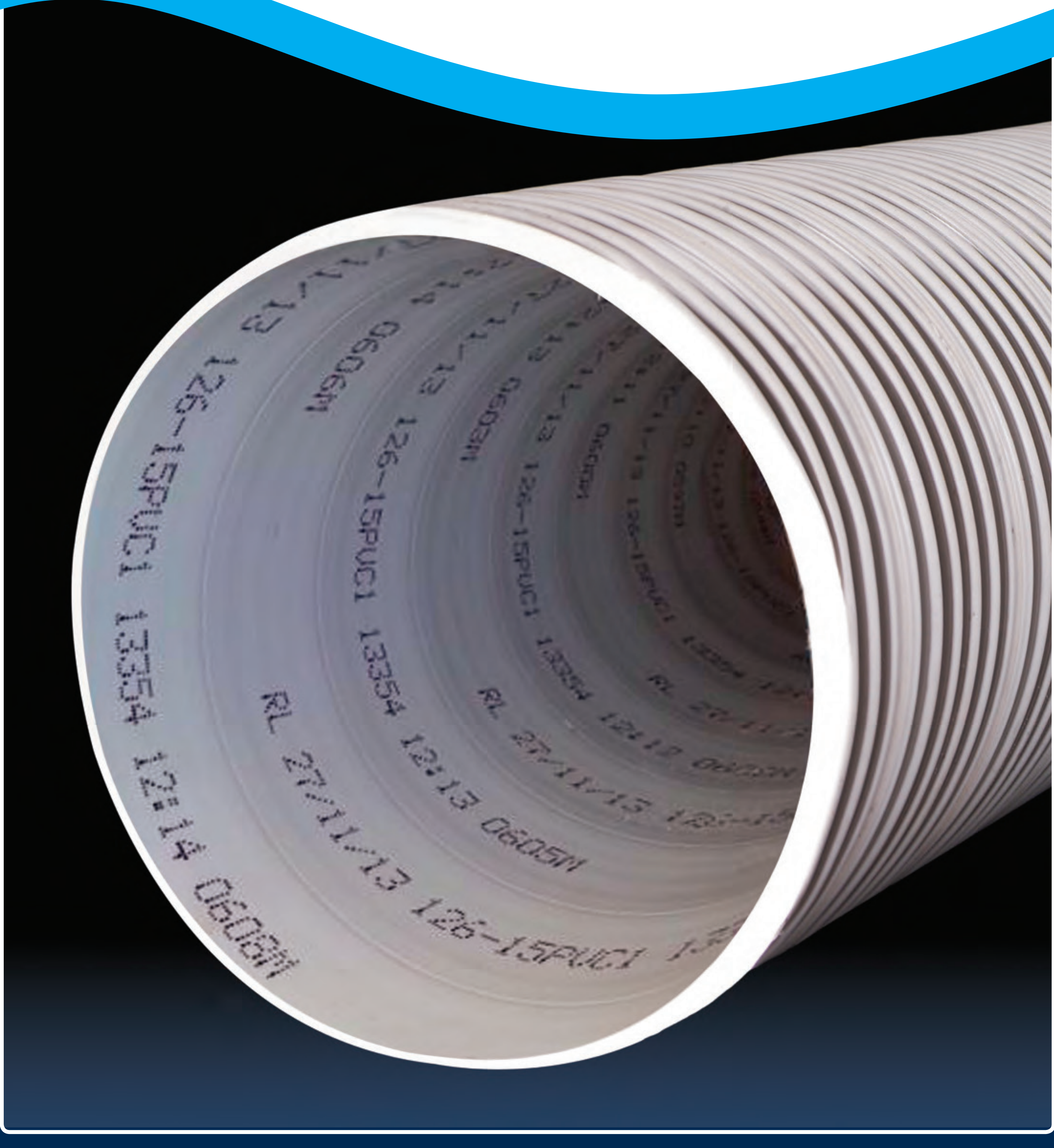
Interflow®

Expanda®

Structure Lining for Deteriorated Pipelines



Expanda®

Expanda is a full-bore structural liner that restores the integrity, reliability and efficiency of aging sewers, storm drains and culverts with diameters from 150mm to 1200mm.

Expanda is a spirally wound PVC liner that is installed by a mechanical process with no need for heating or temporary softening of the liner. This offers a variety of benefits and increases the range of applications where structural sewer lining is possible.

The PVC liner is rigid and provides a smooth circular bore so the hydraulic efficiency of the pipe is restored. The liner is available in a range of profiles to suit project requirements and can structurally rehabilitate pipes constructed of any material, including brick, concrete vitrified clay, AC, glass, reinforced plastic and corrugated metal.

Expanda installation

1) The deteriorated pipeline is cleared of debris and obstructions, cleaned and inspected. Locations of any lateral connections are logged.

2) The Expanda winding machine is lowered to the base of the access chamber. The PVC profile strip is fed into the winding machine from an above-ground spool.

3) The winding machine winds the strip, locking the edges together to form a continuous helix with a diameter slightly less than the host pipe.

4) The winding process continues until the liner reaches the next access chamber.

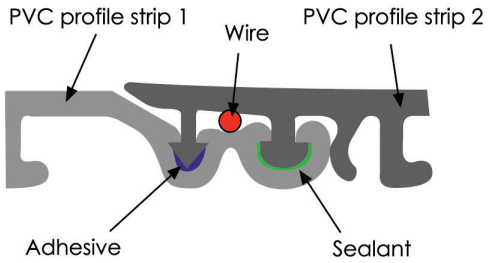
5) The diameter of the liner is then expanded so it fits tightly against the inside wall of the deteriorated pipe. The expansion process is achieved by restraining the end of the liner at the terminating access chamber and pulling the cutting wire.

