



Precast Concrete Trench Drain Systems

ENVIRONMENTAL IMPACT

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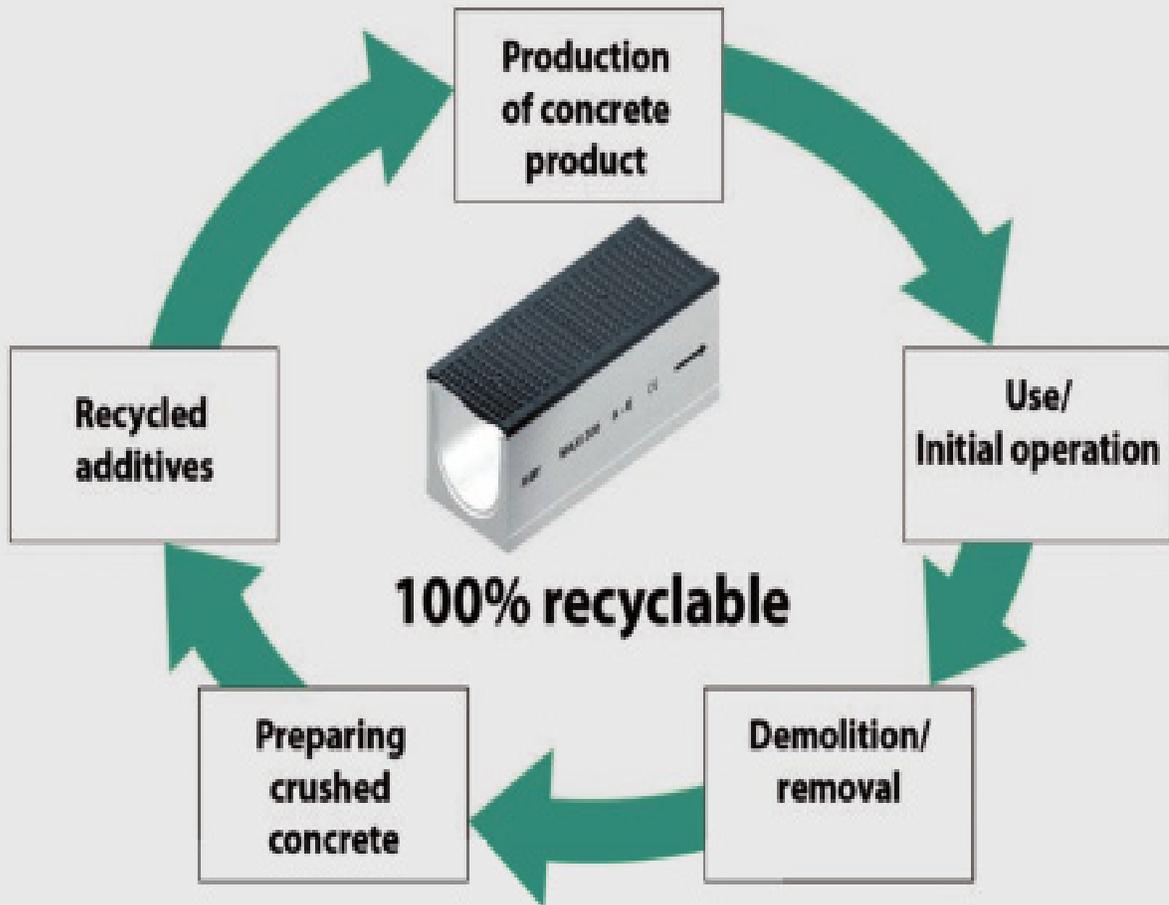
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HYDROTEC 

