

CATALOGUE January 2011



# drainage

Corrugated pipe in PE for drainage



technical catalogue



ENGLISH

# drainage

The term "drainage" indicates the method that enables the hydrologic regulation of the underground soil, which comprises the elimination of excess water, allowing the draining of watershed basins and terrain, which due to its nature and composition is impermeable and therefore in which water may stagnate. These drainage pipes remove excess water from those areas where loss of the mechanical stability of the land might occur after prolonged contact with it.

Riccini pipes from the drainage series, owing to the specific slotting applied along their circumference, abstract, collect and eliminate excess water in the soil, re-establishing the proper balance of the land. Through the establishment of specific drainage lines and networks it is possible to remove significant quantities of undesired water found in the land: for agriculture, construction, the implementation of infrastructure projects, recovery of lands stricken by hydro-geological instability, for waste disposal plants and for sports facilities.

The lack of a suitable drainage system, or its inadequacy may bring about serious harm such as the flooding of the land, the drowning of tree roots, landslides, building humidity, contamination of water tables in the case of waste disposal areas, infiltration of valley verges by artificial piedmont watershed basins.

Riccini drainage pipes are made of polyethylene comprised of two co-extruded and shaped tubes so that the outer wall takes on the typical corrugation necessary to provide the product with structural strength, whilst the internal wall is smooth and continuous, facilitating the removal of unfiltered debris and averting accumulations and occlusions in the drainage system.

Both of the polyethylene walls are made up of top choice raw materials, which, besides guaranteeing the manufactured product high quality and long life, facilitate installation in the trench and avert internal tears and lacerations that could obstruct the normal outflow of the draining fluid. The quality of the materials used also ensures great ductility for the entire system as well as excellent resistance to chemical and bacterial agents found in the soil.

Riccini drainage pipes are especially light in weight and extremely flexible as well as having a crush resistance value such that they may be used without any particular precautions during site installation. They offer a series of advantages among which there is speed of installation compared to traditional drainage systems made of other materials. In addition, DRENOCOR D.P. and DRENOFILTER are much appreciated owing to the extreme ease with which changes in slope, curves and unevenness in the trench may be managed, in such a manner that the use of elbow fittings, indispensable when using more rigid pipes in measured lengths, is avoided. Attention to the rationalisation of the packaging enables easy stocking in the warehouse making both the spools (DRENOCOR D.P. and DRENOFILTER) and the lengths (DRENOBAR) easy to handle, transport and stack.

# technical specifications

Riccini double wall drainage pipes are manufactured in such a manner as to guarantee, for the entire line of product diameters, the following specifications and minimum requirements:

- » The annular rigidity (crush resistance) determined pursuant to the UNI EN ISO 9969 Standard enables the Riccini drainage pipes to be classified as SN4, equal to 4 KN/m<sup>2</sup> (DRENOCOR D.P. and DRENOFILTER) and SN8, equal to 8 KN/m<sup>2</sup> (DRENOBAR).
- » They have passed the shock test at -5 °C, performed with the application of variable energy values depending on the nominal pipe dimension.
- » They are especially resistant to chemical agents, corrosion and temperature shifts (practically the application range extends from -25 to +60°C)
- » They are U.V. ray stabilized: guaranteed for 18 months from the manufacture date for irradiation equal to 100 -110 KJ/year).
- » The slotting is in the trough of the corrugation fold so as to avoid direct contact with the soil and reduce the possibility of obstruction of the passage of water to a minimum.
- » The particular flexibility of the DRENOCOR D.P. and DRENOFILTER facilitate installation in irregular and uneven terrain.

They have held up under the bend test performed both at room temperature and at -5°C, with a bending radius of at least 5 times the nominal diameter of the pipe.

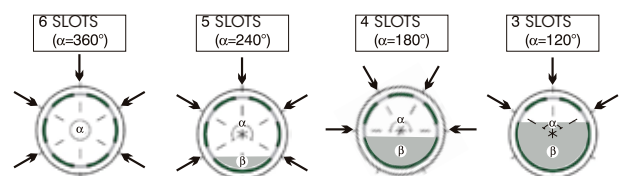
Standard colours: DRENOCOR D.P., green outside and black inside, DRENOBAR, black inside and outside, DRENOFILTER, green outside and black inside.

In the table below some of the specifications for Riccini drainage pipes are shown.

