

# Product Catalogue



**Casing (protective) pipes for cable telecommunications, power engineering, and TV ducting**



## Dear Readers,

We present you with our catalogue of products and hope that you will enjoy this introduction to our family business, MTB Trzebińscy, which originated in 1989 and is based in Nakło nad Notecią (Nakło upon Noteć), Poland.

Among our company's main products are casing pipes for tele-technical cable ducting. We offer these pipes in a range of diameters, from  $\phi 25$  to  $\phi 160$ .

Our company employs only the most highly skilled and experienced workers to manufacture our products. Since 2000, we have had a laboratory at our plant that allows us to run quality tests on both raw materials and our final products.

As a further means of ensuring that our products are of the highest quality possible, we have developed a quality management system that conforms to the requirements of the standard ISO 9001 and this is utilised throughout the manufacturing process, allowing us to satisfy the high requirements of our clients.

This catalogue contains detailed listings of the products produced by MTB TRZEBIŃSCY.

Inside we present our range of casing pipes and accessories for tele-technical cable ducting, for use with underground power and TV cables.



**We look forward to your custom**



# High-Density Polyethylene (HDPE) Casing Pipes



## Applications

High-density polyethylene casing pipes are intended for use as a mechanical shield of the following underground cable types:

- tele-communications cables
- power cables
- cable TV cables
- traffic signalling cables
- cables serving other media



## Raw material data

The material used to produce these pipes is high-density polyethylene (HDPE) with the following parameters:

- density:  $> 0,943 \text{ g/cm}^3$
- mass flow rate (MFR)  $190^\circ\text{C}/5 \text{ kg}$ : from 0.2 - 1.3 g/10 min.
- stress corrosion conforms to the standard PN-EN 60811 -4-1:2006
- oxidizing induction time at  $200^\circ\text{C} \geq 20\text{min.}$  in accordance with PN-EN 728:1999
- operation temperature from  $-30^\circ\text{C}$  to  $90^\circ\text{C}$





## RDV-z Two-Ply Corrugated Pipes in Coils

Our RDV-z two-ply corrugated pipes in flexible coils have a corrugated external wall (HDPE) and a slippery, medium density polyethylene (MDPE) internal wall to facilitate its pull on the cable. They are intended for use in areas with a low external load, e.g.

- under pavements
- under green belts



These pipes are watertight and leak-proof in order to protect cable bushes in the ducting. They are delivered in 50 running-metre coils with a pre-inserted cord for pulling cable. Each coil is equipped with a coupler. Elbows can be made out of RDV-z pipes in coils. Additional gaskets must be applied if leak-proof joints are required.



## RDV-s Two-Ply Corrugated Pipes in Six Running-Metre Lengths

RDV-s two-ply corrugated pipes in straight lengths are corrugated on the outside and smooth on the inside. They are made of a high-density polyethylene (HDPE). A closed wall construction provides the pipe with extremely high circumferential rigidity. These RDV-s pipes can be used as cableways under roads, streets, and railway tracks. They are intended for use only in open pits.

Each pipe is delivered with a coupler. Additional gaskets must be applied if leak-proof joints are required.

Our RDV pipes are manufactured in the following colours:

- blue
- red
- orange
- black

We can produce the pipes in other colours at the client's request.



## Applications

The RDV polyethylene two-ply corrugated pipes are intended as cable protection for use in the construction of:

- power cable networks
- primary telecommunications and technical cable ducting
- cable TV ducting
- street lighting cable ducting
- road and traffic signalling cable ducting



## Advantages

- high mechanical strength
- resistance to deformation
- good elasticity
- low weight
- resistance to corrosion
- long service life
- when used in coils, these pipes can avoid obstacles or take turnings (without wells)



## Assortment of RDV pipes

	Marking	Diameter ext./int. (mm)	Diameter tolerance (mm)	Trade length/ package (running metres)
Coils	RDV-z Ø 50/40	50/40	+ 0,5	50
	RDV-z Ø 75/61	75/61	+ 0,8	50
	RDV-z Ø 110/94	110/94	+ 1,0	50
	RDV-z Ø 160/135	160/135	+ 1,6	25
Straight lengths	RDV-s Ø 50/40	50/40	+ 0,5	6 / 360
	RDV-s Ø 75/61	75/61	+ 0,8	6 / 312
	RDV-s Ø 110/94	110/94	+ 1,0	6 / 288
	RDV-s Ø 160/135	160/135	+ 1,6	6 / 198



## Physical properties of two ply corrugated pipes

Pipe ovality does not exceed 2% D (D = pipe's nominal diameter).

