
Directional Drilling

When is it used and what are the benefits?

Directional drilling is particularly advantageous for installing a new pipe in urban situations, such as road crossings, where disruption to traffic and the community must be minimised or eliminated. Directional drilling is used in other applications, such as river crossings, where it is more economical than conventional methods and eliminates disruption to river traffic.

What are the concerns?

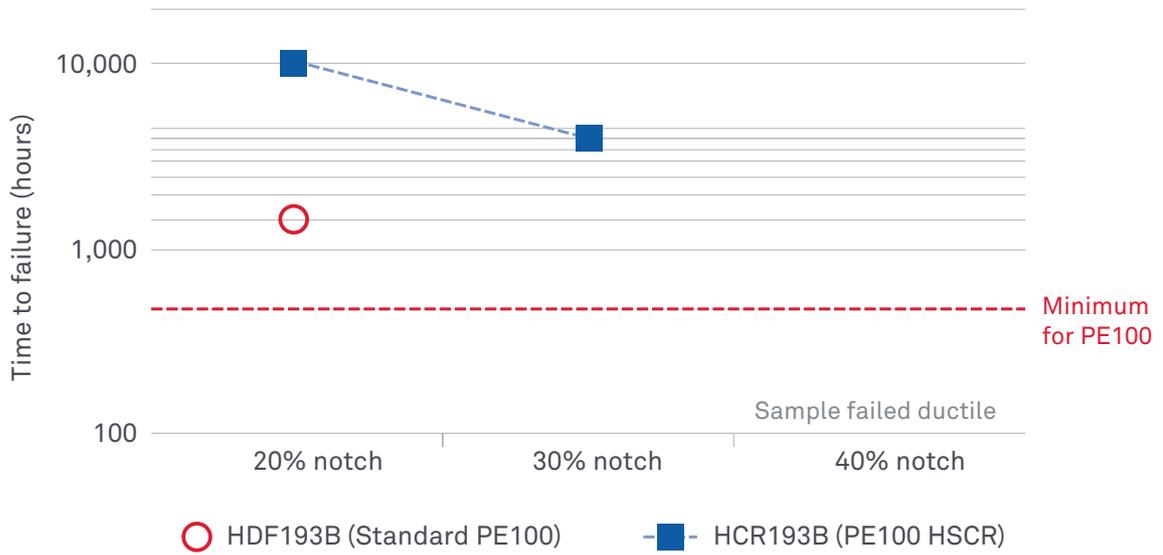
Whilst minimising external disruption, directional drilling has the potential to cause damage to the pipe through scratching and point loading, especially if rocks are present. In the presence of tensile loads or pressure related hoop stress, surface damage may put the pipe at risk. The induced scratches are localised areas of stress concentration that may lead to eventual failure arising from slow crack growth.

How can the use of Alkadyne® HCR193B address these concerns?

Alkadyne® HCR193B is a PE100 HSCR resin that has been specifically developed to achieve stress crack resistance that is greatly superior to standard PE100 resins. Alkadyne® HCR193B complies with AS/NZS 4131 and meets the requirements of POP016 for High Stress Crack Resistant PE100. The use of Alkadyne® HCR193B inhibits crack growth from notch type damage during installation and point loading due to rock and root impingement.

Surface damage is a significant risk when installing pipe using directional drilling. The depth of any surface damage on the installed pipe cannot be accurately determined in the field, and may possibly be greater than the 10% of the wall thickness that is allowed by the installation standard. Testing has shown that Alkadyne® HCR193B meets slow crack growth resistance specifications even with notches deeper than 10% of the wall thickness as shown in the chart below.

Notched Pipe Test (ISO 13479)



NOTE: Test covered 110mm pipes with varied notch depth tested in hydrostatic pressure test at 920kPa/80°C

Figure 9: Notched Pipe Test ISO 13479 with varying notch depth
