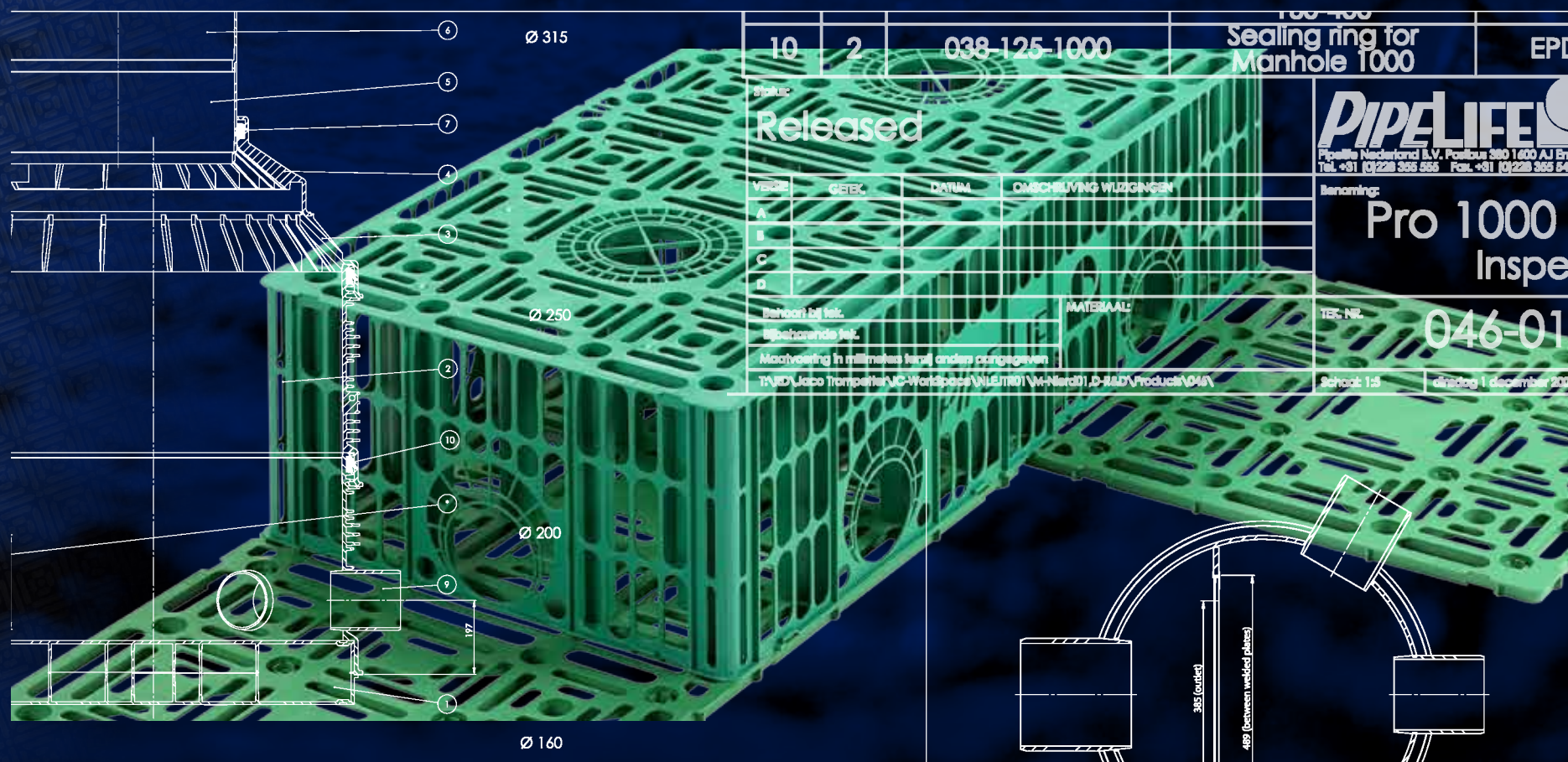


Raineo®: product catalog



1. Application areas

- Parking lots and roads
- Urban agglomerations
- Stadiums and sports grounds
- Airports
- Commercial and industrial areas
- Agriculture