Length:

- straight length is 6 running metres + 1%
- length in coils is 50 running metres + 1%

The pipe's internal and external surface is smooth and free from inclusions and irregularities.

Impact resistance:

- true impact resistance (T. I.R ) is  $\geq 10$  in accordance with PN-EN 744: 1997

Circumferential in accordance with PN EN ISO 9969:

1997:

- RDV-z pipes -  $\geq 4\text{ kN}$
- RDV-s pipes -  $\geq 8\text{ kN}$

Compression resistance - class 250,450, 750 in accordance with PN-EN 50066-2-4

Internal pressure resistance in accordance with PN-EN

921:1998

Relative elongation at break:  $> 300\%$

Bend radius: the average bend coefficient has been determined based on the assumption that the pipe will be bent along a circle sector

**RDV-z pipes (coils)** - for pipes in coils, the bend coefficient is - 0.35m at a temp.  $+20^{\circ}\text{C}$

**RDV-s pipes (straight lengths)** - for straight pipes the bend rate is:

- temperature  $+20^{\circ}\text{C}$  - coefficient 25
- temperature  $0^{\circ}\text{C}$  - coefficient 35

The pipes' bend radius is calculated as follows:

bend coefficient x pipe's external diameter = minimum bend radius

Example:

R DV- s  $\phi 75$  at a temp.  $+20^{\circ}\text{C}$  -  $75 \times 25 = 1875\text{ mm} \approx 1.9\text{ m}$

RDV-s  $\phi 160$  at a temp. of  $0^{\circ}\text{C}$  -  $160 \times 35 = 5600\text{ mm} \approx 5.6\text{ m}$

## Pipe connection

Pipes are connected with a two-bell coupler. Two types of joints are used:

### Silt-tight

- including a simple coupler without gaskets

### Watertight

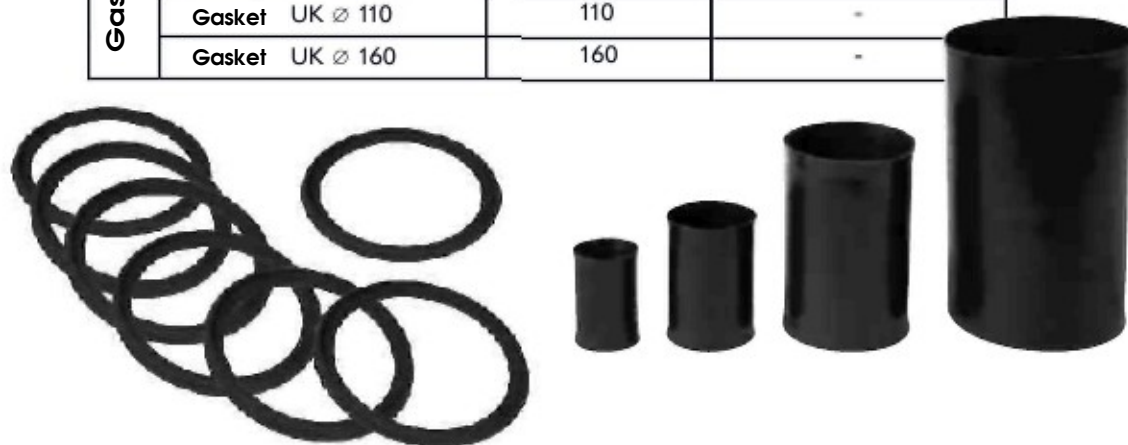
- including a coupler and profiled gaskets attached to the pipe directly, between the 3rd and 4th notch.





## Accessories for our RDV Pipes

	Marking	Diameter (mm)	Diameter tolerance (mm)
Couplers	Coupler ZK $\varnothing$ 50	50	+0,5
	Coupler ZK $\varnothing$ 75	75	+0,8
	Coupler ZK $\varnothing$ 110	110	+1,0
	Coupler ZK $\varnothing$ 160	160	+1,4
Gaskets	Gasket UK $\varnothing$ 50	50	-
	Gasket UK $\varnothing$ 75	75	-
	Gasket UK $\varnothing$ 110	110	-
	Gasket UK $\varnothing$ 160	160	-





## RHDPE 'Optel' Casing Pipes for Optotelecommunication Cables

RHDPE 'OPTEL' cables are made of high-density polyethylene (HDPE) and come in a standard black colour with multi-coloured stripes at regular intervals around the pipe's circumference.