Technologies



**Positive eco-balance -
Drainage system of fiber-reinforced concrete**



Sustainability in the spotlight

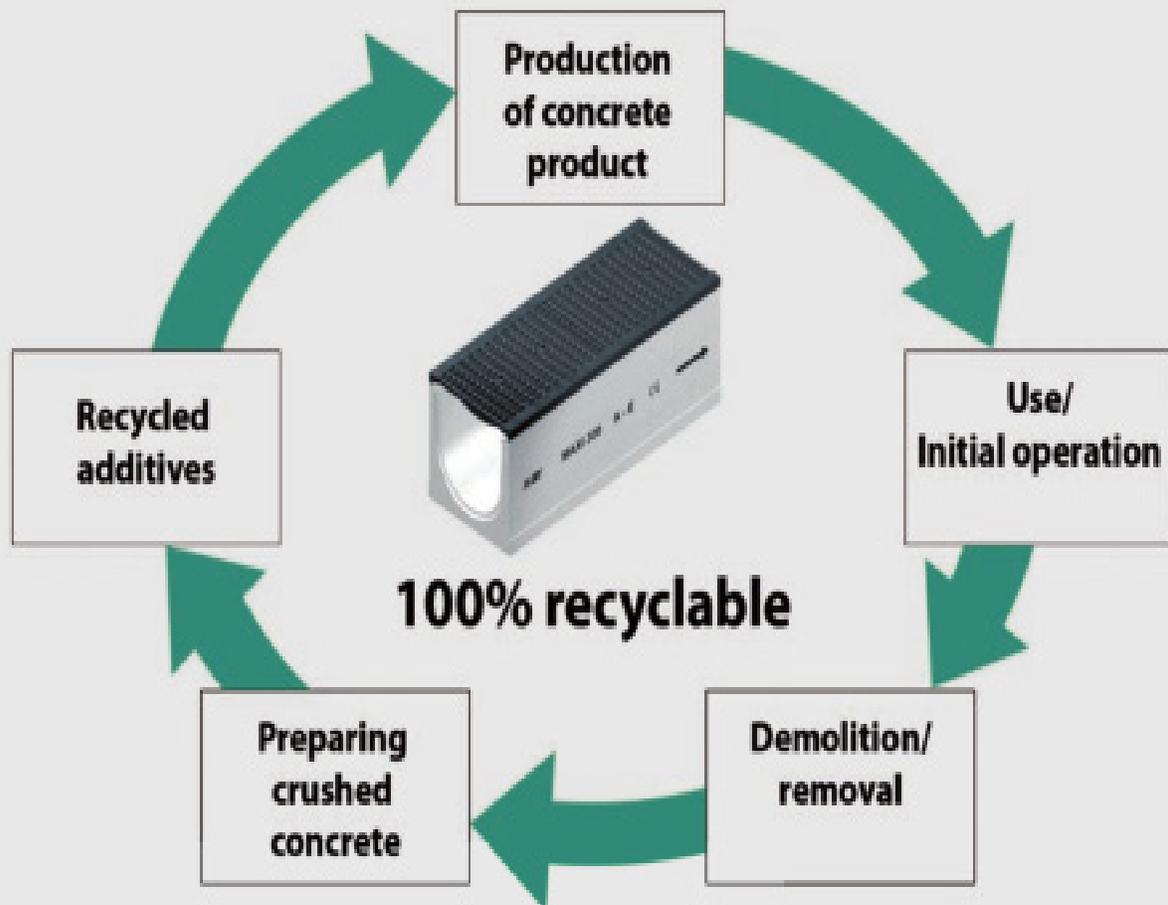
HYDROTEC always selects the raw materials for its fibre-reinforced concrete with ecological perspectives in mind. The basis for concrete is simple, and nature offers what we need to make it: cement from limestone and clay, aggregate from sand and/or gravel and, finally, water. These raw materials are abundantly present as natural reserves in the long term and give the concrete a very long lifespan and the associated properties. Safety, resilience, ability to be moulded and economic viability made concrete one of the most important construction materials - then, now and in the future

Made in Germany

HYDROTEC has been producing its fibre-reinforced concrete drainage channels in Germany for 45 years. At the Wildeshausen factory, over 90 highly-qualified employees guarantee quality, efficiency and environmental sustainability in every working process.