2. Catching and redirecting

- Line drainage and gullies
- Inspection chambers
- Pipes
- Manifolds

3. Get clean

- Sand and sediment trap
- Oil trap

Or:

- Combi filter for separation of sand, sediment, oil and gasoline and a chemical filter for removal of heavy metals and other harmful substances

4. Safe place to store water

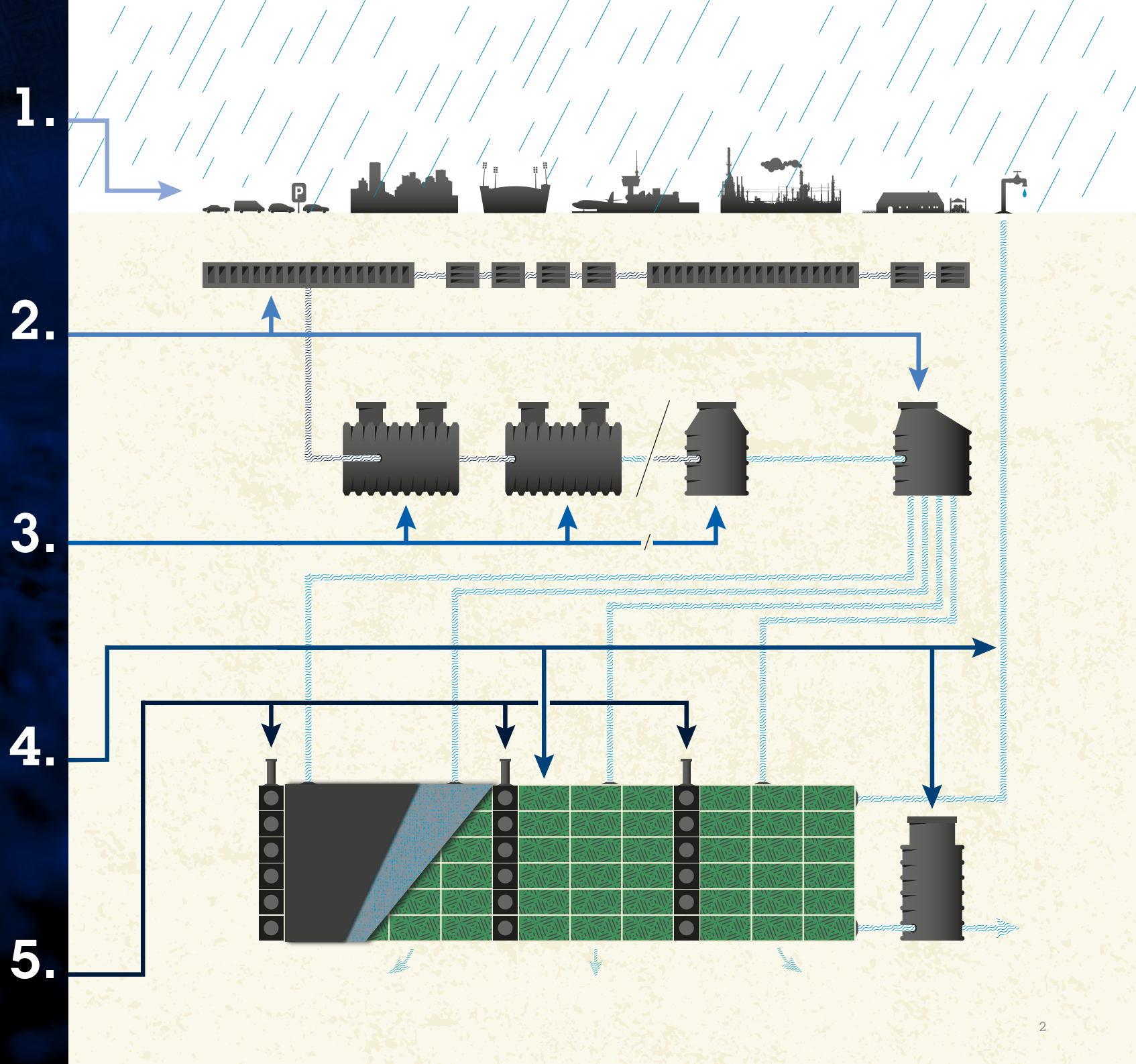
- Water buffer lined with geotextile for infiltration
- Flow control for a controlled discharge of surplus water

