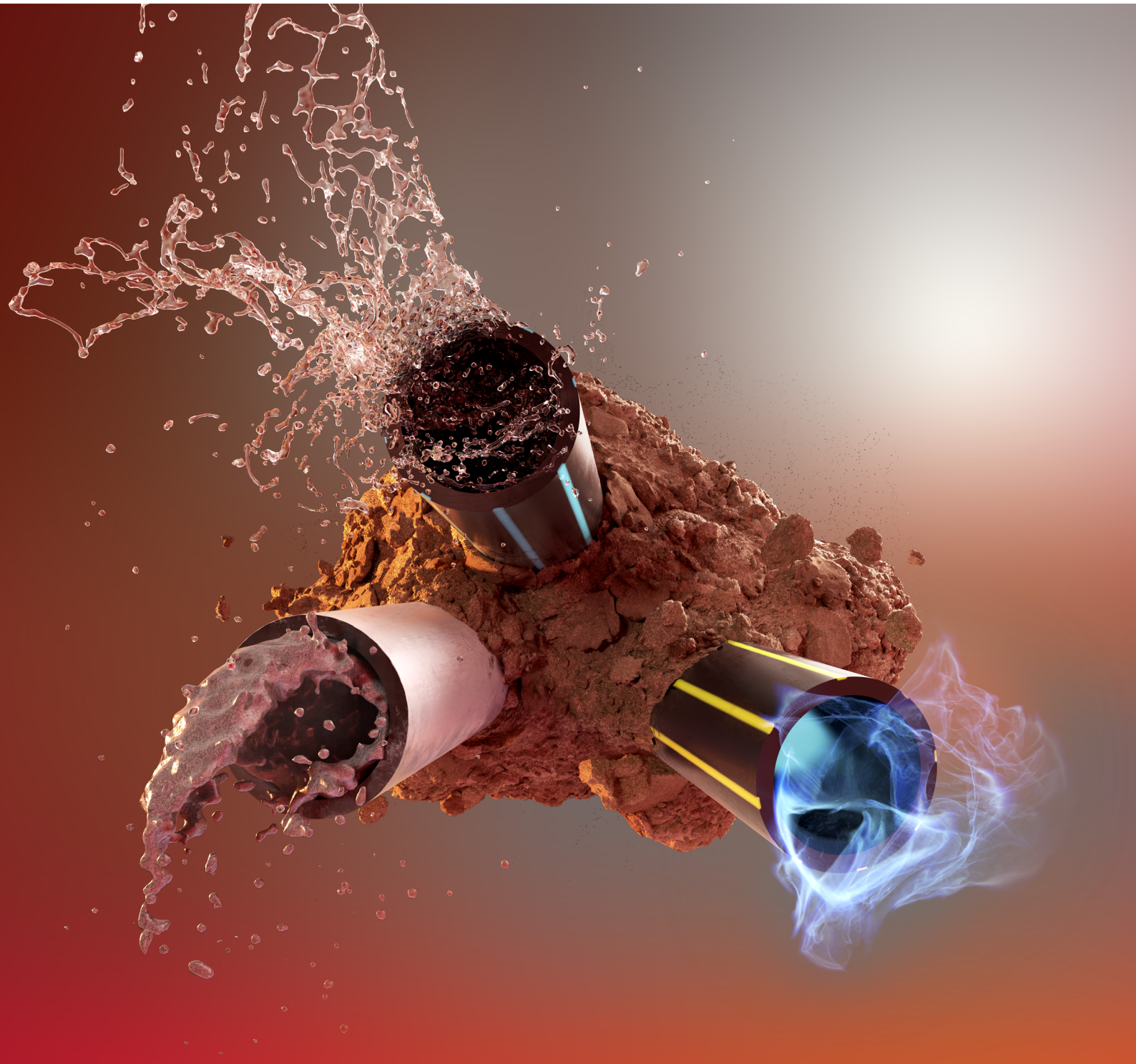


Alkadyne® PE100



ENGINEERED TO OUTPERFORM

ALKADYNE® PE100

HCR193B

PE100 WITH EXCEPTIONAL STRESS CRACK RESISTANCE

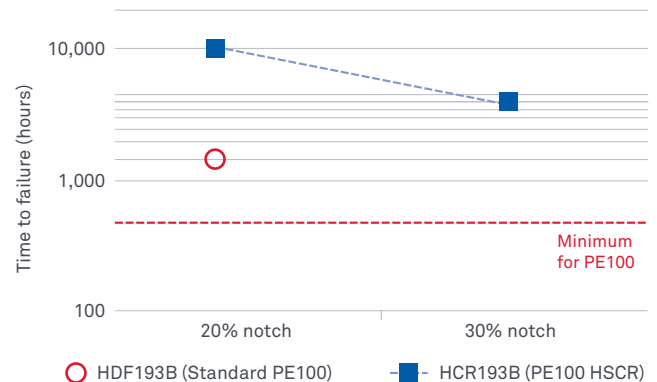
Alkadyne® HCR193B is a PE100 resin with high stress crack resistance (HSCR) and is a new class of PE100 material. HCR193B has many times greater stress crack resistance than standard PE100 resin. HCR193B enables you to work with your designer to achieve more efficient pipelines, longer lasting pipe networks or reduced installation costs.



PEACE OF MIND

HCR193B provides up to 10 times higher resistance against slow crack growth and pipes based on this resin are able to exceed minimum failure times even at notches deeper than the standard 20% of wall thickness. The exceptional resistance to slow crack growth of HCR193B renders pipes more resilient to damage, which may occur during installation or in-service due to rock or root impingement.

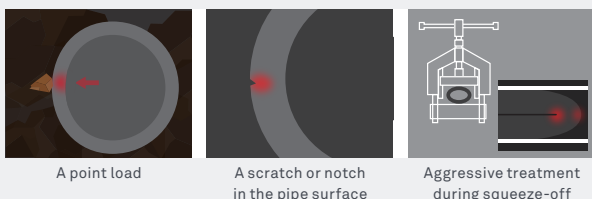
Notched Pipe Test (ISO 13479)



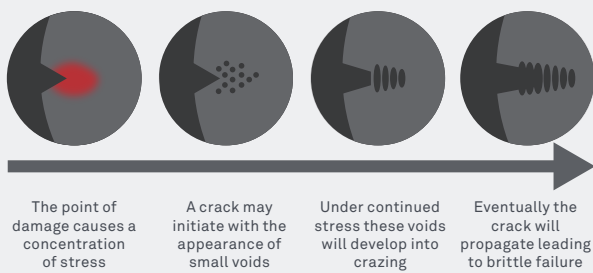
HOW ALKADYNE HCR193B WORKS

