red	34040
Street Lighting	Yellow	34041

365m Rolls.

MetroDuct Access Chamber

The Naylor Modular Access Chambers systems are an easy to assemble, eco-friendly system, which can either be supplied flat packed or pre-assembled depending on the customer's preference.



Metro Access Chambers

Clear Opening (W) mm	Clear Opening (L) mm	Depth (D) mm	Pallet Qty.	Code
300	300	330	18	69224
300	450	330	18	69225
450	450	330	24	69226
450	600	330	18	69227
600	600	330	13	69228

Larger sizes are available upon request. Supplied fully assembled or flat packed.

Features

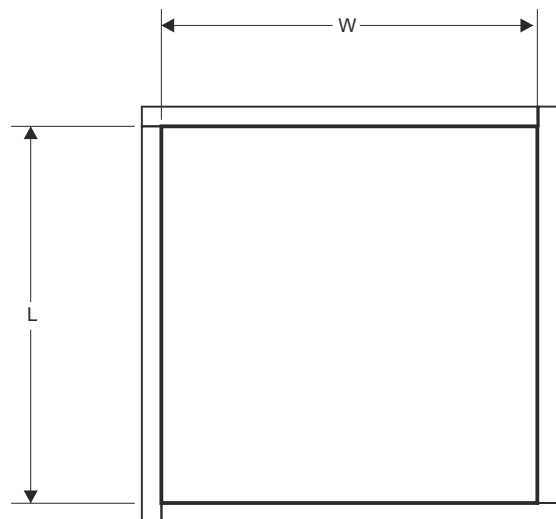
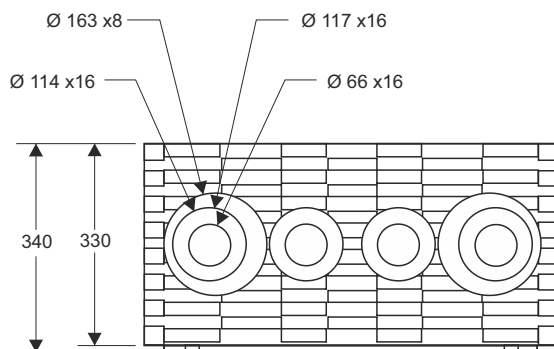
- Panels quick and easy to assemble
- Interlock design at each corner
- Panels available from 300, 450 & 600mm
- Panels are 330mm deep, with locking features
- Panels are trepanned to take pipe from 63mm to 160mm
- Wide flange design, enables covers to fit onto top chamber ring

Benefits

- Manufactured from recycled Polypropylene
- External wall patterned, such that concrete surround will flow into voids
- Composite covers & frames available
- Adaptors available to suit 178mm pipe
- Chamber system used by many Local Authorities

Access Plate Packaging Details

Plate Size (mm)	Pallet Qty.	Code
300	600	69220
450	400	69221
600	200	69222
900	200	69229
1200	150	69230



Please refer to Technical Document for Installation Details



Design & installation

Design

Naylor MetroDuct should be design and installed in accordance with the general requirements as specified in The Manual of Contract Documents for Highway Works (MCHW) and any other site-specific requirements to ensure correct installation and use.

Material properties and testing/ standards

Naylor MetroDuct is manufactured from high density polyethylene and where possible we use recycled materials to reduce our impact on the environment. Duct couplings are manufactured using polypropylene and seals are manufactured from EPDM rubber.

Depending on the application are products are subjected to a wide range of testing in accordance with the relevant standards to ensure they are fit for purpose and durable in their proposed application.

Our Class 1 and Class 2 ducting products comply with the requirements of ENA TS 12-24, certificates A3002 and T5952, and have undergone stringent testing including:

- Compression testing
- Impact testing
- Resistance to deformation
- Static friction co-efficient testing
- Heat reversion testing
- Dimensional and assembly testing

MetroDuct coils are kitemarked to BS EN 61386, kitemark licence number KM57808 and our MetroDuct straight lengths have been assessed by BBA and are compliant with HAPAS requirements, certificate number 08/H131.

Installation

including trenching, bedding, cover depth, installation details

Naylor Metro-Duct must be installed in accordance with the general requirements as specified by MCHW, volume 3, as shown in figures X & Y.

Ducting laid in depths of cover, other than those specified in figure X and Y, must be laid in accordance with the procedures described in the contract with the Highways England (HE).

The products must be adequately protected against damage from site construction traffic and from agricultural or similar operations.

When used as ducts for fibre optic cabling the recommendations of BS 50174-3: 2013 should be followed.

Minimum clearance between duct and drain

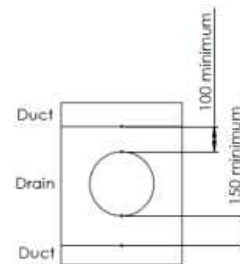


Figure 2, Minimum clearance between duct and drain.