Or:

- Coated with geomembrane water buffer storage for reuse
- Surface connections for coupling with pumps
- Flow control for a controlled discharge of surplus water

5. Inspection and maintenance

- Access to pipes, filters, distribution and flow control chambers through manholes
- Access basin through inspection chambers



Raineo® is a total rainwater management solution, developed and produced by Pipelife to assist in flood prevention as well as rainwater management.

Raineo® is designed for underground application. It functions under tough circumstances and delivers consistent and excellent results. For a full comprehension of the system we refer to our website www.pipelife.com and to the Raineo® Introduction brochure and Raineo® Design manual.

This product catalogue only presents a basic summary of all system components. All parts are tailor-made available so that materials, measurements, connections et cetera are in conformity with local legislation. For detailed information please contact your local Pipelife advisor. All contact information in 28 countries is available on www.pipelife.com.

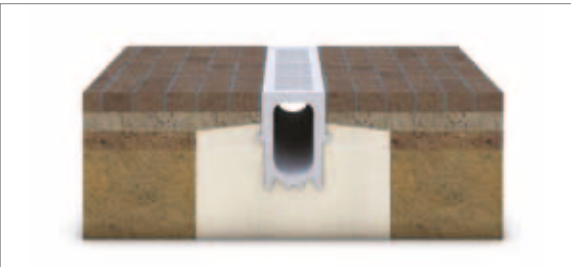
Pipelife has its own design team, equipped with special software programs and onsite experience. On request, our trained Raineo® specialists will design the projects or assist the design agency that is responsible for the project.

1. Catching and redirecting

The actual look, properties and availability of these products change country by country.
Get in touch with your local Pipelife contact person to check your possibilities.

LINE DRAINAGE (EN 1433:2003 AND EN 124:2003)

Pipelife offers various types of line drainage products
.....
High strength, impact resistance and light weight
Different available depths 180-385 mm
No Loose grids, load class D400
Flow rates up to 65 l/s, depending on hydraulic gradient and type of line drainage



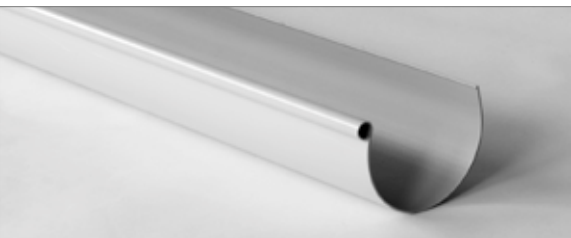
ROAD GULLIES, PP, PVC (EN 1433:2003 AND EN 124:2003)

Pipelife offers different types made from pipe OD400, ID400, OD630 or with injection moulded parts
Different covers, telescopic or fixed entrance and loading classes are available, with bucket for leaves or without.
.....
Road gullies with hinged grid on top are designed to collect surface water from roads, parks, etc. There are two types of outlet gullies: siphon and straight. Output pipes are DN160, OD160 or 200.



ROOF GUTTERS, PVC (EN12056-3:2004)

Pipelife offers various type of roof gutters and down pipes.
.....
High strength and toughness
High UV-resistance



PIPE SYSTEMS (EN 13476-3:2009, ÖNORM 20513 – EN 476, EN 12201-2, EN 1401:2009)

Type	Range
Pragma PP, SN8-3/6m	DN/OD160-500, DN/ID200-500
PP Master, SN10(12)-1/3/6m	DN/OD160-500
PE 100 PN10-coils and straight	DN/OD63-500
PVC SN4(8)-0.5/1/2/5m	DN/OD110-500



FITTINGS

Pipelife offers a full range of pipe fittings, including bends, t-pieces, branches, reducers, double and repair sockets for all type of pipe systems.
.....