PE100 pipes are designed to convey water and gas under pressure over a long and trouble free service life. Harsh installation conditions particularly when using trenchless installation techniques and certain maintenance practices can cause stress concentration in the pipe wall, which can initiate a stress crack and lead to brittle failure. Specifying a high stress crack resistant (HSCR) grade of PE100 can reduce the risk of crack initiation.

WHAT CAUSES STRESS CONCENTRATION IN THE PIPE WALL?



HOW DOES SLOW CRACK GROWTH PROGRESS?

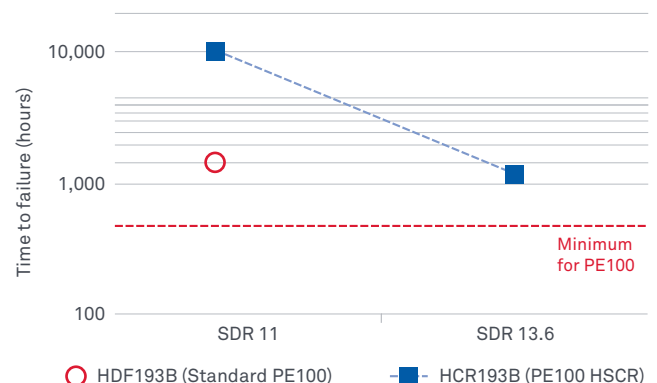


Crack initiation comprises up to 90% of the time to failure

REDUCED WALL THICKNESS

- HCR193B has been proven to exceed minimum requirements for slow crack growth even when pipe wall thickness is reduced by one SDR size.
- Pipeline designers can capitalise on the potential to reduce pipe wall thickness in trenchless installations by adopting appropriate use of design factors and “fit-for-purpose” design methodology.
- Downgauging decreases costs while increasing efficiency. Reduced material usage lowers pipe costs and environmental footprint, while improved flow decreases pumping costs.
- Visit www.alkadyne.com.au to discover the benefits HCR193B can provide using the online PE100 HSCR design calculator.