Positive ecological balance as a sign of quality

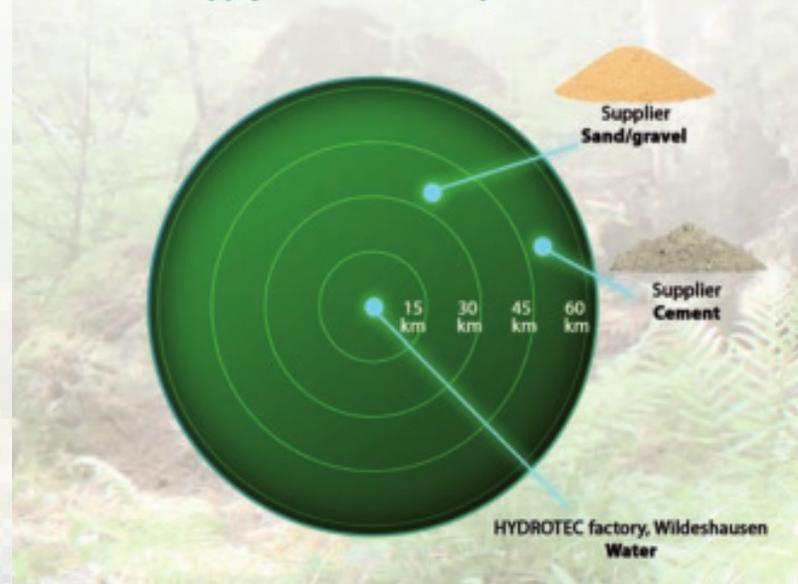
Concrete is one of the few materials which have an extremely strong eco-balance. The highest possible ecological requirements are already fulfilled when raw materials which were extracted in an environmentally friendly way are selected. In contrast with other materials, the production of concrete requires a very low amount of energy. At the end of its lifespan, concrete can be completely recycled, which keeps its environmental footprint to a minimum.



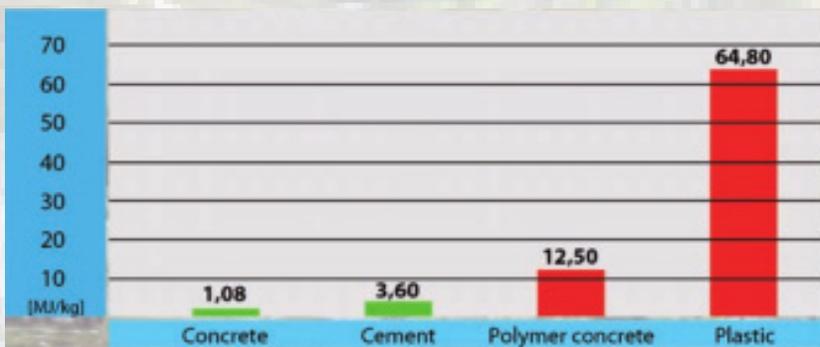
Positive eco-balance as a sign of quality

Concrete is by far the material which is produced in the most energy efficient way, as clearly shown in the below diagram. The regional availability in all parts of Germany is only one indicator which shows that the raw materials required for producing concrete may be transported and processed with little effort. Only the production of cement requires a similar level of energy use, which, given the low proportion of approx. 15% in concrete, does not have a significant influence.

HYDROTEC supply sources for the production of concrete



Primary energy requirements for the production of ...

