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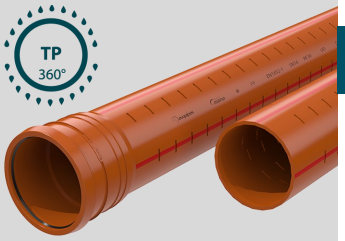
TECHNICAL DATA SHEET

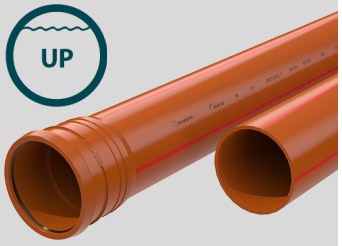
DRAIN mono



Totally perforated pipe TP(360°)

Locally perforated pipe LP(220°±10°)

Multipurpose pipe MP(≤120°)



Unperforated transport pipe UP

Ring stiffness class:

SN16

Open product

MONODRAIN SN16

DN/OD series R3 type drainage pipe with smooth external and internal surface

Conformity:
EN 1852-1; DIN 4262-1;
(DBS 918 064)
Pipe profile type: R3

PRODUCT DESCRIPTION

Drainage pipe with smooth internal and external surface according to product standard EN 1852-1, DIN 4262-1 (DBS 918 064) conforms to profile type R3. Perforation classes TP (360° totally perforated drainage pipe), LP (180°±10° locally perforated pipe), MP (≤120° multipurpose pipe) and UP (unperforated liquid transport pipe). Water filtration inlet perforation opening area ≥100 [cm^2/m] (for perforated pipes). Pipes are available in bars — with a pipe length of 6 [m]. The supplied sealing ring grants a hermetic seal with a pressure rating of ≥0,5 bar (for coupling area). Oil resistant seal acc. to requirements of EN 681-2 p.5.10.

Pipe material: PP (polypropylene).

Sealing ring material: EPDM (ethylene-propylene-diene rubber (terpolymer)).

Pipe produced according to standard: EN 1852-1, DIN 4262-1 (DBS 918 064)

Sealing rings conform to standard: EN 681-1/A3

APPLICATION AREA

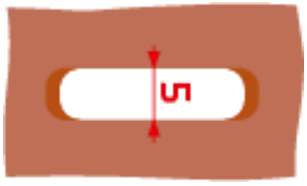
MONODRAIN R3 type SN16 class drainage pipes are best suited for zones/places with high traffic load and places where construction depth is less than 0.7 [m] or more than 5.0 [m], for example:

- Airport territory construction;
- Harbour and dock territory construction;
- Highway construction;
- Tunnel construction;
- Railway construction

Storage of sealing rings according to standards ISO 2230 and EN 681-1/A3 D.

Installation performance in accordance with standard EN 1610; CEN/TR 1046.

Both ends of perforation opening are rounded.



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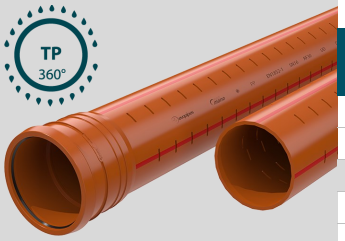
DRAIN mono

MONODRAIN SN16

DN/OD series R3 type drainage pipe with smooth external and internal surface

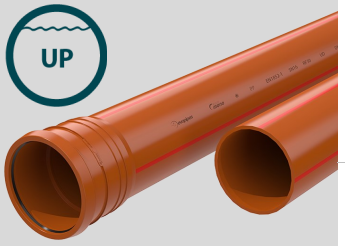
Conformity:
EN 1852-1; DIN 4262-1;
(DBS 918 064)
Pipe profile type: R3



Totally perforated pipe TP(360°)

Locally perforated pipe LP(220°±10°)

Multipurpose pipe MP(≤120°)



Unperforated transport pipe UP

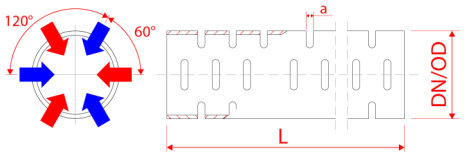
Ring stiffness class:

SN16

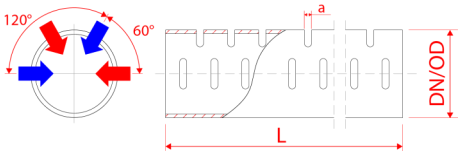
Open product

PRODUCT DIMENSIONS

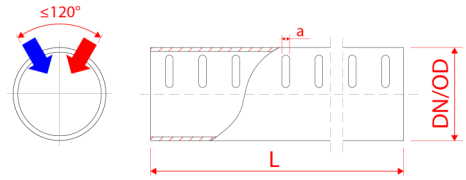
Nominal size	DN/OD 110	DN/OD 160	DN/OD 200	DN/OD 250
Pipe bar length (L), m	6	6	6	6
Perforation opening parametres for perforation classes — TP, MP and LP				
Perforation opening width (a), mm	5	5	5	5
Perforation opening area, cm^2/m	≥100	≥100	≥100	≥100
Perforation opening parameters for perforation class TP (360°)				
Perforation opening quantity on transverse plane normal to profile foot, pcs	3	3	3	3
Perforation opening parameters for perforation class LP (220°±10°)				
Perforation opening quantity on transverse plane normal to profile foot, pcs	2	2	2	2
Perforation opening parameters for perforation class MP (≤120°)				
Perforation opening ratio on transverse plane normal to profile foot, pcs	1	1	1	1



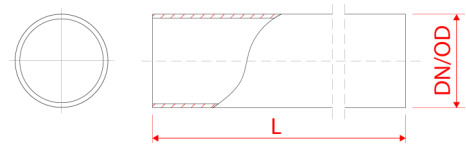
TP class 360° totally perforated pipe. Water inlets are evenly distributed along pipes circumference.



LP class 220°±10° locally perforated pipe. Water inlets are located in the upper part of the pipe symmetric to pipes vertical axis in 220°±10° area, but flow line (used for collection and transportation of liquids) is not perforated and stands opposed to inlet area.



MP class ≤120° multipurpose pipe. Water inlets are located in the upper part of the pipe symmetric to pipes vertical axis in max of 120° area, but flow line (used for collection and transportation of liquids) is not perforated and stands opposed to inlet area.



UP class unperforated liquid transport pipe is used for transportation of water.

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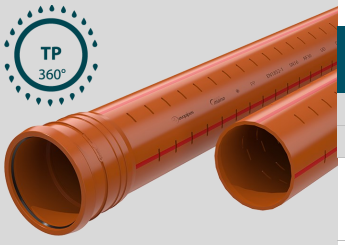
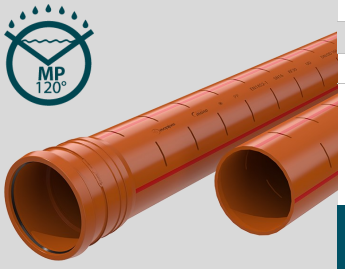
TECHNICAL DATA SHEET

DRAIN mono

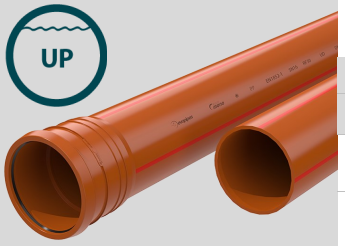


Totally perforated pipe TP(360°)

Locally perforated pipe LP(220°±10°)



Multipurpose pipe MP(≤120°)



Unperforated transport pipe UP

Ring stiffness class:

SN16

Open product

MONODRAIN SN16

DN/OD series R3 type drainage pipe with smooth external and internal surface

Conformity:
EN 1852-1; DIN 4262-1;
(DBS 918 064)
Pipe profile type: R3

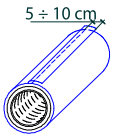
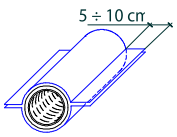
PRODUCT PARAMETERS

