

Compact PVC pipes, environment-friendly

The main features of the new environmental-friendly compact PVC pipes stabilised in organic materials.

Context

The advancement of knowledge and production technologies now make it possible to manufacture PVC pipes without the addition of heavy metals. During manufacture, the hydrochloric acid produced by the process of dechlorination of the PVC molecule, damages the chemical structure of the molecule so causing a significant depletion of the mechanical characteristics. To avoid this phenomenon, the stabilisation of this acid is essential. In the past, stabilisation was achieved by adding lead or heavy metals. Nowadays, these old stabilisers have been replaced by organic stabilisers, which improves the properties of the PVC material and eliminates the ecological issues of heavy metals.

Application

Sewage, rainwater and drainage networks. Underground ventilation ducts and Canadian wells.

Standardisation

The **SIA 190** standard (2000 edition, page 23) requires, for PVC pipes without overpressure (gravity flow), the application of **SN EN 1401-1** standard. This standard is the most stringent for the manufacture of PVC pipe with **SN 2**, **SN 4** and **SN 8** rigidities. Structured PVC pipes are not allowed by the **EN 1401-1** standard.

Physical and mechanical characteristics

Specific weight	1'380 kg/m ³
Modulus of elasticity (value for a minute)	3'000 N/mm ²
Modulus of elasticity (long-term value)	1'500 N/mm ²
Tensile strength	20 N/mm ²
Average coefficient of longitudinal elongation	0.08 mm/m K
Ring stiffness available	SN2 (2 kN/m ²) SN4 (4 kN/m ²) SN8 (8 kN/m ²) SN12 (12 kN/m ²) SN16 (16 kN/m ²)

Materials and ecology

Ecological PVC is distinguished from "traditional" PVC by its composition which no longer contains heavy metals.

PVC pipes stabilised with calcium and zinc stearate (PVC Ca-Zn) or organic stabilisers (OBS) are recommended by the Swiss Research Centre for Rationalization in Building and Civil Engineering (**CRB**). In the chapter of **CAN 237**, PVC Ca-Zn is classified in the best category with the mention "ecologically interesting." It is ranked equally with polyethylene (PE) and polypropylene (PP). Fiberglass-reinforced polyester pipes are not recommended.

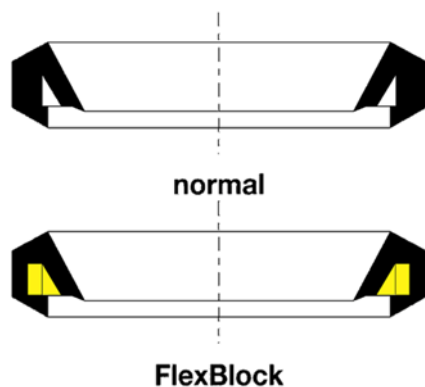
Assembly and sealing

The assembly is achieved by :

- Interlocking M/F fit directly integrated in the pipe. Male part : chamfered smooth end – Female part : interlocking tulip
- By double or sliding sleeve

Sealing is guaranteed by the traditional joint system or FlexBlock seals. The latter consists of a normal joint reinforced by a rigid ring that holds it in place. The advantages of the FlexBlock system are as follows :

- Non-removable and integral joint with the sleeve
- Absence of strangulation during assembly
- Safety of the result during implementation



Depths of laying

The installation depths of the PVC, PE and PP pipes meet the criteria of the SIA 190 standard, in order to guarantee the structural strength and a maximum admissible deformation of 5% of the plastic pipes.

According to the SIA190 standard, the minimum covering height (H_laying) is 0.80 m.

Manufacturing program

Rigidity	SN 0.5	SN 2	SN 4	SN 8
Ref.	S 40	S 25	S 20	S 16.5
SDR	SDR 81	SDR 51	SDR 41	SDR34
DN OD in mm	Wall thickness in mm			
Ø 110			3.0	3.2
Ø 125			3.2	3.7
Ø 160		3.2	4.0	4.7
Ø 200		3.9	4.9	5.9
Ø 250		4.9	6.2	7.3
Ø 315		6.2	7.7	9.2
Ø 355		7.0	8.7	10.4
Ø 400		7.9	9.8	11.7
Ø 450		8.8	11.0	13.2
Ø 500		9.8	12.3	14.6
Ø 630	7.9	12.3	15.4	18.4
Ø 710	8.8	13.9	17.4	20.7
Ø 800	10.0	15.7	19.6	23.3
Ø 900	11.3	17.6	22.0	
Ø 1000	12.4	19.6	24.5	
Ø 1200	14.9	23.6		

	Compact PVC pipes according to EN 1401
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Submission text

The texts of the CAN often lack precision. For submission, we recommend that you specify the **EN 1401** standard and its requirements in your text.

A condensed text could be summarised as follows :

« Compact PVC pipes stabilized with organic materials or Ca-Zn according to the EN 1401 standard, Canplast brand or similar ».