The RHPDE 'OPTEL' pipes are grooved on the inside and have an additional slippery layer to facilitate pulling of the cable. They are manufactured in coils of 250 running metres.

We can produce the pipes in other colours and lengths at the client's request and can equip them with a cord to facilitate cable pulling.



### Applications

The RHDPE OPTEL pipes are intended for the construction of secondary telecommunications ducting and cable pipelines for optotelecommunications and signalling cables for local and long-distance tele-technical networks.

### Advantages

The slippery layer is made by extrusion and is permanently bound to the pipe's material. Therefore, it is not scuffed (for example, on the curves) during pulling of the cable. Its properties do not alter over many years' use.



The slippery layer, whose friction factor is  $\leq 0.1$ , enables the pulling of fibre-optic cable lengths into the ducting of OPTEL pipes in one operation. These cable lengths can be twice as long as the cable lengths that can be pulled into pipes without the slippery layer.

### Assortment of the RHDPE 'OPTEL' pipes

Marking	External diameter (mm)	Minimum thickness (mm)	Diameter tolerance (mm)	Trade length/package (running metres)
RHDPE OPTEL $\varnothing$ 25x2,0	25	2,0	+ 0,2	250
RHDPE OPTEL $\varnothing$ 25x2,3	25	2,3	+ 0,2	250
RHDPE OPTEL $\varnothing$ 32x2,0	32	2,0	+ 0,3	250
RHDPE OPTEL $\varnothing$ 32x2,9	32	2,9	+ 0,3	250
RHDPE OPTEL $\varnothing$ 40x3,7	40	3,7	+ 0,4	250
RHDPE OPTEL $\varnothing$ 50x4,4	50	4,4	+ 0,5	250



## Physical properties of the RHDPE OPTEL pipes

- Pipe ovality does not exceed 6% D (D = pipe's nominal diameter)
- Lengths of 250 running metres + 1%
- Pipe's internal and external surface is smooth and free from inclusions and irregularities

Impact resistance: true impact resistance (T.I.R.) is  $\leq 10$  in accordance with PN-EN 744: 1997

- Circumferential rigidity is  $\geq 8$  kN in accordance with PN EN ISO 9969: 1997
- Compression resistance - class 250,450 in accordance with PN-EN 5008624-2-4
- Internal pressure resistance  $\geq 1$ MPa within 30 min. in accordance with PN-EN 921:1998
- Relative elongation at break:  $> 350\%$
- Average relative change of the pipe's length after heating at the temperature of  $110^{\circ}\text{C}$  does not exceed 3%
- Friction coefficient  $\leq 0,1$
- Bend radius – the average bend coefficient has been determined based on the assumption that the pipe will be bent along a circle sector

The minimum bend radius of pipes during the laying of a pipeline depends on the pipeline's diameter and the ambient temperature during the work.

Ambient temperature	Diameter multiple	Ø 25 (mm)	Ø 32 (mm)	Ø 40 (mm)	Ø 50 (mm)
20°C	20dn	500	650	800	1000
10°C	35dn	875	1100	1400	1750
0°C	50dn	1250	1600	2000	2500

## Pipe connection

The pipes are connected using screwed couplers.

## Accessories for our RHDPE OPTEL Pipes



Marking	Diameter
Screwed coupler	25
Screwed coupler	32*
Screwed coupler	40*
Screwed coupler	50
Reduction coupler	40/32*
Screwed plug for straight pipes	32
Screwed plug for pipes with a cable	32
Screwed plug with a valve	32
Screwed plug for straight pipes	40
Screwed plug for pipes with a cable	40
Screwed plug with a valve	40

\*An inflammable version is also available

## RHDPEp Cableway Pipes

The RHDPEp polyethylene cableways are made of high-density polyethylene. They are manufactured in the standard black colour. Other colours are available on request. The standard length is 6 running metres, however this can be adjusted to the client's requirements.

### Applications

Our RHDPEp pipes are intended for use where telecommunications lines run in close proximity to, or intersect, other elements of technical infrastructure, as well as at sites requiring passage through obstacles. They are used to lay cables in difficult terrain and in areas with heavy transportation loads, as well as for push-throughs and rebores.