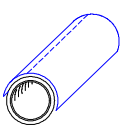
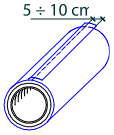
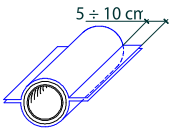
Pipe physical and mechanical properties		
Parameter	Value	Test method
Material	PP	EN 1852-1 DIN 4262-1 (DBS 918 064)
Ring stiffness, kN/m²	16	EN 9969
Impact resistance —10°C ❄ (staircase method)	H_{50}≥1000mm No break below 500 mm	EN 11173
Sealing ring physical and mechanical properties for TP, LP, MP un UP class pipes		
Rubber sealing ring		
Material	EPDM	ISO 1629
Durability in low temperature, at t= -25°C	72 h	ISO 815
	168 h	ISO 3387
Chemical resistance	pH2<pH<pH12	ISO/TR 7620
Permeability pressure	<0,5 bar	EN ISO 13254 EN ISO 13259 Condition B and C
Oil resistance*	Conforms	EN 681-2
Pipe flushing (cleaning) allowance parameters		
Max pressure, bar	120	
Minimum flow rate, l/min	80	

*Oil resistant seal acc. to requirements of EN 681-2 p.5.10; conformity determined by Volume change in oil test acc. to ISO 1817

FILTER MATERIAL APPLICATION OPTIONS

Drainage pipes MONODRAIN R3 are produced without filter material overlay. If it is necessary then application of filter material must be done on site. Recommended application of filter material overlay is demonstrated in the tables bellow.

Class TP 360° totally perforated pipe recommended filter material overlaying options	
A variant	B variant
Pipe is covered fully along it's circumference with a single sheet of filter material overlay	Pipe is covered along it's circumference with two identical sheets of filter material overlays
	

Class LP 220°±10° locally perforated pipes and class MP ≤120° multipurpose pipe recommended filter material overlaying options		
A variant	B variant	C variant
Only perforated area is overlaid with a single filter sheet	Pipe is fully covered along it's circumference with a single filter sheet	Pipe is covered along it's circumference with two identical sheets of filter material overlays
		

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TECHNICAL DATA SHEET

STANDARDS APPLICABLE TO PIPES

Standard	Description
DIN 4262-1	Pipes and fittings for subsoil drainage of trafficked areas and underground engineering - Part 1: Pipes, fittings and their joints made from PVC-U, PP and PE
EN 1852-1	Plastics piping systems for non-pressure underground drainage and sewerage — Polypropylene (PP). Part 1: Specifications for pipes and fittings and the system
(DBS 918 064)	(Plastic pipes and manholes for the railway facilities drainage)
Pipe geometric parameters according to:	
EN 3126	Plastic piping systems - Plastic components - Determination of dimensions
Pipe mechanical parameters according to:	
EN ISO 9969	Thermoplastics pipes - Determination of ring stiffness
EN 9967	Thermoplastics pipes - Determination of creep ratio
EN 11173	Plastics piping and ducting systems - Thermoplastics pipes - Determination of resistance to external blows by staircase method