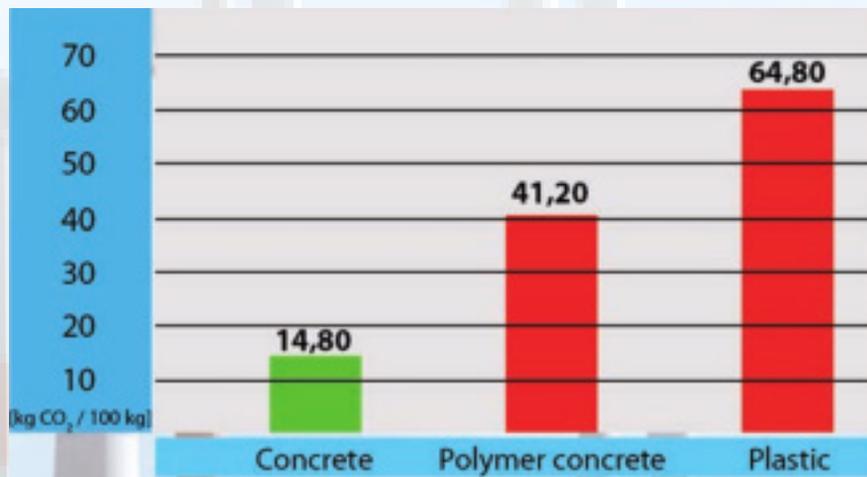


Ecology combined with economy is our goal in concrete production. This goal is achieved particularly through short transport routes, which not only protect the environment, but also keep transit costs low. In order to achieve this goal, HYDROTEC deliberately selects suppliers from the region.

Positive eco-balance as a sign of quality

CO2 emissions for the production of...

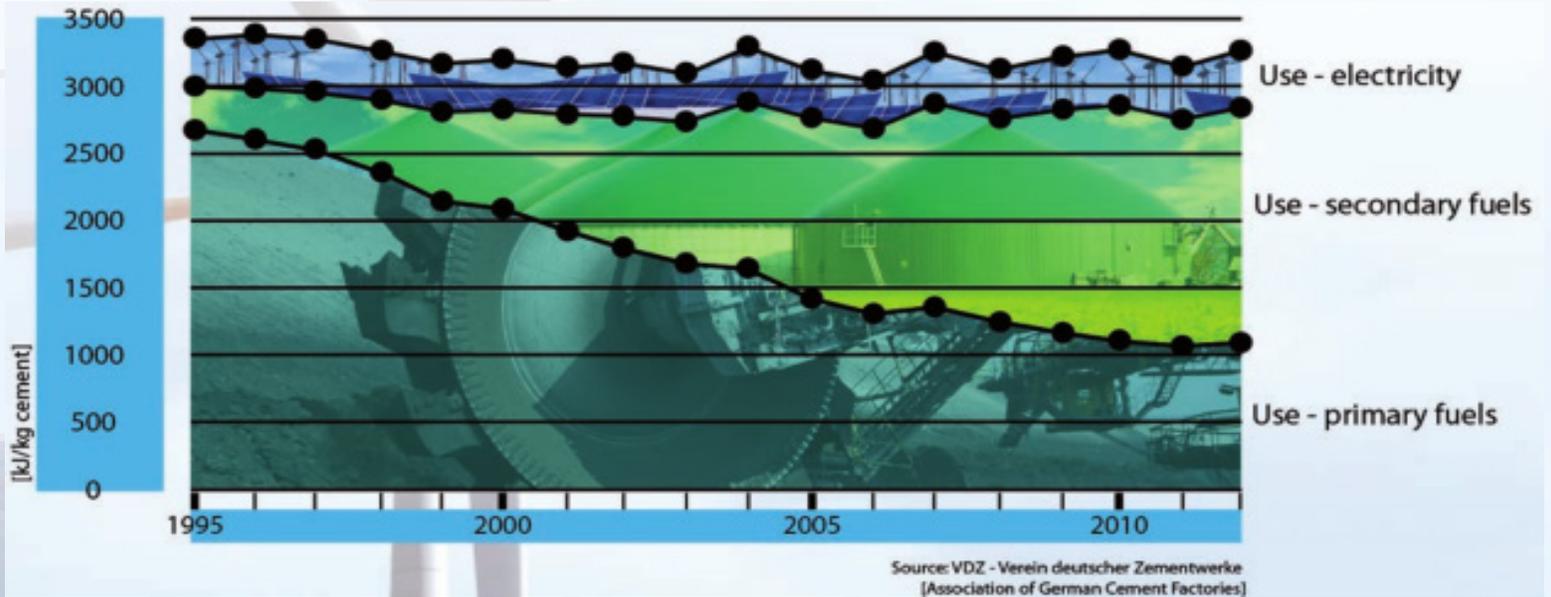
In comparison with other materials, such as polymer concrete or plastic, concrete produces a significantly lower amount of CO2 emissions in the production process. This leads to a reduction in CO2 of approx. 60% by comparison with polymer concrete and nearly 80% in comparison with the production of plastic.