### Physical properties of the RHDPEp pipes

- Pipe's internal and external surface is smooth and free from inclusions and irregularities
- Pipe ovality does not exceed 2% D (D = pipe's nominal diameter)
- Lengths are 6 or 12 running metres + 1%
- Impact resistance: true impact resistance (T. I.R .) is  $\leq 10$  in accordance with PN-EN 744: 1997
- Circumferential rigidity is given in the table on page 10 in accordance with PN EN ISO 9969:1997
- Compression resistance - class 250,450, 750 in accordance with PN-EN 5008624-2-4
- Internal pressure resistance  $\geq 1$ MPa within 30 min. in accordance with PN-EN 921:1998
- Relative elongation at break:  $> 350\%$ .

### Pipe connection

The pipes can either be welded together or connected using a coupler. Each coupler has a rubber seal.



## Assortment of the RHDPEp pipes

Marking	Minimal wall thickness (mm)	Circumferential rigidity (kN/m)	External diameter/ tolerance (mm)	Package
RHDPEp $\varnothing$ 63x2,5	2,5	4,0	63+0,6	576 running metres
RHDPEp $\varnothing$ 63x3,6	3,6	16,0		
RHDPEp $\varnothing$ 63x4,7	4,7	32,0		
RHDPEp $\varnothing$ 63x5,8	5,8	64,0		
RHDPEp $\varnothing$ 75x2,9	2,9	4,0	75+0,7	504 running metres
RHDPEp $\varnothing$ 75x4,3	4,3	16,0		
RHDPEp $\varnothing$ 75x5,6	5,6	32,0		
RHDPEp $\varnothing$ 75x6,9	6,9	64,0		
RHDPEp $\varnothing$ 90x3,5	3,5	4,0	90+0,8	330 running metres
RHDPEp $\varnothing$ 90x5,2	5,2	16,0		
RHDPEp $\varnothing$ 90x6,7	6,7	32,0		
RHDPEp $\varnothing$ 90x8,2	8,2	64,0		
RHDPEp $\varnothing$ 110x4,2	4,2	4,0	110+1,0	288 running metres
RHDPEp $\varnothing$ 110x6,3	6,3	16,0		
RHDPEp $\varnothing$ 110x8,1	8,1	32,0		
RHDPEp $\varnothing$ 110x10,0	10,0	64,0		
RHDPEp $\varnothing$ 125x4,8	4,8	4,0	125+1,2	192 running metres
RHDPEp $\varnothing$ 125x7,1	7,1	16,0		
RHDPEp $\varnothing$ 125x9,2	9,2	32,0		
RHDPEp $\varnothing$ 125x11,4	11,4	64,0		
RHDPEp $\varnothing$ 140x5,4	5,4	4,0	140+1,4	168 running metres
RHDPEp $\varnothing$ 140x8,0	8,0	16,0		
RHDPEp $\varnothing$ 140x10,3	10,3	32,0		
RHDPEp $\varnothing$ 140x12,7	12,7	64,0		
RHDPEp $\varnothing$ 160x6,2	6,2	4,0	160+1,6	144 running metres
RHDPEp $\varnothing$ 160x9,1	9,1	16,0		
RHDPEp $\varnothing$ 160x11,8	11,8	32,0		
RHDPEp $\varnothing$ 160x14,6	14,6	64,0		

## Accessories for the RHDPEp pipes

Marking	Diameter [mm]	Diameter tolerance [mm]
HDPE Coupler $\varnothing$ 110	110	+ 1,0
HDPE Coupler $\varnothing$ 125	125	+ 1,2
HDPE Coupler $\varnothing$ 140	140	+ 1,3
HDPE Coupler $\varnothing$ 160	160	+ 1,4







## Smooth Wall RHDPE Pipes with a Coupler

Smooth wall RHDPE pipes are made of high-density polyethylene (HDPE). Each pipe is finished with a coupler, so there is no need to use connectors.

The pipes are produced in lengths of 6 metres each in the following colours:

- blue – pipes used with voltages up to 1 kV
- red – pipes used with voltages exceeding 1 kV



### Applications

The smooth wall RHDPE pipes are designed to protect cables, both in normal terrain, at points with low external loads, and in difficult terrain, at points of maximum road transport loads. Can be used with push-throughs and rebores up to 30 metres.