Range DN/OD 160-500

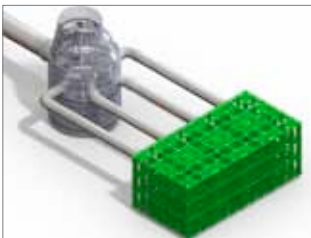
Fittings are used in pipe systems to connect straight pipe or sections, to adapt to different sizes or shapes, and for other purposes, such as regulating or measuring flows.



PRO MANHOLE MANIFOLDS (EN 13958-2:2009)

Type	Inlet	Outlets
IC630 M800	DN/OD160	1xDN/OD160
M1000	DN/OD200	2xDN/OD160
	DN/OD250	3xDN/OD160
	DN/OD315	4xDN/OD160
M1000	DN/OD400	6xDN/OD160

Manifolds are used to distribute incoming water to the infiltration or attenuation system

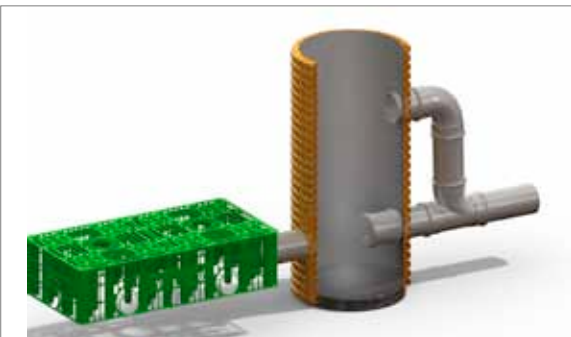


PRO MANHOLE FLOW CONTROL (EN13598-2:2009)

Type	Inlets/Outlets	Restrictor
IC630	DN/OD160	1-25l/s
M800	DN/OD160	1-25l/s
M100	DN/OD160	1-25l/s

Flow control units are placed at the end of attenuation systems to control the volume of the outgoing water.

Length of restrictor depends on height of Stormbox system.
For flow control we use the principle of flow through orifice, with different diameter of the restrictor hole. Vortex flow control units will be available on request.



PRO MANHOLE PP (EN13598-2:2009)		
Type	Inlets/Outlets	Installation depth
IC630	DN/OD160-400	up to 6m
M800	DN/OD160-500	up to 6m
M100	DN/OD160-500	up to 6m

The PRO PP manholes are modern, ecological and cheap with regard to the exploitation alternative of the heavy, massive and maintenance complex concrete constructions. Their guaranteed air-tightness, strength and low weight make them appropriate for building of a complete sewerage with long exploitation life.



PUMPING STATIONS (ACCORDING TO SEVERAL STANDARDS)

Pipelife offers a wide range of pumping stations with one or two pumps, different models , with discharge up to 10 l/s and leveling up to 40 m.

Pumping stationa are used to raise the water level in the system or to discharge water.



STANDARDS

EN 1433 Drainage channels for vehicular and pedestrian areas - Classification, design and testing requirements, marking and evaluation of conformity

EN 124 Gully tops and manhole tops for vehicular and pedestrian areas - Design requirements, type testing, marking, quality controlGully tops and manhole tops for vehicular and pedestrian areas - Design requirements, type testing, marking, quality control

EN 12056-3 Gravity drainage systems inside buildings - Part 3: Roof drainage, layout and calculation

EN 13476-3 Plastics piping systems for non-pressure underground drainage and sewerage - Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) - Part 3: Specifications for pipes and fittings with smooth internal and profiled external surface and the system, Type B

EN 1401 Plastics piping systems for non-pressure underground drainage and sewerage - Unplasticized poly(vinyl chloride) (PVC-U) - Part 1: Specifications for pipes, fittings and the system

EN 13598-2 Plastics piping systems for non-pressure underground drainage and sewerage - Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) - Part 2: Specifications for manholes and inspection chambers in traffic areas and deep underground installations

EN 476:2003 General requirements for components used in discharge pipes, drains and sewers for gravity systems.