Notched Pipe Test (ISO 13479)



HDF193B

WORLD-CLASS PE100 GRADE FOR PRESSURE PIPE

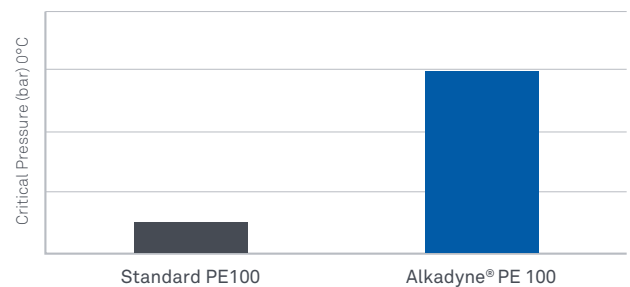
Alkadyne® HDF193B is designed to meet or exceed the key performance requirements for hydrostatic strength (MRS10), slow crack growth resistance (SCGR) and resistance to rapid crack propagation (RCP). Over many years, the mining, water and gas industries have taken advantage of the proven world class performance of HDF193B, using it in pressure pipe in large volumes.



HIGH RESISTANCE TO RAPID CRACK PROPAGATION (RCP)

Alkadyne® PE100 has passed Rapid Crack Propagation (RCP) tests at critical pressures well above the requirements of the standard. RCP performance data for sub-zero application temperature is also available. RCP performance enables pipe designers to specify:

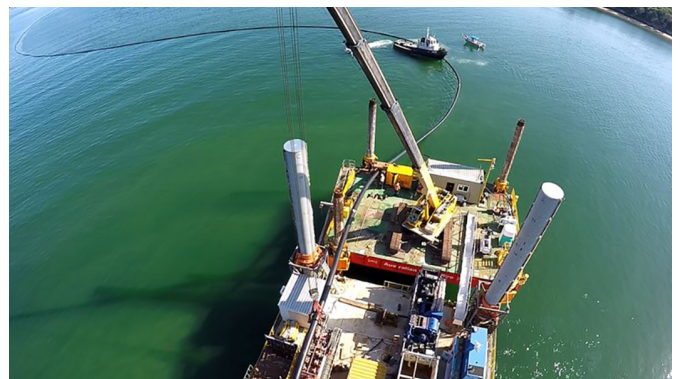
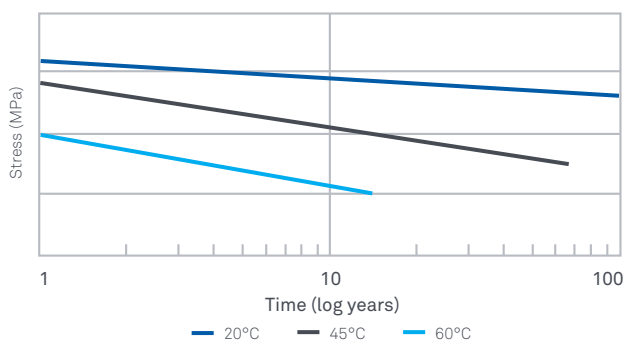
- Lower in-use temperatures
- Higher safety margins for fluid containment



BEYOND MINIMUM REQUIRED STRENGTH (MRS)

For Alkadyne® pipe grades, Qenos maintains Pipe Pressure data beyond the minimum requirements of the PE100 standard. Working with Qenos Technical Service, your pipe design can be optimised to achieve;

- Maximum lifetime design
- Elevated usage temperature



PROVEN PERFORMANCE

Alkadyne® HDF193B has a long track record with use in hundreds of projects across Australia.

Visit www.alkadyne.com.au to read and watch case studies, illustrating how Alkadyne® PE100 delivers real value in projects all over the country.



ALKADYNE® PE100

The Alkadyne® range of PE100 grades from Qenos are at the leading edge of polyethylene molecular design. Each grade performs beyond the required standards and sets a high bar for the competition.

Alkadyne® PE100 grades were developed by Qenos in partnership with Australian pipe manufacturers. Close involvement in the local pipe industry has ensured that local product and processing requirements are fully understood and incorporated into each product design. Qenos is proud that it is the only Australian manufacturer of high density polyethylene (HDPE) resin for PE100 pipe and employs over 700 Australians.

Alkadyne® PE100 – Made from Australian gas to keep Australia moving.

