TESTING PIPELINE COATINGS FOR SEVERE CONSTRUCTION CONDITIONS

23rd Word Gas Conference

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Background

- DN700. PE coating
- 200 m HDD
- Coating damage during pulling
- Not detectable
- Lessons
  - Method suitable, but
  - Be careful
  - Use suitable materials

Test equipment and procedure

Tested materials

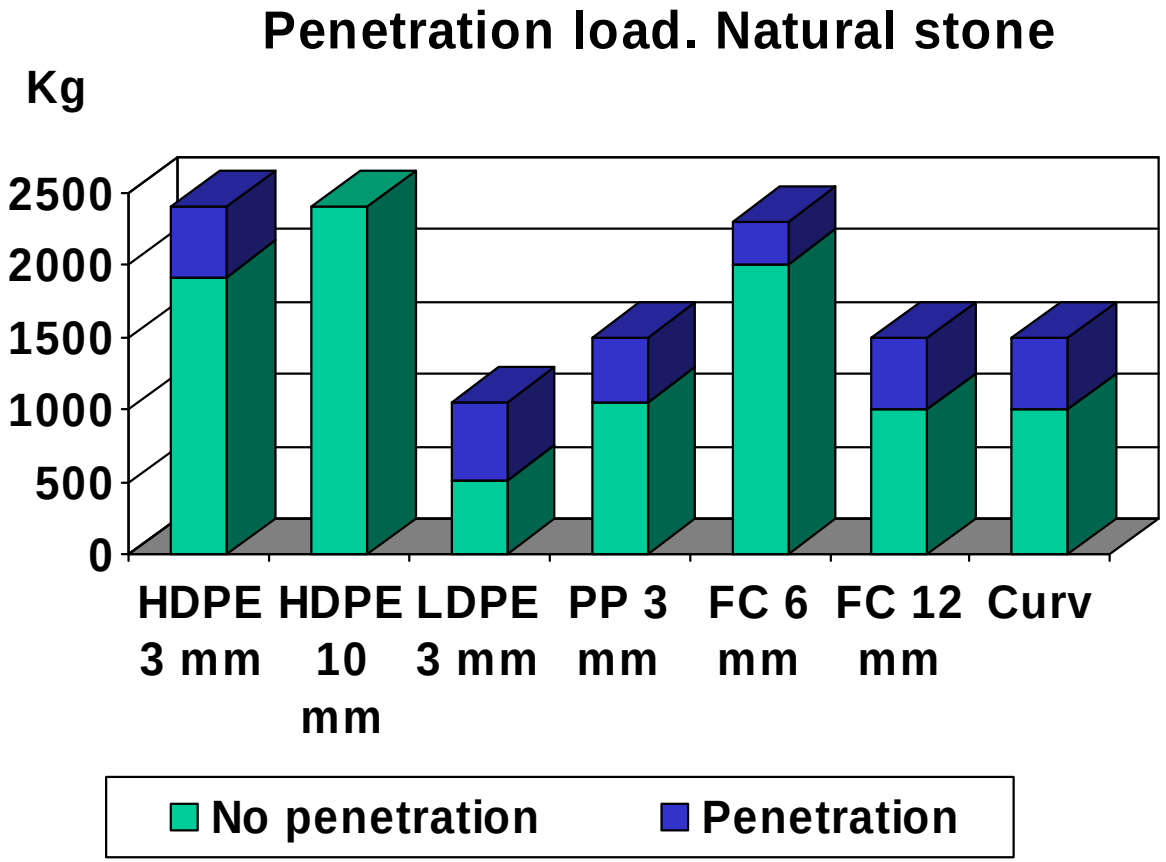
COATINGS

- DN700 HDPE, 3 mm
- DN500, HDPE, 10 mm
- DN300, LDPE, 3 mm
- DN500, PP 3 mm
- DN400, HDPE 2,5 mm + fibre concrete 6 mm
- DN300, HDPE 3 mm + fibre concrete 12 mm
- DN300, FBE + PP tape ”Curv” 2 mm