### Assortment of the RHDPE smooth wall pipes with a coupler

Marking	External diameter (mm)	Minimal wall thickness (mm)	Diameter tolerance (mm)	Circumf. rigidity (kN/m <sup>2</sup> )	Package
Rura RHDPE gładkościenna z mufą 110 x 4,0	110	4,0	+ 1,0	4,0	288 running metres
Rura RHDPE gładkościenna z mufą 110 x 5,5	110	5,5	+ 1,0	9,0	288 running metres
Rura RHDPE gładkościenna z mufą 160 x 5,0	160	5,0	+ 1,6	4,0	144 running metres
Rura RHDPE gładkościenna z mufą 160 x 8,0	160	8,0	+ 1,6	9,0	144 running metres

### Physical properties of the RHDPE smooth wall pipes with a coupler

- Pipe's internal and external surface is smooth, free from inclusions and irregularities
- Pipe ovality does not exceed 2% D (D = pipe's nominal diameter)
- Lengths are 6 running metres + 1%
- Impact resistance: true impact resistance (T. I.R. ) is  $\leq 10$  in accordance with PN-EN 744: 1997
- Circumferential rigidity is given in the table, in accordance with PN EN ISO 9969: 1997
- Compression resistance - class 250,450, 750 in accordance with PN-EN 5008624-2-4
- Internal pressure resistance  $\geq 1$ MPa within 30 min. in accordance with PN-EN 921:1998
- Relative elongation at break > 350%

### Pipe connection

The pipes are connected with a coupler placed at the end of each pipe.



## RHDPEt Fire-Resistant Pipes

On special request, we can manufacture the protective RHDPEt flame retardant pipes. A flame retardant pipe is a pipe can catch fire if it comes into direct contact with a naked flame but the fire will die down after the source of the fire has been removed. Our flame retardant pipes are produced with the addition of an inflammability modifier to the basic raw material (HDPE) during the production process.

Pipes of this type are intended for use as protection for cables laid in public buildings, bridges, flyovers, viaducts, tunnels, and industrial works.

### NOTE

All of our polyethylene (HDPE) pipes can be manufactured in an inflammable form.





## Sectional Pipes (DZ)

Sectional protective pipes for cables (DZ) are produced from a high-density polyethylene (HDPE). They are intended for the protection of existing cables and mending damaged cable ducting. They can also be used under roads and railway tracks. They come in lengths of 3 running metres.

### Types:

- blue – pipes used with voltages up to 1 kV,
- red – pipes used with voltages exceeding 1 kV.

### Assortment of the DZ sectional pipes

Marking	External Diameter [mm]	Internal Diameter [mm]	Packaging
Rura dzielona DZ Ø 110	110	100	162 running metres
Rura dzielona DZ Ø 160	160	138	72 running metres





# RPP Polypropylene Casing Pipes Intended for the Construction of Telecommunication Cable Ducting



## Applications

The RPP casing pipes are intended to protect cables within cable ducting, such as:

- primary telecommunication and technical ducting
- cable TV ducting
- street lighting ducting
- road and traffic signalling ducting

The pipes are produced in the standard black colour in lengths of 6 running metres. Their length can be adjusted according to the client's requirements.



## Raw material data

The material used to produce the pipes is a copolymer of polypropylene possessing the following properties:

- density:  $\geq 0.905 \text{ g/cm}^3$
- mass flow rate (MFR) 230o5 kg: from 0.3 -1.3 g/10 min.
- stress corrosion conforms to the standard PN-EN 60811-4-1: 2006

The time of oxidation induction at a temperature of  $200^\circ\text{C} \geq 8 \text{ min.}$  in accordance with PN-EN 728: 1999.

## Advantages

The main advantage of the RPP pipes is their high mechanical resistance. Compared to the earlier polyvinyl chloride (PVC) pipes, these are a great deal more impact resistant. This feature is especially important when working at low temperatures.

Polypropylene pipes show impact resistance even at temperatures of  $-20^\circ\text{C}$ , which is sufficient to carry out a range of work, for instance, unloading. There are virtually no pipes lost due to impacts.



## Assortment of RPP pipes

Marking	External diameter (mm)	Minimal wall thickness (mm)	Diameter tolerance (mm)	Packaging
Rura RPP $\phi$ 100x3,7	100	2.7	+ 0,9	318 running metres
Rura RPP $\phi$ 100x3,7 z mufą	100	3.7	+ 0,9	318 running metres
Rura RPP $\phi$ 100x5,0	100	5.0	+ 0,9	318 running metres
Rura RPP $\phi$ 110x3,7	110	3.7	+ 1.1	288 running metres
Rura RPP $\phi$ 110x3,7 z mufą	110	3.7	+ 1.1	288 running metres
Rura RPP $\phi$ 110x5,0	110	5,0	+ 1.1	288 running metres
Rura RPP $\phi$ 110x6,3	110	6.3	+ 1.1	288 running metres