Figure X – Trench detail for ducts buried between 750mm and 1200mm

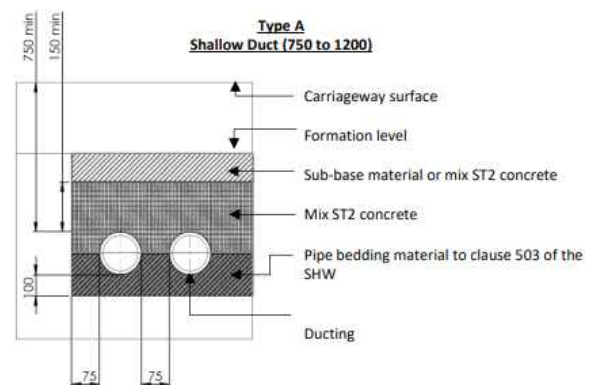
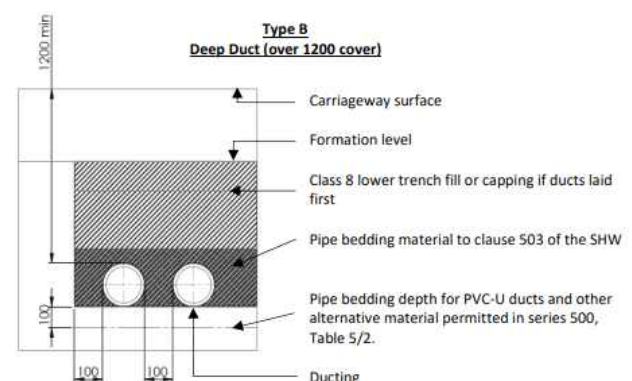


Figure Y – Trench detail for ducts buried deeper than 1200mm



Installation procedures

Ducting can be cut using a coarse-toothed saw or heavy-duty jig saw.

Before jointing, ensure the pipe ends are free of sharp edges and grit.

For sealed systems, the seal should be placed on the third valley of the duct for smaller sizes and in the second valley for the 160/137 and 178/150.

Naylor lubricant should be applied to the outside edge of the seal and the inside of the coupler. If

installing without seals, Naylor Lubricant can be used for an easier jointing on site.

Ensure that the pipe end and seal are free from dirt and grit and introduce the ducting to the coupler and push home, ensuring the pipe end is flush.

Trench to be excavated appropriately then ducting laid in depths of cover as described in figure X and Y in accordance with HE.

Access chambers

MetroDuct modular access chambers are an easy to assemble and install system which can either be supplied flat packed, for assembly on site, or pre-assembled for ease and speed on site.

The panels feature a design that interlocks at each corner providing a robust structure and due to their modular nature they can be built up into variety of sizes, both square and rectangular.

Pre-assembled access chambers

Width clear opening	Length clear opening	Height	Pack quantity	Product code
300mm	300mm	330mm	18	69224
300mm	450mm	330mm	18	69225
450mm	450mm	330mm	24	69226
450mm	600mm	330mm	18	69227
600mm	600mm	330mm	13	69228

Panels are available to order separately in width options of 300mm, 450mm and 600mm, all with a height of 330mm.

Panels are manufactured from recycled polypropylene with a design that allows the concrete surround to flow into the indents. Duct connection cut-outs are included for duct sizes from 63mm up to 160mm and 178mm ducts can be connected using an additional adaptor.

To complete the range there is a selection of composite covers and galvanised frames, load rated to BS EN124, Class B125.

Size	Product code
300mm x 300mm	69128
300mm x 450mm	69129
450mm x 450mm	69127
450mm x 600mm	69126
600mm x 600mm	69125

Each composite cover features lifting keyholes and a locking feature.

Galvanised frames have been specifically designed to fit to the Naylor access chambers with a wide external flange and a deep seat ensuring a flush finish.

Access chamber installation procedures

Excavate the required location to the depth appropriate to the number of chambers required up to a maximum of 3 chambers (990mm) plus an additional 40mm for the depth of the base.

Base of excavated area must be well compacted granular material or preferably a concrete slab.

Drainage channels are required in the concrete slab to allow any excess water to drain from the chamber.

Cut the required duct connections in the chamber walls where possible prior to installing the chamber in the excavated area.

Install the chamber centrally within the specified location.

Backfill as necessary to leave a minimum of 150mm for a surrounding solid concrete support. Concrete should be of a semi-dry workable mixture to ensure it flows into the access chamber indents. We recommend temporary internal bracing for larger chambers 600mm x 600mm whilst backfilling and concreting takes place.

Concrete surround should be evenly distributed around the chamber and the frame should be concreted in at the appropriate height.

Maintenance

Naylor MetroDuct products have an anticipated service life in excess of 50 years. During this time maintenance is not required if installed in accordance with the manufacturers instructions.

Transport, handling and storage

MetroDuct straight lengths are supplied in U frame stillages. Coils are supplied film-wrapped and strapped to pallets. Access chambers and panels are supplied film-wrapped to pallets.

Products should be retained in their packaging until time of use and should be stored on a stable, flat surface.

Products should be handled in a way that takes maximum steps to reduce injury risk. Appropriate risk assessments should be in place on site and mechanical handling equipment must be used where directed.

For long term storage products should be kept away from direct sunlight and over 12 months exposure should be avoided to minimise potential product degradation.

During site works products must be protected against damage from site construction traffic.

Reuse and recyclability

MetroDuct products are manufactured from polyethylene and polypropylene both of which can be recycled at end of life.



MetroDrain™

HDPE premium twin wall carrier/filter drainage system.



MetroDuct™

HDPE twin wall cable ducting.



MetroDuct Access Chamber

Range of access chambers.



Land Drainage

Singlewall corrugated land drainage pipe.



Fabrications

Bespoke comprehensive fabrication service.



Environmental

Hard and soft SuDs solutions.

NAYLOR
DRAINAGE

NAYLOR DRAINAGE
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