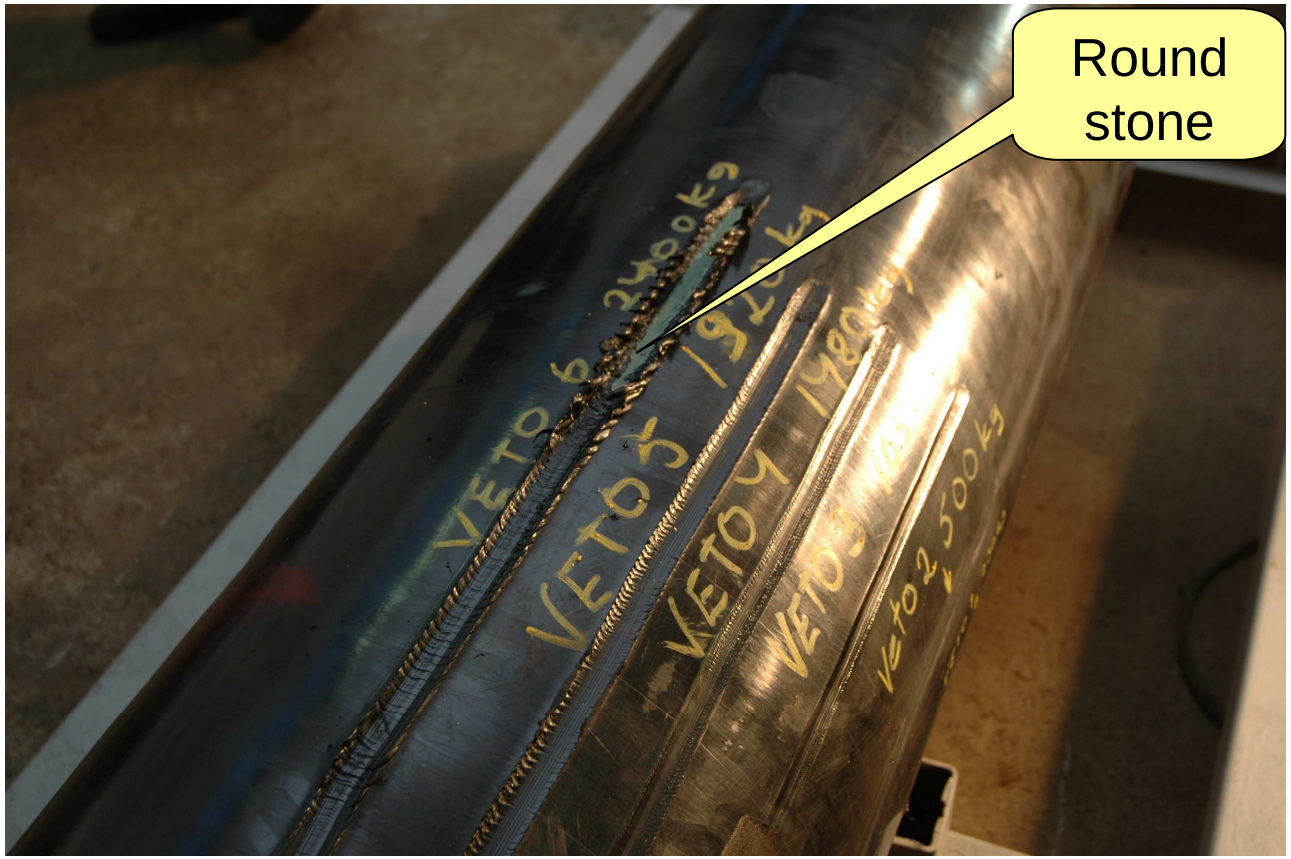
SLEEVES AND TAPES

- Denso, Densolid TLC
- Denso, Densolen Tape AS40 Plus
- Raychem HTLP 60
- Raychem Dirax
- Canusa GTS 65
- Canusa TBK

