
As-dug or No-sand bedding

When is it used and what are the benefits?

Granular materials have been commonly specified for the bedding of pipes. However, “as-dug” bedding can be used in situations where the native soil adequately fulfils performance requirements. This provides a cost effective approach, especially in areas where granular materials have to be imported.

What are the concerns?

If rock is present, the possibility of localised loading (or stress concentrator) on the pipe exists (point load), potentially leading to slow crack growth.

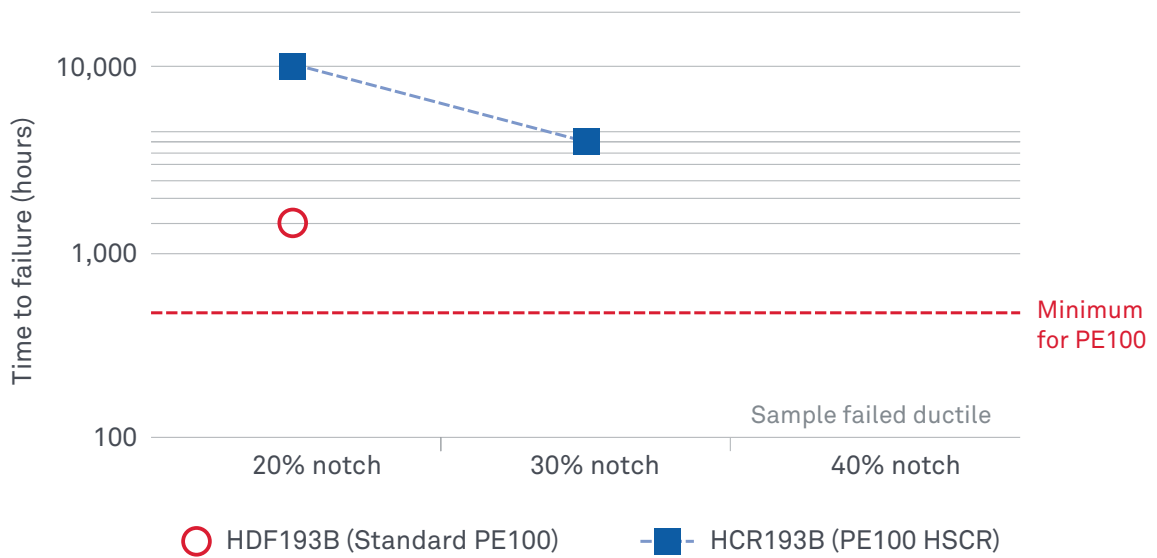
How can the use of Alkadyne® HCR193B address these concerns?

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 and point loads are a significant risk when installing pipe using the as dug backfill method. The depth of any surface damage on the installed pipe cannot usually 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 the slow crack growth resistance of Alkadyne® HCR193B remains at the level required by the standard with notches beyond 10% of the wall thickness as shown in the chart below (figure 13).

The point load test is designed specifically for situations where there is high potential for rock impingement. Alkadyne® HCR193B meets the point load test requirements of POP016 for High Stress Crack Resistant PE100 as seen in the figure below (figure 14).

Notched Pipe Test (ISO 13479)



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

Figure13: Notched Pipe Test ISO 13479 with varying notch depth

Accelerated Point Load Test

90°C; 4N/mm² tensile stress, 2% NM 5 surfactant

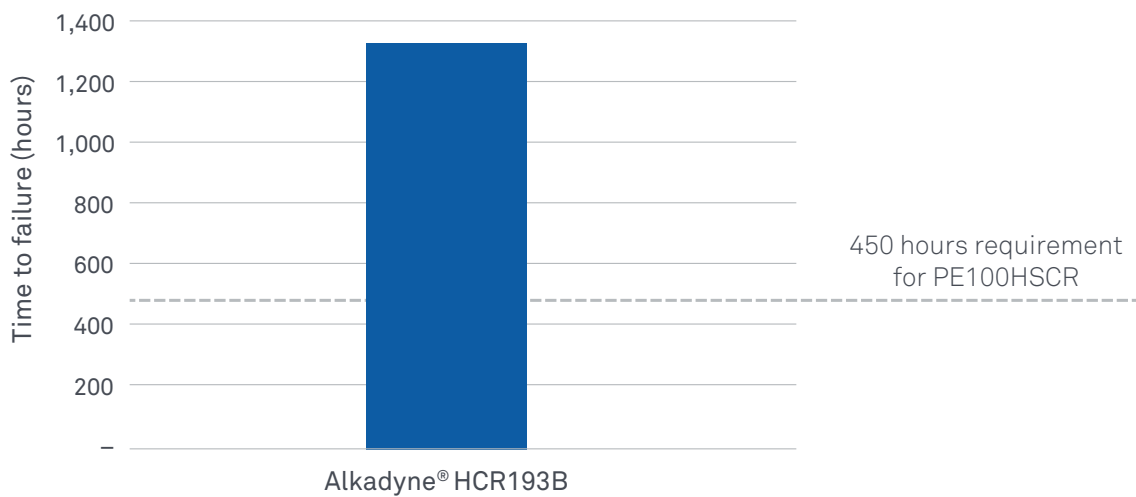


Figure14: Accelerated Point Load Test (PLT+) from DIN PAS 1075 2009