Ø (external) mm	63	75	90	110	125	160	200
Ø (internal) min. mm	51,0	59,5	71,5	92,2	105,3	135,0	175,0
No. of slots per metre <i>with 6 slots at 360°</i>	390	324	318	270	240	300	330
No. of slots per metre <i>with 5 slots at 240°</i>	325	270	265	225	200	250	275
Mean abstraction surface area cm <sup>2</sup> /m <i>with 6 slots at 360°</i>	> 65	> 65	> 75	> 80	> 82	> 105	> 120
Mean abstraction surface area cm <sup>2</sup> /m <i>with 5 slots at 240°</i>	> 54	> 54	> 62	> 66	> 68	> 87	> 100

DRENOCOR D.P. and DRENOFILTER are perforated over 360° of their circumference (6 slots).

DRENOBAR, in its standard formulation, is perforated over 240° of their circumference (5 slots) and is manufactured only in the following diameters 110, 125, 160, and 200 mm. All of the Riccini drainage pipes, besides their standard realisation, may be customised (upon request and for quantities to be agreed upon) with the slots as shown below.



α = arc of the circumference set for the acceptance of the slots for the water uptake.  
β = section without slots set for the transport of the liquid to be drained away.

## SPECIFICATIONS ITEM: CLAD CORRUGATED PIPES FOR LAND DRAINAGE

Delivery and installation of flexible, double-wall structured pipes in PE with corrugated outside wall and smooth inside wall with max. ripple  $\leq 2\%$  (diff. between max int. diam. and min. int. diam.), manufactured with continuous co-extrusion of the two walls, set up with slots located on rows at  $60^\circ$  intervals on the entire circumference (6 rows of slots over  $360^\circ$ ).

The corrugated pipes for land drainage shall be supplied in spools complete with junction sleeves and already clad in synthetic non-fabric geotextile fibre, that will not rot, perfectly adherent and joined to the pipe for its entire length with the following specifications:

- » *Mass  $\geq 150 \text{ gr/m}^2$  (EN 9864);*
- » *Transverse tensile strength  $\geq 7,3 \text{ kN/m}$  (EN ISO 10319);*
- » *Longitudinal tensile strength  $\geq 6,0 \text{ kN/m}$  (EN ISO 10319)*
- » *Elongation to break  $> 30\%$  (EN ISO 10319);*
- » *Static Puncture resistance  $1,0 \text{ kN}$  (EN ISO 12236).*

The corrugated pipes for land drainage shall be of an annular rigidity class of SN4 ( $4 \text{ kN/m}^2$ ) determination based on UNI EN ISO 9969 and shall be manufactured in a company operating with the Quality System compliant with UNI EN ISO 9001:2008 certified by an independent accredited authority.

All that is necessary for delivery of the finished job is included.

## drenocor d.p.

drenobar

drenofilter



## DRENOFILTER: DRAINAGE PIPE CLAD IN SYNTHETIC FIBRE

For the proper operation of a good drainage system it is indispensable that a filter capable of creating a barrier against impurities that would otherwise follow the fluid being drained inside of the pipe be set up, around the pipe.

DRENOFILTER offers all of this. It is comprised of a double wall drainage pipe in PE clad with a synthetic non-fabric fibre filter. The filter, applied directly to the pipe during its manufacture, has been designed to facilitate, speed up and render constant over time filtration over the entire surface of the pipe, which instead, is not ensured by traditional pipes clad with natural fibres, over the long term, being made up of organic material, that rots easily. DRENOFILTER, owing to its cladding that will not rot and its high drainage capacity, ensures the maintenance over the years of the drainage system characteristics estimated during the design phase. The filtration chamber of DRENOFILTER is ensured by the synthetic non-fabric filter fibres, which are mechanically bound to one another through needling.

The physical-mechanical characteristics of this filter are summarised in the following table.

	Unit of meas.	Indicative technical data	Reference Standard
Mass	gr/m <sup>2</sup>	150	EN ISO 9864
Transverse tensile strength	kN/m	$\geq 7,3$	EN ISO 10319
Longitudinal tensile strength	kN/m	$\geq 6,0$	EN ISO 10319
Elongation to break	%	$> 30$	EN ISO 10319
Static puncture resistance	kN	1,00	EN ISO 12236

DRENOFILTER guarantees improved productivity in that it significantly reduces the time necessary for installation, whether performed manually or with the use of mechanical means or pipe laying machines.



Previous to the appearance of DRENOFILTER, the installation of a drainage pipe with attached a geotextile synthetic fibre filter could only come about manually, first cladding the pipe with the filter fibre and then laying the pipe in the trench.



Via Loredana, s.n. - 06132 Perugia (PG) Loc. San Martino in Campo - ITALY  
tel. +39 075 591031 fax +39 075 5917020  
email [info@riccini.it](mailto:info@riccini.it) web [www.riccini.it](http://www.riccini.it)