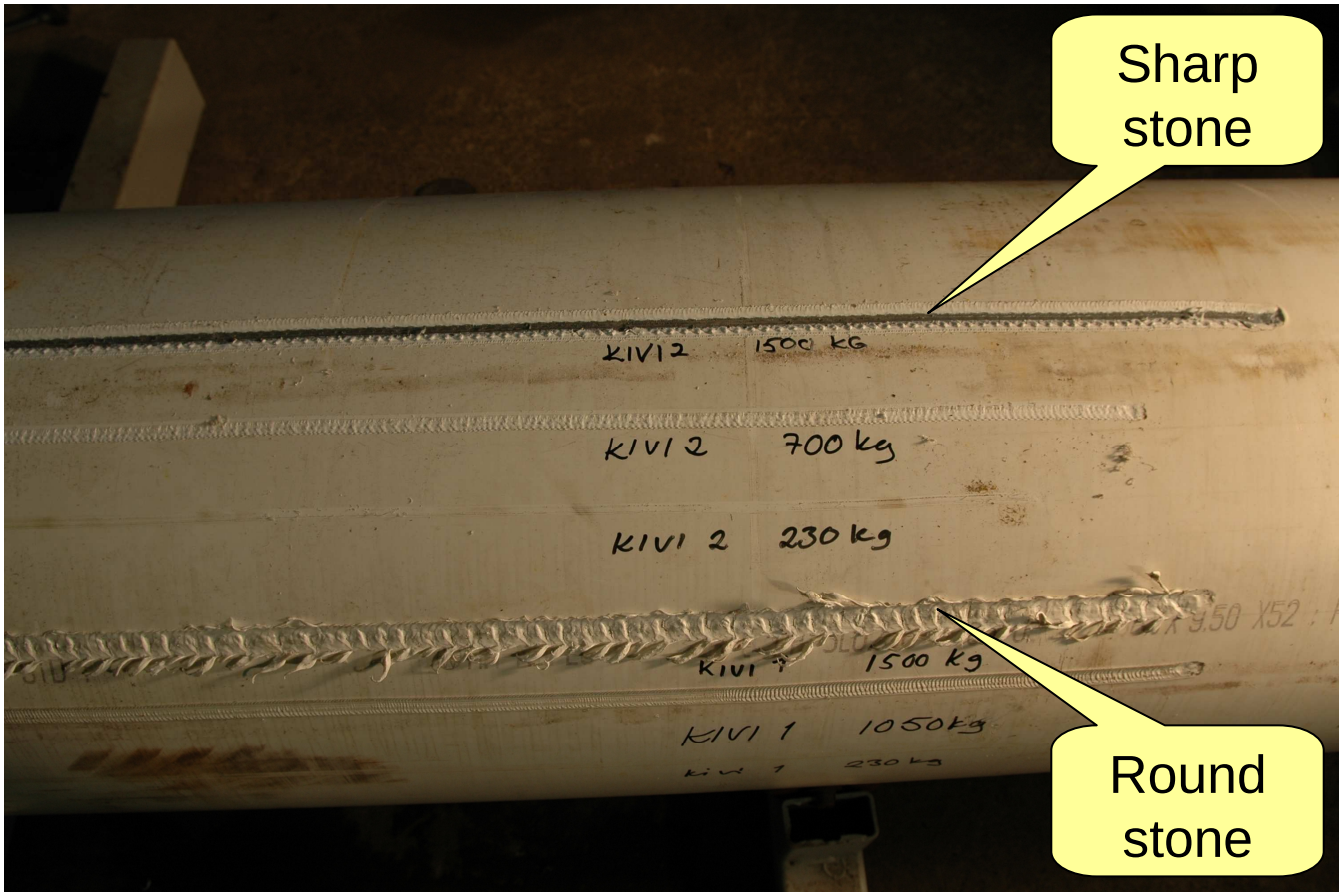
Results – coatings



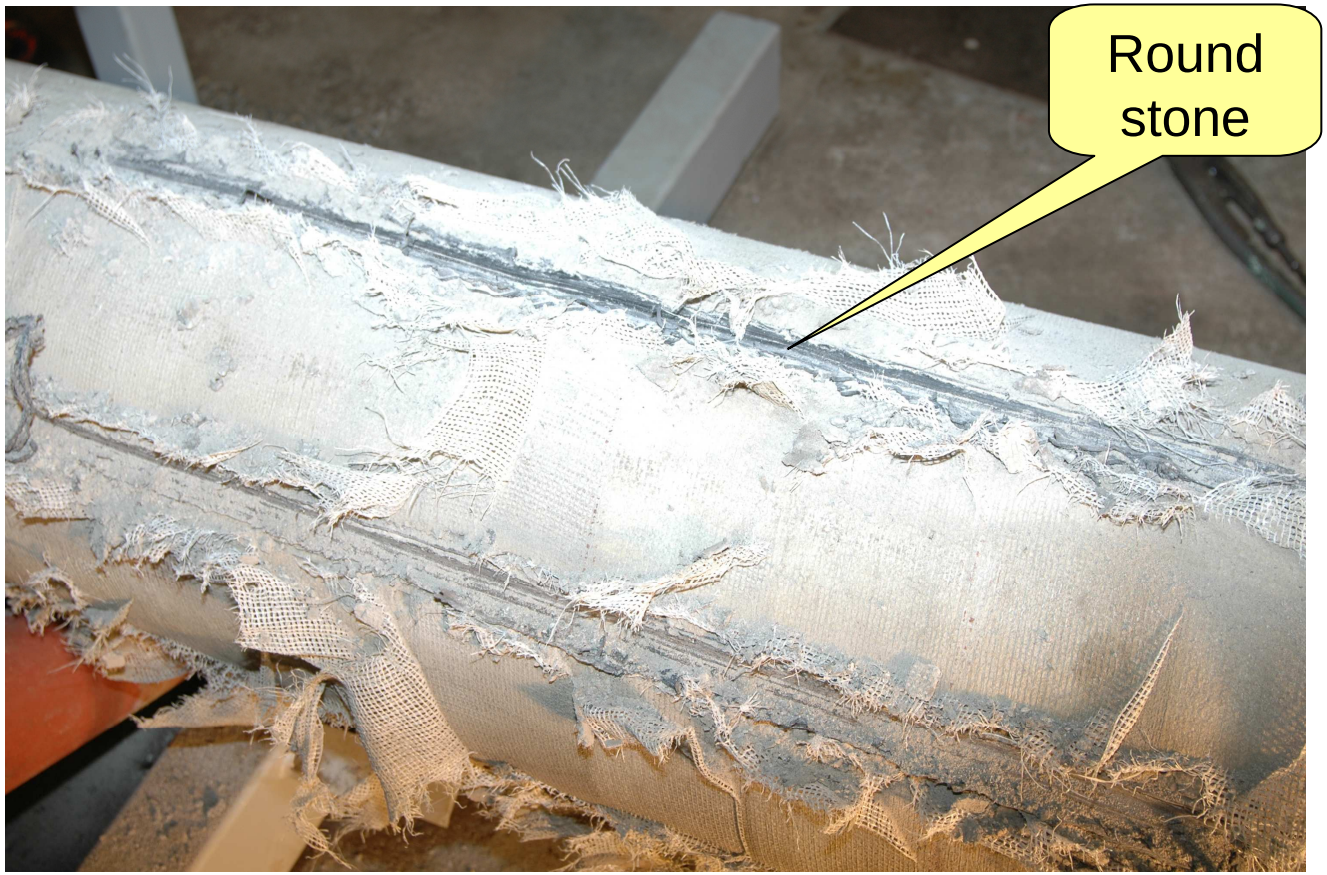