## Physical properties of the RPP pipes

- Pipe ovality does not exceed 2% D (D = pipe's nominal diameter)
- Lengths of 6 running metres + 1%
- Pipe's internal and external surface is smooth, free from inclusions and irregularities
- Impact resistance: true impact resistance (T. I.R. ) is  $\leq 10$  in accordance with PN-EN 744: 1997
- Circumferential rigidity is  $\geq 8\text{kN}$  in accordance with PN-EN ISO 9969: 1997.
- Compression resistance - class 250,450, 750 in accordance with PN-EN 5008624-2-4
- Internal pressure resistance  $\geq 1\text{MPa}$  within 30 min. in accordance with PN-EN 921:1998
- Relative elongation at break:  $> 250\%$



## Accessories for the RPP pipes

Marking	Diameter [mm]	Diameter tolerance (mm)
Złączka PP $\phi$ 100	100	+ 1,0
Złączka PP $\phi$ 100 z uszczelkami	100	+ 1,0
Złączka PP $\phi$ 110	110	+ 1,0
Złączka PP $\phi$ 110 z uszczelkami	110	+ 1,0
Uszczelka $\phi$ 100	100	-
Uszczelka $\phi$ 110	110	-
Przekładka dystansowa $\phi$ 100	100	-
Przekładka dystansowa $\phi$ 110	110	-



## Distance pieces

Distance pieces should be used during the construction of multi-hole sets of a single primary ducting to preserve horizontal and vertical symmetry. Distance pieces allow the same distance between the pipes of a primary and secondary telecommunications ducting in a trench to be established. Distance pieces are manufactured for  $\phi$  100 and  $\phi$  110 pipes.

## Pipe connection

Pipes with straight ends are connected with two-bell couplers. Two types of connectors are used to connect the RPP pipes:

- two-bell couplers with gaskets (these are made leak-proof using lip seals),
- two-bell couplers without rubber seals (these are made leak-proof using sealing greases and silicon, and through the tight fit of the coupler, which is possible because of the coupler's tapered shape).

Two-bell couplers are manufactured for  $\phi$ 100 and  $\phi$ 110 pipes.

There is no need to use connectors while using pipes with push fit sockets (with the exception of those with a 3.7 millimetre-wall). In this case, leak-proof status is achieved in a similar fashion to that utilizing the coupler without rubber seals, thanks to the tapered shape of the socket and the use of sealing greases and silicon.







## PIPE MARKINGS

Lettering on the pipes is made using the 'hot type character' method of thermal printing (with the exception of the RDV pipes, on which lettering is printed in ink). They may consist of, for example:

Customer's sign:	An operator's name
Pipe-type marking:	RHDPEp
Dimensions:	φ110 x 6.3
Producer's sign:	MTB
Length:	L-6
Date of production (week and year):	1208
Operator's number:	5

## PIPE STORAGE

The pipes should be stored horizontally on a flat surface and secured against rolling with wooden inserts (wedges). The height of pipe storage should not exceed 3.0 metres (for pipes in coils, there should be a maximum of four coils in one pile). Pipes and connectors can be stored in the open air without any additional protection for a period not exceeding three months from the production date. Storage for a period longer than three months requires protection against ultraviolet radiation. Do not store these products near an open flame. When the pipes and connectors are covered with lightproof tarpaulin, they should be provided with good ventilation.

## TRANSPORT

The pipes are suitable for any form of transportation that can accommodate their dimensions. The pipes must be protected from impact during loading and unloading. They should be fastened with belts or wedges to prevent movement during travel. Care should be taken to ensure that the pipes are not exposed to sharp objects, as this will result in mechanical damage.

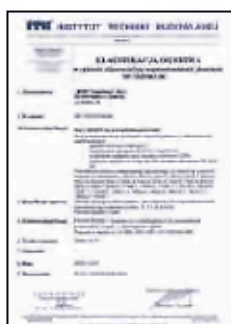




In order to satisfy our clients' expectations and guarantee the high quality of our products, we have implemented a quality management system that conforms to the standard ISO 9001.

**All of our products are manufactured in accordance with the standard PN-EN 50086-2-4 and have received:**

- Technical Approval from the Road and Bridge Research Institute
- Technical Approval from the National Institute of Telecommunications
- A Technical Assessment by the Institute of Power Engineering to ensure the pipes' suitability for use as protection for power cables
- Fire Classification by the Building Research Institute to determine flame retardancy





## Road access map



[www.mtbtrzebinscy.pl](http://www.mtbtrzebinscy.pl)