Cement on an environmental upswing

In recent years, there has been a noticeable development in the use of cement with regard to the switch from primary to secondary energy. This clear trend pursues a clear goal: minimising primary energy and maximising secondary energy.

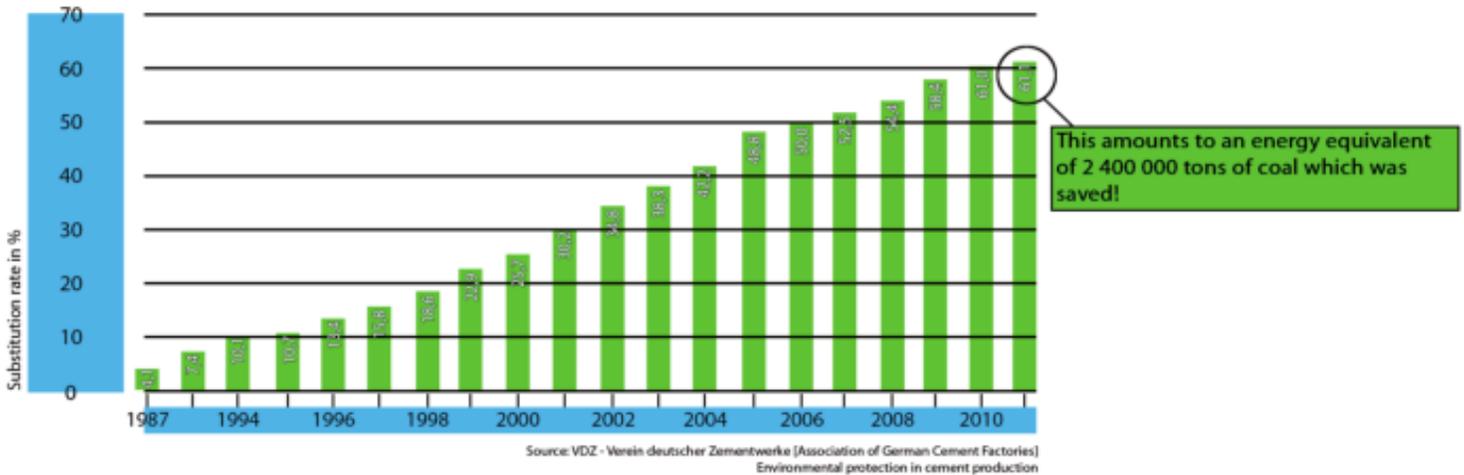
Specific energy use in cement production



Cement on an environmental upswing

As cement production is energy and raw material-intensive, the cement industry is continuously developing new ways to reduce the use of primary raw materials, such as using alternative fuels. The German cement industry recognised these possibilities early on and is now a global leader, particularly in the use of suitable alternative fuels. In 2011, over 60% of the fuel energy required was substituted with replacement fuels in Germany.

Development of alternative fuel use in the German cement industry



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Cement on an environmental upswing

Quelle: Energie MW
Durchschnittlicher Stromverbrauch



provide **3 000 000 households** with electricity for a whole year. This applies to three-person households with an average energy use of 6500 kWh.

Quelle: Germanischer Lloyd
Containerchiffahrt – Robinsons ohne Ende?



make **200 round-the-world trips** with a huge container ship with a load of 9000 containers and fuel usage of 200 tons/day

The saving of **2,400,000 tons of coal** is enough to:

Quelle: www.wuerttemberg.de
Das Oktoberfest in Zülpich



celebrate **3500 Oktoberfests** and cover their entire energy requirements. The electricity and gas requirements per Oktoberfest are around 5.5 million kWh.