EN 1671:2004 Pressure sewerage systems outside buildings.

EN 12056-4:2004 Gravity drainage systems inside buildings - Part 4: Sewage pump stations design and sizing.

EN 752:2008 Drain and sewer systems outside buildings.

EN 13598-2:2009 Plastics piping systems for non-pressure underground drainage and sewerage - Unplasticized polyvinyl chloride (PVC-U), polypropylene (PP) and polyethylene (PE) - Part 2: Specifications for manholes and inspection chambers in traffic areas and deep underground installations.

EN 12256:2006 Plastics piping systems - Thermoplastics fittings - Test method for mechanical strength or flexibility of fabricated fittings.

2. Safe place to store water

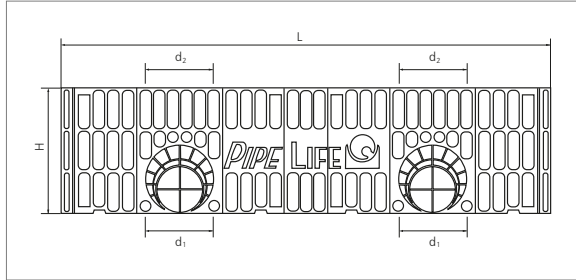
The actual look, properties and availability change country by country. Get in touch with your local Pipelife contact person to check your possibilities.

A safe place to store water, according DWA-A 138E and DWA-A 117E

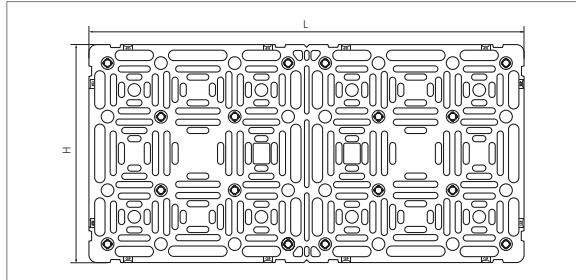
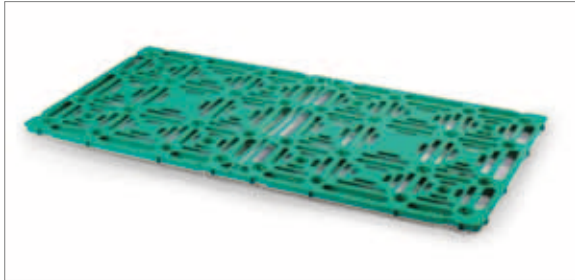
STORMBOX PP-B				
L (mm)	W (mm)	H (mm)	d1 (mm)	d2 (mm)
1200	600	300	110, 125, 160	110, 125, 160, 200

Gross capacity: 216 dm3
Net water capacity: 206 dm3

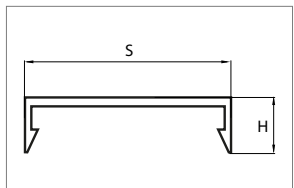
Storage factor: 95,5%



STORMBOX GROUND PLATE PP-B		
L (mm)	W (mm)	H (mm)
1200	600	20



STORMBOX CLIPS PP-B	
L (mm)	W (mm)
36,5	21,5



STORMBOX REDUCER LATERAL INLET PE

L (mm)	W (mm)	H (mm)	d1 (mm)
600	600	600	200,250,315,400, 500

Needs two Stormbox stacked on top of each other and can be placed on all sides of the Stormbox

Pipe connection can be made with double socket



STORMBOX CONNECTIONBOX PE

L (mm)	W (mm)	H (mm)	d1 (mm)
600	600	600	160-200-250-400-500

Needs two Stormboxes stacked on each other and 400 riser pipe

Provides inspection possibilities to the lower boxes on all sides

Can be placed on the edges or somewhere in the middle of a Stormbox infiltration or attenuation tank