APPLICATION BY SUBSTANCE TYPE

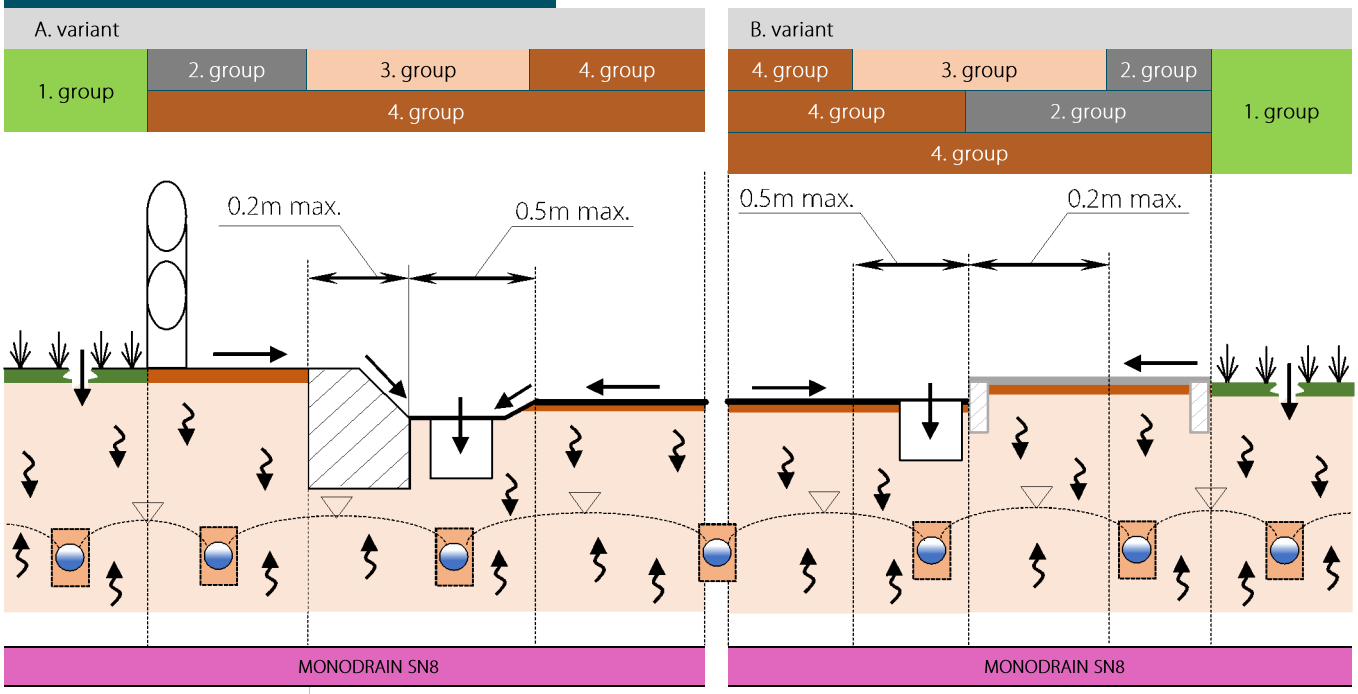
Substance type	Without filter material overlay	With A type filter material overlay*	With coco fiber filter material overlay*
Binding– poorly filtering ground			
Clay	No	No	Yes
Dense sandstone	No	No	Yes
Sandstone	No	Yes	Yes
Non-binding– poorly filtering ground			
Loam	No	Yes	No
Binding–well filtering ground			
Coarse sand	Yes	Yes	No
Binding sand	No	Yes	No
Non-binding sand (loose)	No	Yes	No
Gravel	Yes	Yes	No
Turf	No	Yes	Yes

*- If substance requires a filter material overlay then application of filter overlay must be done on site.