Results: HDPE 3 mm.



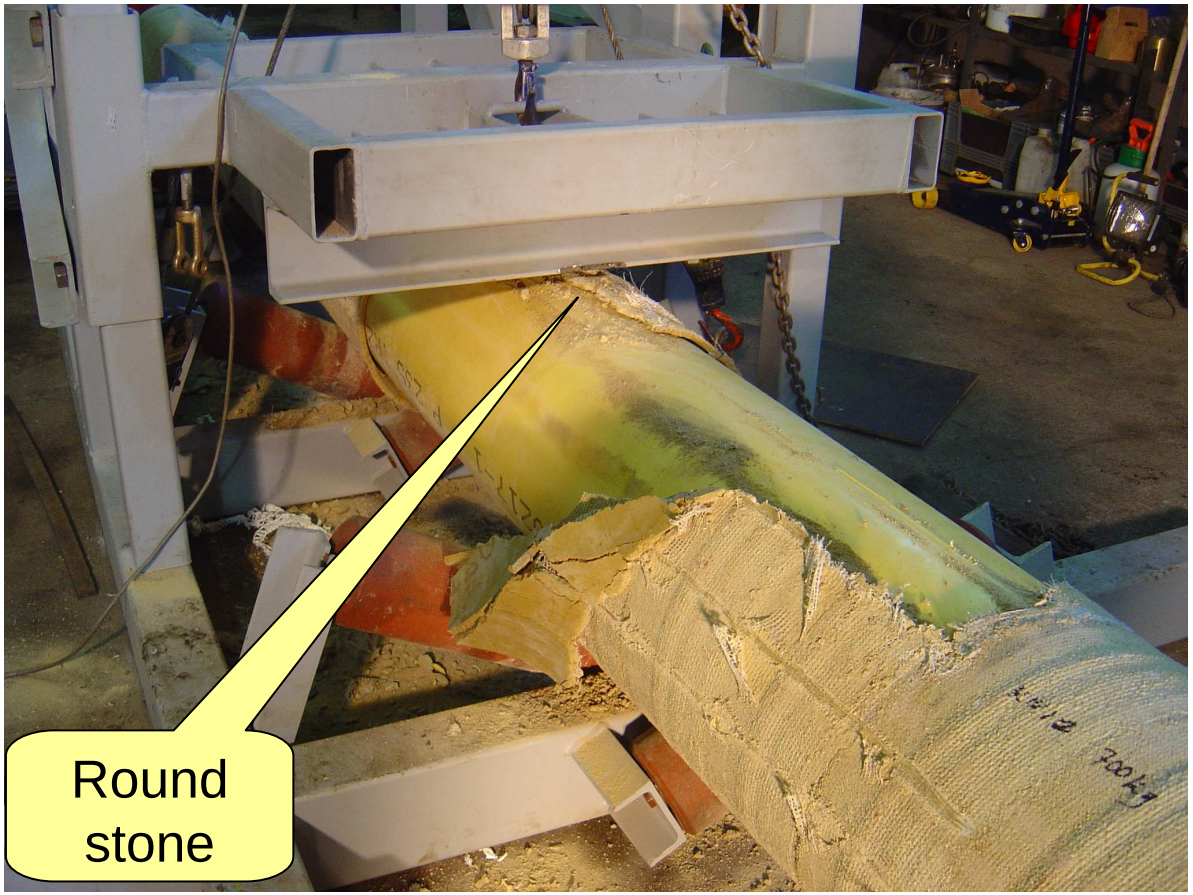
Results: PP 3 mm.