6) The cutting wire severs the secondary lock inside the profile as it is removed. This allows the adjacent profile wraps to slide relative to each other.

7) The ends of the liner at each maintenance hole are sealed and rendered to make them smooth with the host pipe.

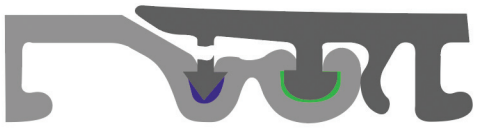
8) Laterals are immediately reconnected by robotic cutting.

9) The connection between the lined pipe and the lateral can be sealed, if required.



During Wind-In

The Adhesive holds the liner at constant diameter as the liner is wound into the deteriorated pipe.



During Expansion

The wire is progressively removed, severing the secondary lock. Adjacent PVC profile strips can then slide relative to each other as more profile is wound. This causes the liner to expand until it is in tight contact with the host pipe.

Structural properties

Expanda can be designed as a stand-alone structural liner according to AS/NZS 2566.1: 1998 Buried Flexible Pipelines, WRc Type 2 Liner, ASTM F 1697 and ASTM F 174.

The profile strip that forms the Expanda liner is provided in a range of sizes and thicknesses. The appropriate profile is selected to provide a liner with sufficient stiffness to meet specific design requirements.

Strong flexible liner

Expanda offers a strong flexible liner that:

- Provides a circular, structurally efficient cross section, even when the host pipe is non-circular, misaligned or has missing inverts or wall sections
- Maintains a constant wall thickness; the wall will not 'balloon' and thin in unsupported areas
- Expands to fit tightly against the existing pipe wall so the loss of cross sectional area is always minimised

Low risk, fast installation

Expanda is made from PVC – a proven pipe material with properties that are not dependent on successful curing. Installation is performed by machine and, because there are no resins, there is no heating, no risk of stress cracking, no shrinkage, stretching, soft spots or excess resin build-up, making installation lower risk.

Installation can often be performed in live flow, which reduces the need to bypass pumping and, because there is no waiting for curing, installation is faster and less disruptive.

The environment

Expanda restores the structural integrity of deteriorated pipes in the most environmentally friendly manner possible.

Expanda can be installed from existing access chambers, avoiding the need for excavation and, since there are no resins, there are no harmful styrene vapours. Because there is no need to cure, heating water and generating steam is not required, so there is no water wastage.

The material wastage is minimal as only the quantity of profile required for the length of pipe is used. Unused or short lengths of profile can be completely recycled.

Expanda winding machine is designed to fit down existing access chamber openings.

Finished product: pipe lined with Expanda.

Community

Expanda ensures minimal community disruption:

- The profile is delivered to site on spools, so there is no need for on-site pipe storage and support vehicles are generally smaller, which reduces the size of the site's footprint and minimises disruption to local traffic.
- There is no waiting for curing or heat treatment.
- Compact mobile lining rig speeds installation in remote locations or sites with difficult or restricted access.
- Expanda can often be installed in live flow so bypass pumping is rarely needed.

Small footprint of the installation set-up minimises community disruption.

Safety

Ensuring safety for its staff and the community is central to every task Interflow undertakes. Expanda provides a safer alternative to other methods, because there are no resins and chemicals to store, handle and dispose of, and no heating, boiling or steam to work with.

Expanda®

Structural lining for deteriorated pipelines from the leaders in pipeline renewal

Experience

Expanda was developed in Australia by Rib Loc, Interflow's technology partner, and released worldwide in 1990. Expanda has been installed throughout North America, Europe and Asia.

Interflow has been installing Expanda to renew deteriorated sewers, storm drains and culverts in Australia since 1991 and in New Zealand from 2005. Interflow is the most experienced installer of Expanda in the world, having lined more than 1,250,000m of pipe with Expanda. And Expanda is the most widely used lining system in the Southern Hemisphere.

Installing Expanda in corroded rail culverts in outback Western Australia.

Proven strength: Floods smash the clay pipe but the Expanda liner remains intact.

Testing

The Expanda liner is made from similar grades of thermoplastics as new sewer and drainage pipe. PVC is resistant to chemicals, gas attack and abrasion, and has a smooth surface finish, which results in improved flow capacity compared to pipes made of concrete or vitreous clay.

Independent testing confirms that the flow resistance coeffcients applicable to new PVC sewer pipe also apply to Expanda liner.

The structural, sealing and hydraulic properties of Expanda have been comprehensively tested to confirm their suitability for long-term performance in sewer environments.

Some of the standards that Expanda has been tested against include:

- Strength tested to EN ISO 9969 Determination of Ring Stiffness
- Long-term strength tested to EN ISO 9967 Determination of Creep Ratio
- Reagent testing to ASTM D543 Resistance to Plastics Chemical Reagents
- Hydrostatic Internal Pressure Testing to confirm the sealing properties of the liner

The durability of Expanda liners in sewer environments has been demonstrated in practice; since 1990, when the first Expanda liner was installed in a sewer pipe, there has been no evidence of any liner experiencing deterioration, damage, or failure while in service.

Strength testing of the Expanda liner.

Interflow®

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