TECHNICAL DATA SHEET

MONODRAIN R3 SN8 and SN16 pipes application for drainage piping systems

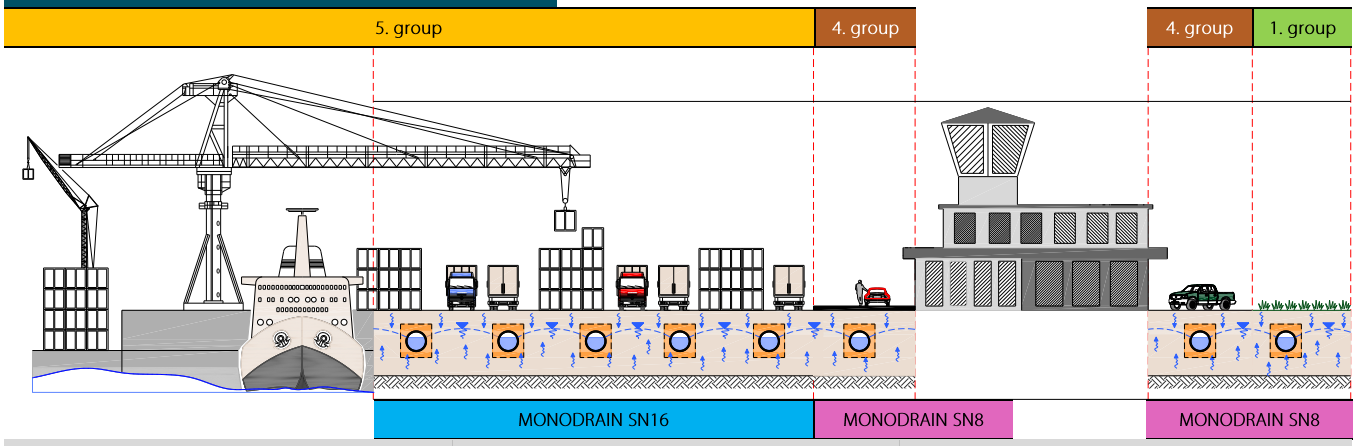
ROAD CONSTRUCTION APPLICATION



A. variant	Typical highway cross-section, split into groups according to nominal strength (SN) class application of MONODRAIN pipes.
B. variant	Representative cross section of city street (carriageway) and pavement (sidewalk) or a hard shoulder, split into groups according to nominal strength (SN) class application of MONODRAIN pipes.

1. Group	2. Group	3. Group	4. Group
Areas which can only be used by pedestrians and pedal cyclists.	Pedestrian areas and comparable areas, car parks or car parking decks.	Areas of kerbside channels of roads which, when measured from the kerb edge, extends a maximum of 0.5m into the carriageway and maximum of 0.2m into the pedestrian area.	Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.

HARBOR AND DOCK APPLICATION



1. Group	4. Group	5. Group
Areas which can only be used by pedestrians and pedal cyclists.	Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.	Areas imposing high wheel loads, e.g. docks, aircraft pavements.

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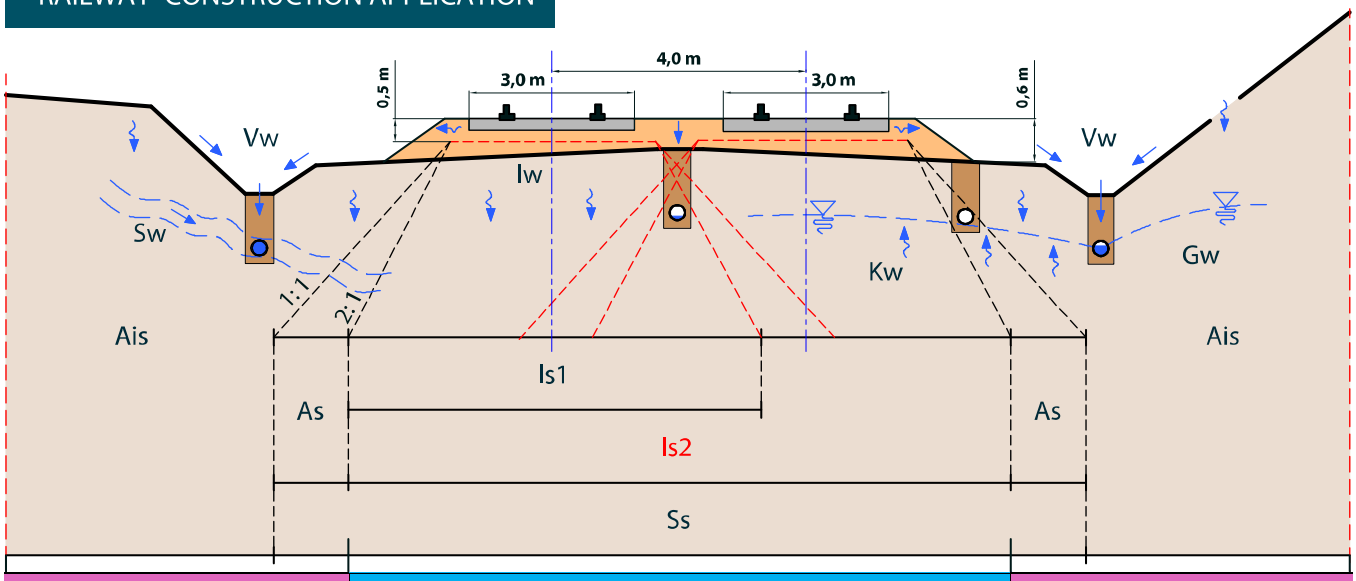
RAILWAY CONSTRUCTION APPLICATION