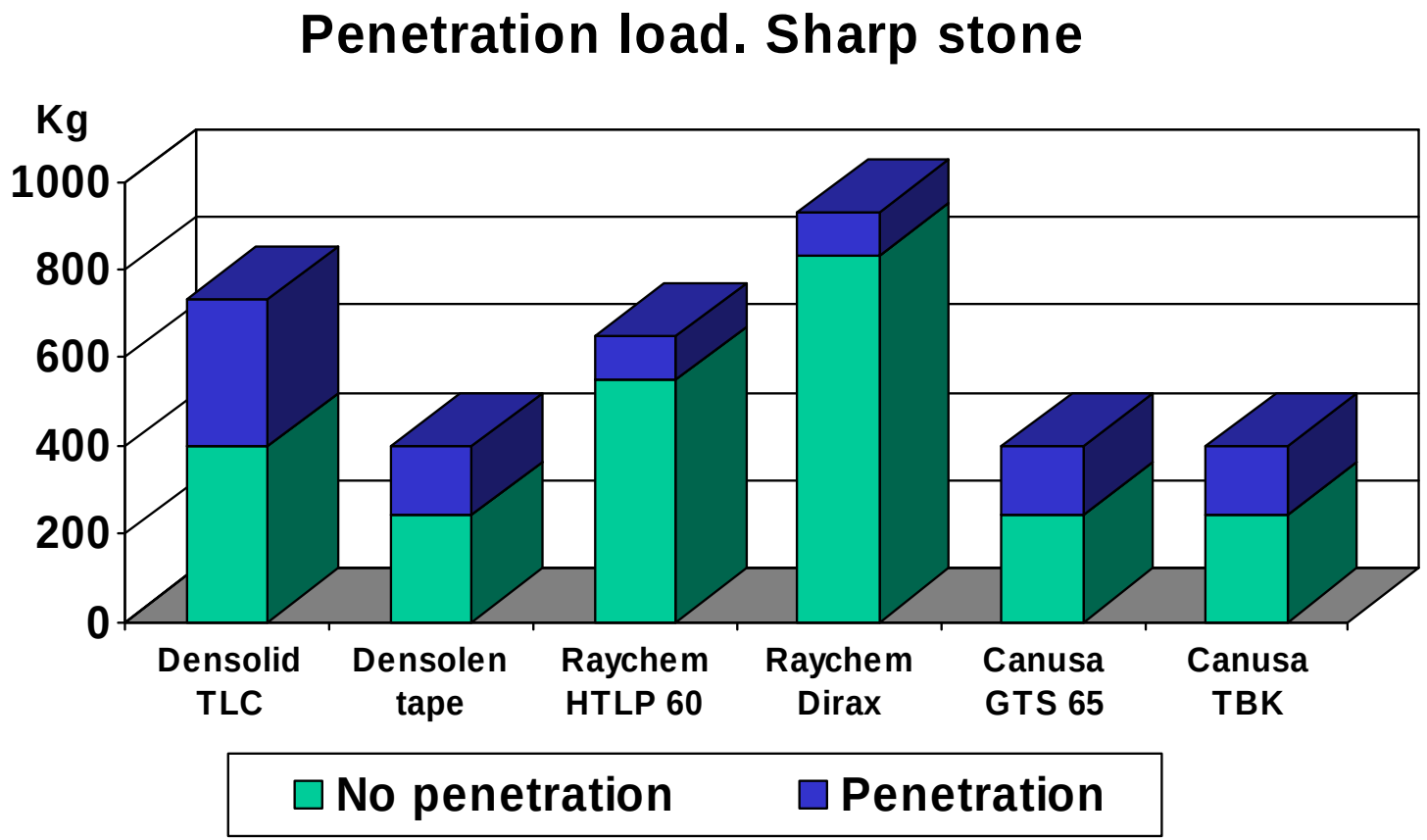
Results: Fibre concrete 6 mm.



