

Plastics

in cold temperatures

Impact and Shock Resistance



Most plastics become more susceptible to impact and shock loads at lower temperatures.

The material can crack or break if handled roughly. Sensitivity varies by plastic type:

Handling

PVC pipes can be glued down to 5°C. Gluing below 5°C is not recommended. If you must glue anyway, keep the adhesive conditioned at > 5°C until just before use, preferably pre-warm the parts to be bonded, and shield the work area where the gluing will take place.

Processing PVC-U from 5°C and up is no problem at all. Key points to watch when working with PVC-U in cold conditions include:

- Gluing below 5°C is only possible if done in a sheltered setup, condensation is prevented, and you allow for a much longer drying time. In principle, this is not recommended.
- The trench and backfill soil must not be frozen.
- Cutting, drilling, lifting, and positioning must be done with care.
- During use, for safety reasons, be aware that pipes may become slippery due to ice buildup.

Condensation can also occur during PE electrofusion welding in freezing weather. It's important to keep couplers and pipe ends "warm" before welding—for example, by storing them indoors. It's also recommended to cap the pipe ends to prevent cold drafts through the pipes. With butt welding, make sure the combination of low temperatures and strong wind doesn't overcool the weld faces. Since PE's E-modulus increases sharply at low temperatures, installation can be more difficult (tight fit of support sleeves, pipe is hard to cold-bend), but the risk of breakage remains low compared with PVC-U.

For plastics such as PE, PP, and modified PVC types like PVC-A (impact-resistant PVC) and oriented PVC (Aquatop), this sensitivity increases at temperatures well below freezing. Under typical conditions in the Netherlands, using these plastics is therefore not a problem.

Installation

Laying pipe on frozen ground or backfilling with frozen soil is not permitted. During thawing, significant settlement can occur, which may lead to unacceptable deformation in diameter (ovalizing) and lengthwise (sagging). When installing plastic pipes indoors, account for the expected expansion as the pipe reaches its operating temperature.

Transport



PVC	handle with extreme care < 5 °C
PVC-U	down to -5 °C
PP, PE	down to -20 °C

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