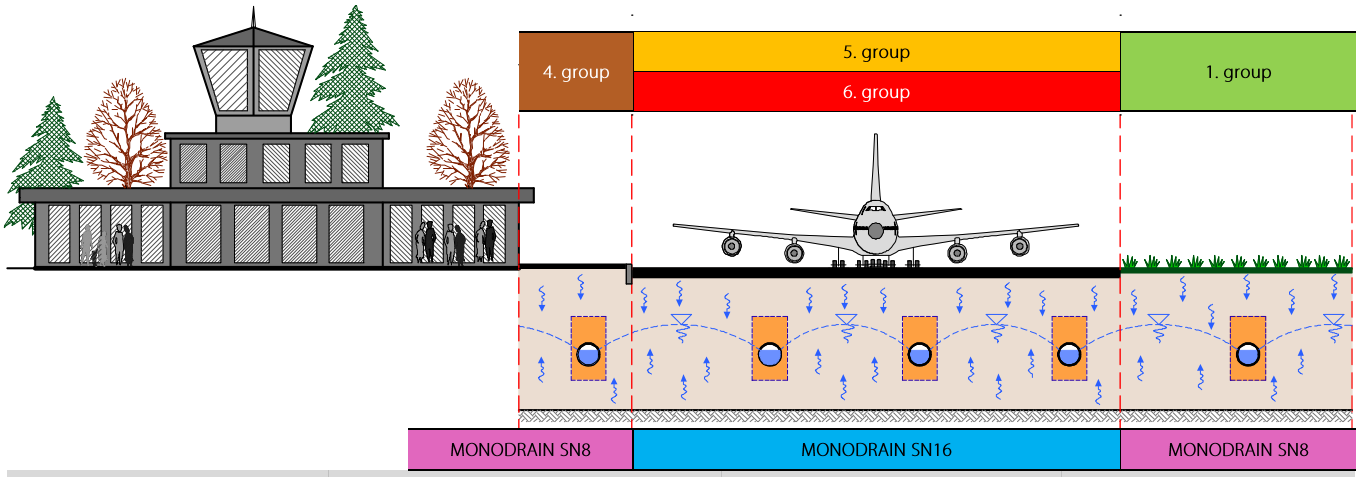


Description of used terms	
Vw - terrestrial water; Lw - infiltration water; Kw - capillary water; Sw - water layer; Dw - groundwater, still water	Is 1 - inside traffic load influence area (from 1 track) Is 2 - inside traffic load influence area (from 2 tracks) As - outside traffic load influence area Ss - traffic load influence area Ais - area outside of traffic load influence

Drainage pipe nominal ring stiffness class (SN) selection by usage area and ground group		
Ais	As	Is 1 and Is 2
MONODRAIN SN8	MONODRAIN SN8	MONODRAIN SN16
Applicable to all ground groups*	Applicable to all ground groups*	Applicable to G1, G2 and G3 ground groups*

*Ground groups according to ATV-A 127			
G1 - non-binding sand and gravel	G2 - well binding sand and gravel	G3 - binding mixed ground and coarse sand	G4 - binding ground (e.g. clay)

AIRPORT TERRITORY APPLICATION



1. Group	4. Group	5. Group	6. Group
Areas which can only be used by pedestrians and pedal cyclists.	Carriageways of roads (including pedestrian streets), hard shoulders and parking areas, for all types of road vehicles.	Areas imposing high wheel loads, e.g. docks, aircraft pavements.	Areas imposing particularly high wheel loads, e.g. aircraft pavements.