Quelle: www.merger.com in Hausklima
Durchschnittlicher Heizölverbrauch



heat **1 650 000 apartments** for a whole year. The apartments are 75m² with an oil heating requirement of 1155 litres/year.

Resistant and watertight

HYDROTEC drainage systems have Class C35/45 pressure resistance in accordance with DIN EN 206. However, the concrete is analysed not only according to its load-dependent effects but its effects which are not dependent on load. The various exposure classes give an indication of what kind of environmental effect the concrete involved must deal with in the long term.

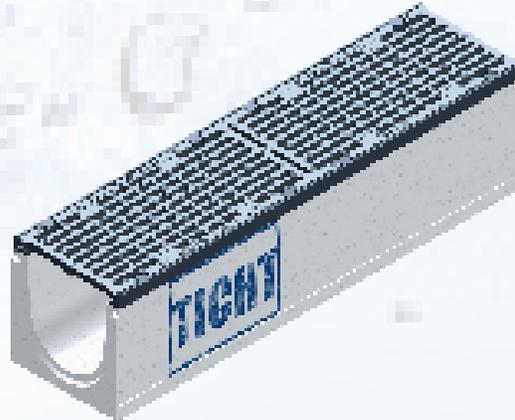
Exposure class	Description of area of use	Example for classification of exposure classes	Minimum pressure resistance class
XC4	switches between wet and dry	exterior building components directly affected by rain	C 25/30
XD3	switches between wet and dry	parts of bridges often under strain from chloride-containing spray water	C 35/45
XS3	tidal areas, spray water and spray areas	quay walls in port facilities	C 35/45
XF3	high water saturation, no deicing agent	open water containers	C 35/45
XA3	chemically strong, invasive area	industrial waste water facilities with chemically invasive waste water	C 35/45

Full description in DIN 1045-2

**tested
Quality**

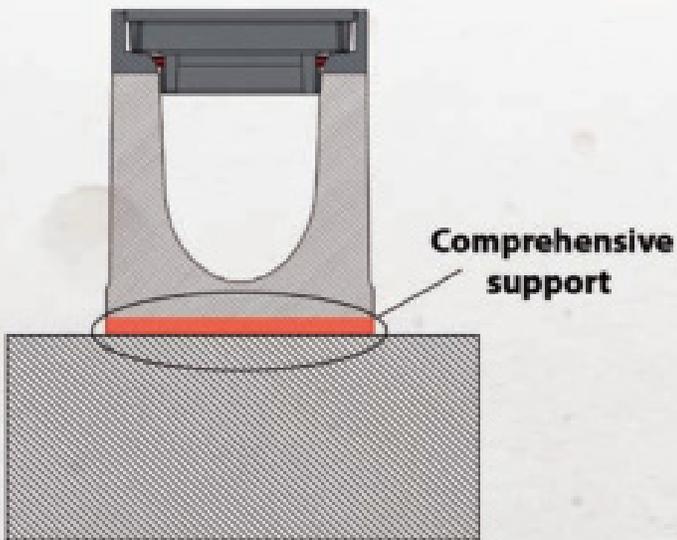
Resistant and watertight

The high quality of the concrete in HYDROTEC drainage channels C35/45 allows a waterproof drainage system to be created. The maximum water penetration depth of 8mm, along with the professional pointing of individual channel elements, guarantee a secure and complete drainage of liquids. The well-conceived MAXI drainage channels have a tongue and groove joint which allows the individual parts to be quickly and tightly joined together.