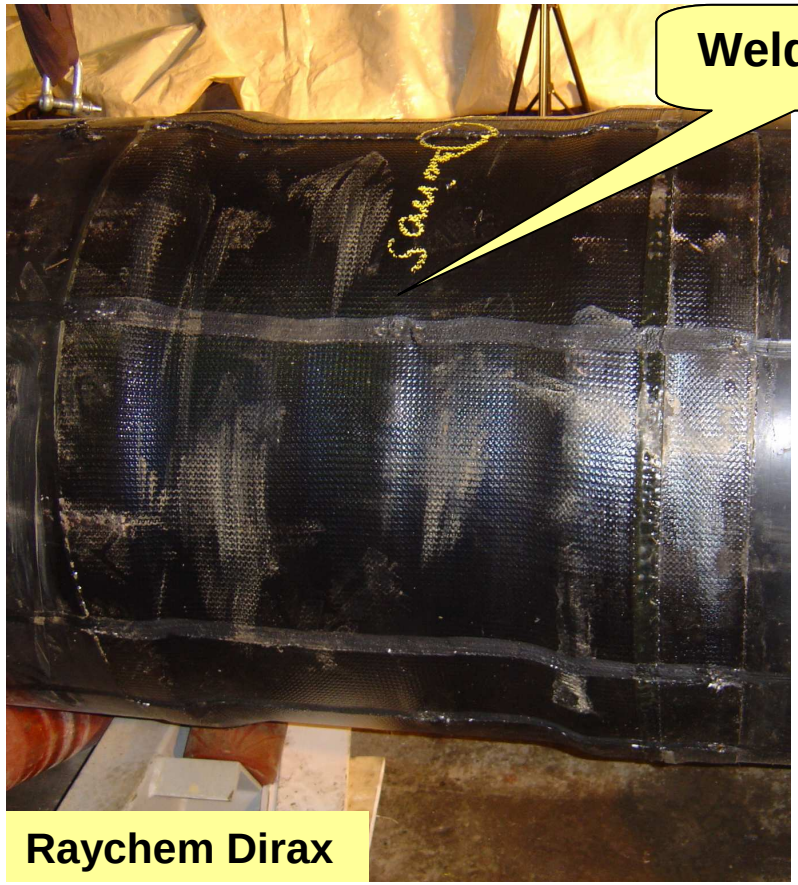
Results: Fibre concrete 12 mm.