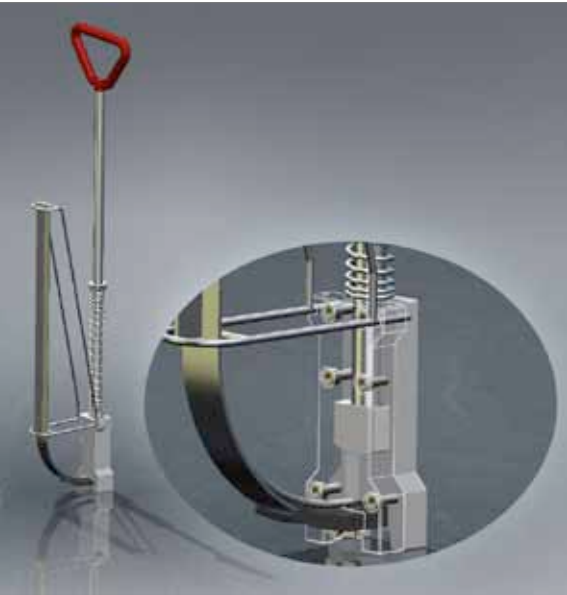
VERTICAL TOOL CLIP

Optional tool voor adding Stormbox clips in vertical direction during installation



HORIZONTAL TOOL GUN CLIP

Optional tool voor quickly adding Stormbox clips in horizontal direction during installation



GEOTEXTILE (EN 13252:2001)

L (m)	W (m)	Type	Material
30-50	2-5	woven and unwoven	several

The Geotextile acts as a filter which must allow free flow of the water. They are are an important element in Stormwater systems either as a filtration layer or as a separation layer at the boundary surface between filter layers and the surrounding soils.



GEOMEMBRANE (EN 13967:2004)

L (m)	W (m)	thickness	material
20	2-5	> 0.75	PE, PVC, PP

Care should be taken in the choice of selection criteria and specification of impermeable geomembranes for attenuation/ storage systems. Geomembranes should withstand rough installations and withstand the required physical and mechanical characteristics of the surrounding soil.



STANDARDS

DWA-A 138E Planning, Construction and Operation of Facilities for the Percolation of Precipitation Water

DWA-A 117E Dimensioning of Stormwater Holding Facilities

EN 13252:2001 Geotextiles and geotextile related products – characteristics required for use in drainage systems

EN 13967:2004 Flexible sheets for waterproofing. Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet. Definitions and characteristics

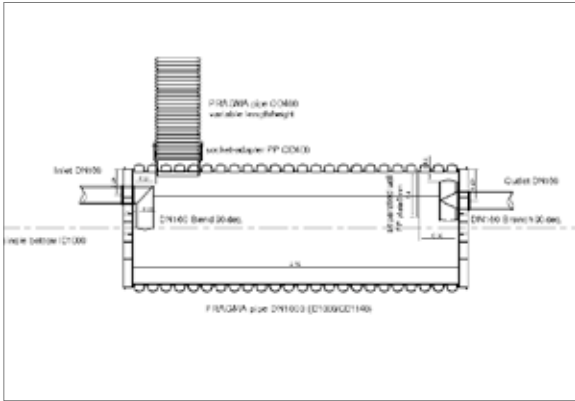
3. Get Clean!

The actual look, properties and availability of these products change country by country.
Get in touch with your local Pipelife contact person to check your possibilities.

SEDIMENTATION TANKS (DWA-M 153, AUGUST 2007)

L (m)	Diameter (m)	In/outlet
3	1.0	DN 160/200
6	1.0	DN 160/200

Sedimentation tanks are used for the mechanical cleaning of stormwater from particles like clay or silts. The sediments remains trapped in the tank and it can be removed by specialised companies.