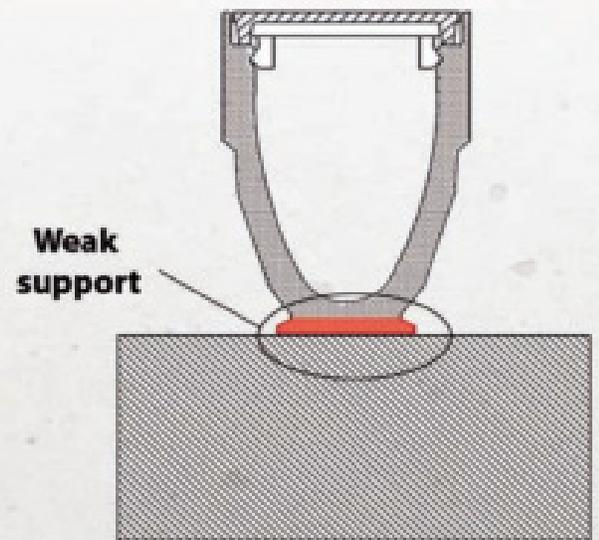


Highest stability, best join

HYDROTEC drainage channels, with their own high weight, guarantee a high level of stability in position which leads to quick and smooth installation.



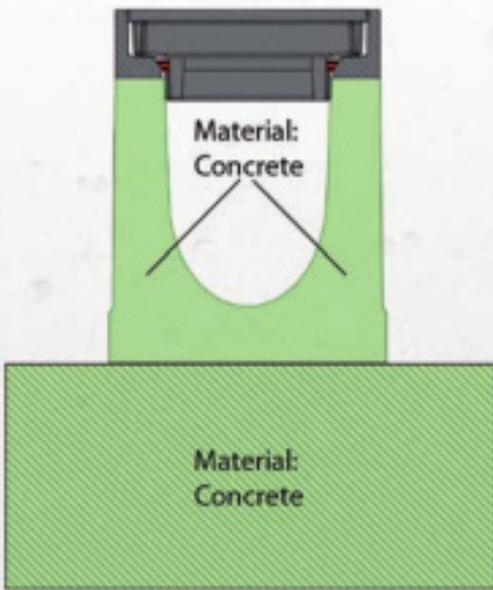
MAXI drainage channel made of fibre-reinforced concrete



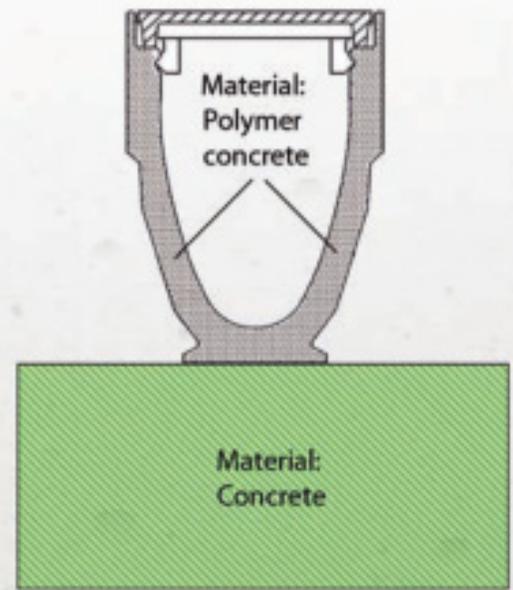
Polymer concrete drainage channel

The MAXI drainage channel offers comprehensive support which guarantees stable and fixed positioning during installation. Compared to drainage channels made of polymer concrete, the MAXI drainage channel has a much larger support surface, omitting the risk of wobbling/toppling.

Highest stability, perfect join



Perfect join between concrete and concrete



Weak join between different materials

A perfect unit is built from a MAXI drainage channel and the base and/or concrete cladding due to almost identical material properties. This combination has a strong join, as two identical materials join to form one unit. The properties of polymer concrete differ from natural concrete due to the use of polyester resin as a binding agent.

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Fireproofing included

HYDROTEC drainage channels are not only resistant to high temperatures, but are not flammable according to DIN 4102! If there is an accident with flammable liquids in the concrete drainage channel, then:



The drainage channels made from concrete cannot be set alight!



No poisonous gases occur!



The drainage channel is not damaged!



Fireproofing included

In case of fire, where temperatures may reach up to 1000°C, the high performance of concrete prevents the fire from spreading through the concrete, as concrete is not flammable. These specific qualities of concrete allow planners in particular to create a fireproof building for clients.