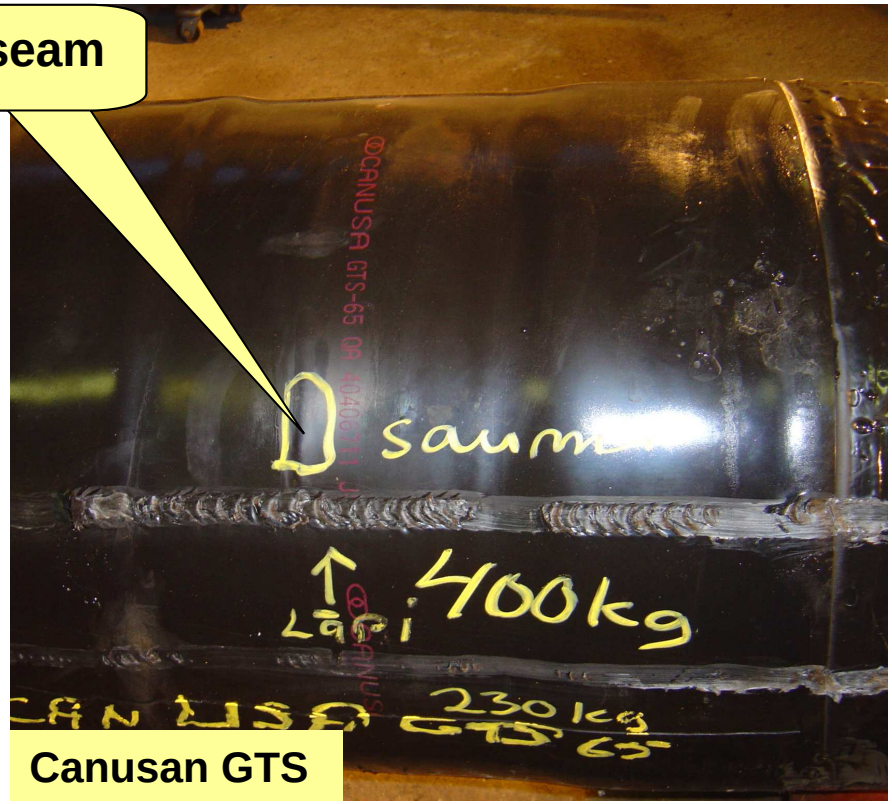
Results – sleeves and tapes



Results: Sleeves.