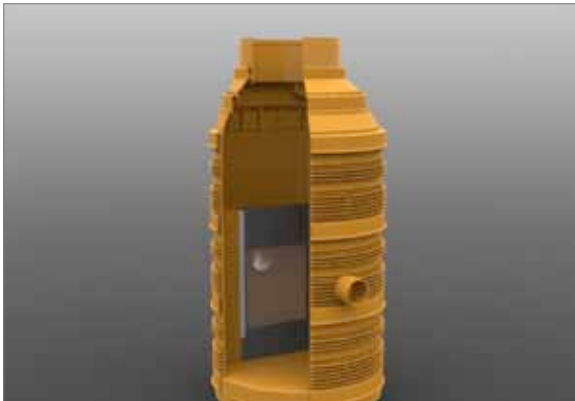


PRO MANHOLE FILTERS (DIN1989-2 :2001)

Type	Inlet	Outlets
IC630,	DN/OD160	1xDN/OD160
M800 and	DN/OD200	2xDN/OD160
M1000	DN/OD250	3xDN/OD160
	DN/OD315	4xDN/OD160

M800 and	DN/OD400	6xDN/OD160
M1000		

Filters prevent clogging of the infiltration application by removing sand and organic materials from the rainwater. This sludge remains trapped in the manhole and it can be removed by specialised companies. The filter has a large surface, which prevents clogging in sandy areas with a lot of leaves, branches and other dirt.

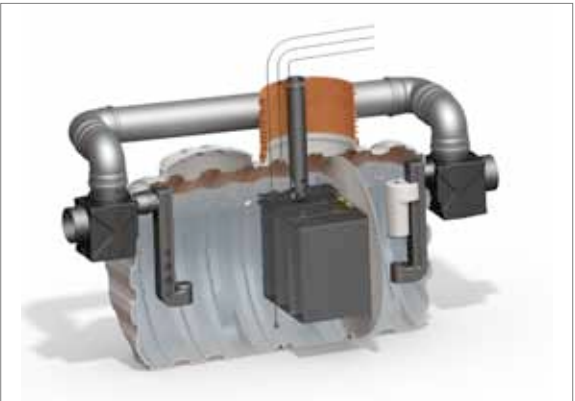


OIL SEPARATORS CLASS I AND CLASS II WITH OR WITHOUT BYPASS (EN 858-1,2 : 2003)

Type	flow rate (l/s) without or with bypass	Class
NS3	3-30	I and II
NS6	6-60	I and II
NS10	10-100	I and II

Tanks sizes vary

Oil separators are used to remove light fluids (gasoline, oil, kerosene, etc.) from rainwater. The installation is before t infiltration or attenuation tank.



STANDARDS:

DWA-M153 Recommended Actions for Dealing with Stormwater

EN 858-1 Separator systems for light liquids (e.g. oil and petrol) - Part 1: Principles of product design, performance and testing, marking and quality control

EN 858-2 Separator systems for light liquids (e.g. oil and petrol) - Part 2: Selection of nominal size, installation, operation and maintenance

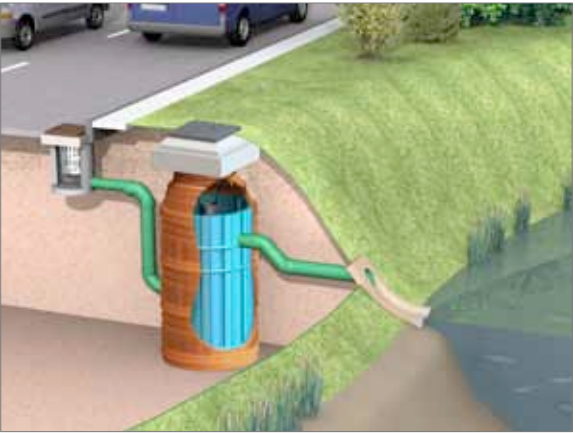
DIN1989-2 rainwater harvesting systems-Part 2 Filters

HYDROSYSTEM: FILTERS FOR HEAVY METALS, HYDROCARBONS AND PAC'S (DIN1989-2: 2001)

Type	connected traffic area (m2)	Diameter (mm)
400	130	400
1000	1000	1000

Available in selected countries only

The Hydrosystem filter manholes are used for cleaning rainwater from heavy metals (e.g., zinc from roofs, abrasion from tyres), hydrocarbons (e.g., oil, PAC's from cars on streets) The Hydrosystem is also used for rainwater harvesting purposes.





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