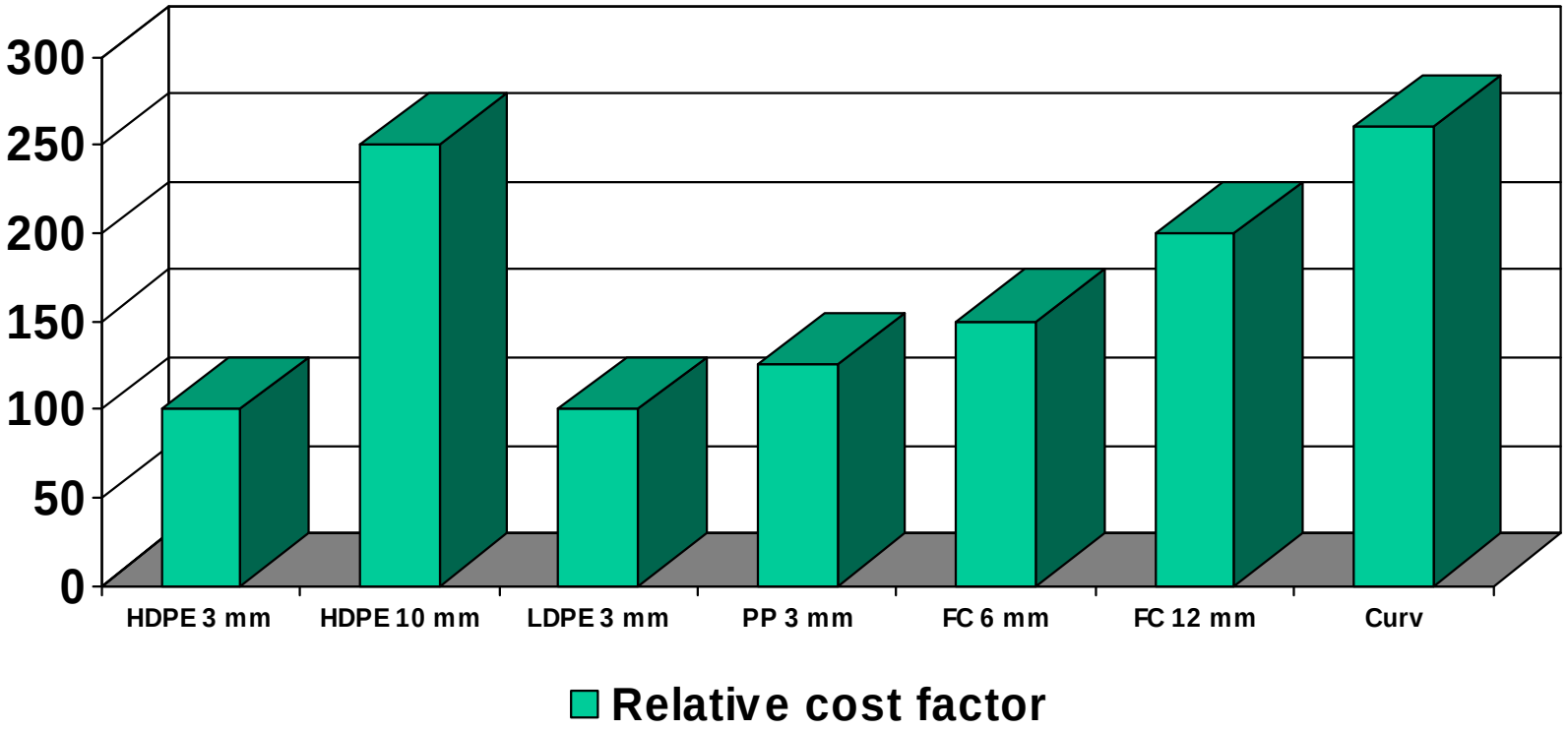


Raychem Dirax

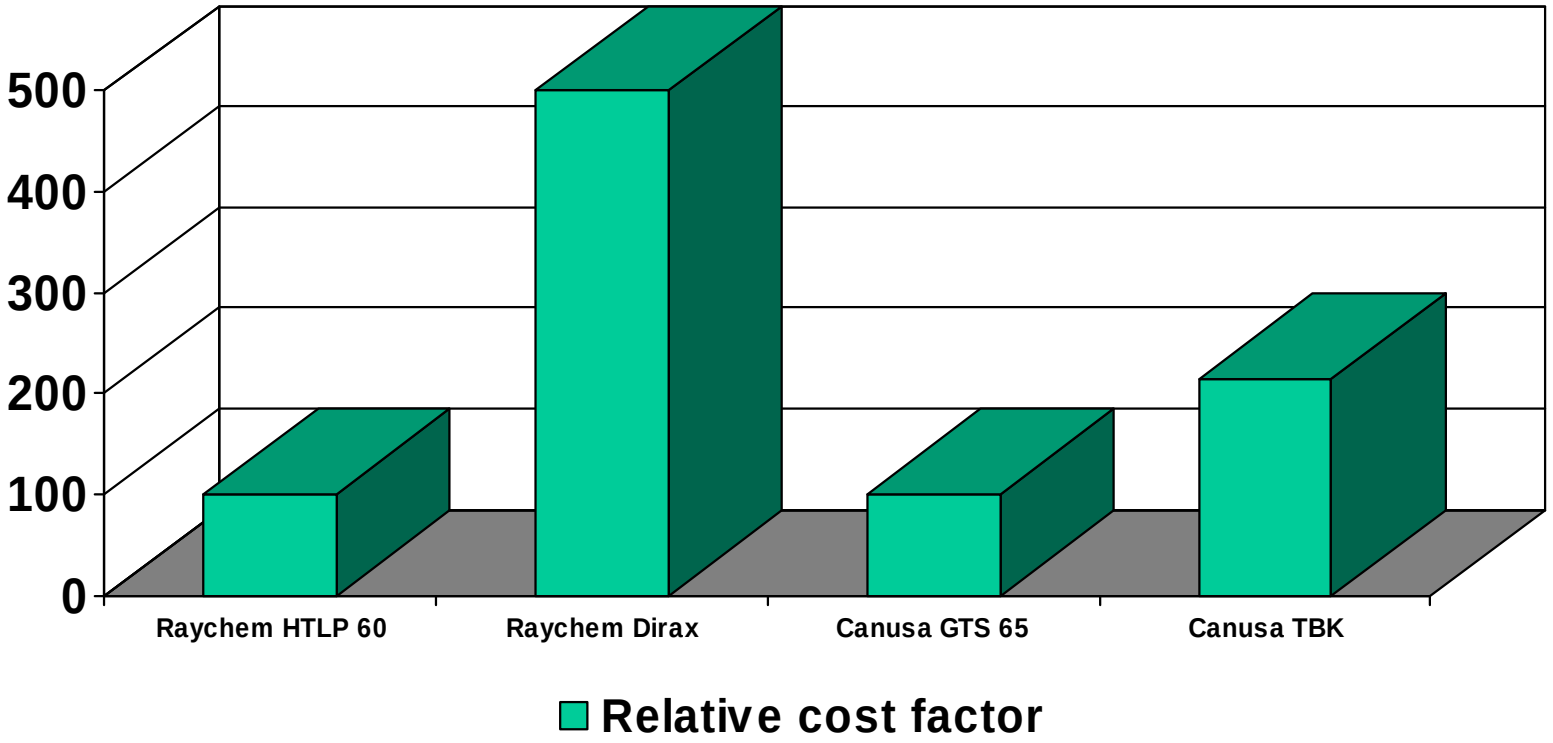


Canusan GTS

Investment costs - coatings



Investment costs - Sleeves



Conclusions

- Under normal conditions most coatings perform well
- A commonly used 3 mm HDPE coating gives sufficient protection in most cases and has the best cost vs quality rate
- Poor backfill material can be compensated by more resistant coatings
- A double or triple layer of HDPE can be justified when additional protection is required, e.g. trenchless laying tecniques
- Fibre concrete has good protective properties. Attention must be paid to bonding between layers
- The tested sleeves have sufficient mechanical properties for normal pipe laying
- A more resistant sleeve is recommended for special purposes.
- Critical points are the edge between coating and sleeve and the weld seam