HDF145B

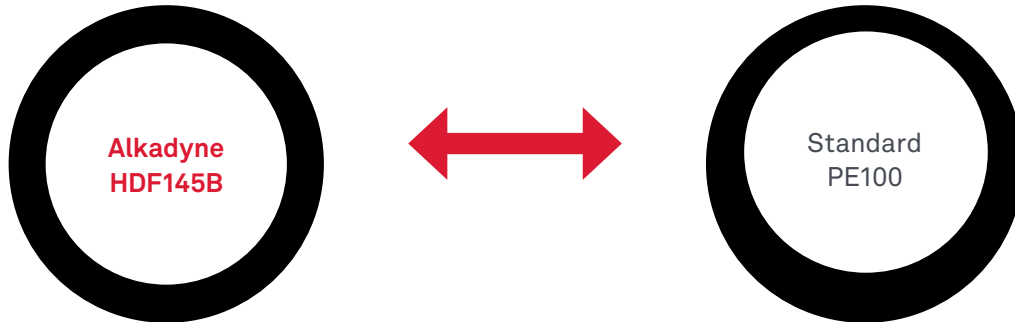
LOW SAG PE100 FOR LARGE BORE, THICK WALL PIPE

Alkadyne® HDF145B is outstanding for the production of large diameter, thick walled pipes (>100mm wall thickness). Exceptional melt strength results in ultra low sag extrusion performance making even the most challenging pipe dimensions possible using existing vacuum sizing extrusion technology. Alkadyne® HDF145B expands the range of applications for PE pipes into new frontiers and brings a proven track record in large scale projects.

EXCELLENT PIPE DIMENSIONAL STABILITY

High melt strength results in excellent pipe dimensional stability. Alkadyne® HDF145B minimises wall thickness variation and reduces rework resulting in:

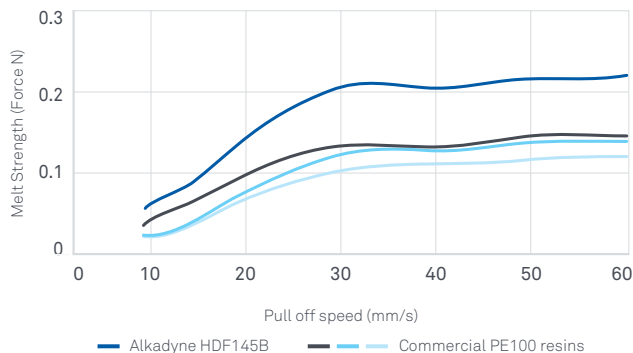
- Raw material saving
- Optimal pipe installation efficiency



ULTRA LOW SAG PERFORMANCE

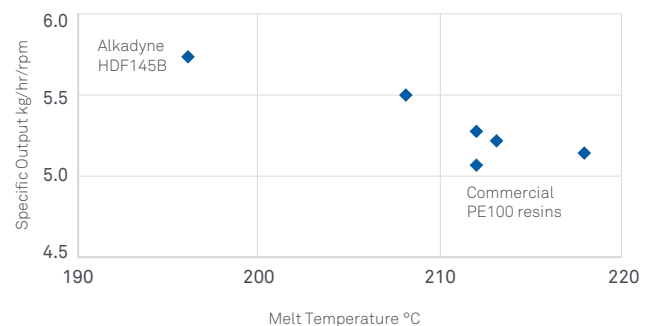
The exceptional melt strength performance means Alkadyne® HDF145B is capable of producing pipe of wall thickness greater than 80mm. This opens up new applications to PE100 pipe and allows manufacturers to access new markets.

Designers are able to consider using PE100 in applications usually reserved for steel and concrete.



HIGHER SPECIFIC OUTPUT AND COOLER MELT TEMPERATURES

The market leading extrusion performance of Alkadyne® HDF145B allows pipe extruders to increase outputs and efficiency. Production capacity can be expanded through the higher extrusion rates enabled by the properties of HDF145B. Cooling limited sites can substantially increase line speed.





RANGE

Well suited ✓ Preferred choice ✓✓

Installation	Application	HDF193B	HDF145B	HCR193B
Trench	Water Distribution	✓✓	✓	✓
	Gas Distribution	✓✓	✓	✓
	Mining slurry	✓✓	✓	✓
	Large bore, thick wall	✓	✓✓	✓
Trenchless	HDD Large bore	✓	✓✓	✓
	HDD	✓	✓	✓✓
	Pipe cracking/bursting	✓	✓	✓✓
	Slip lining, tight-lining	✓	✓	✓✓
	Plough-in	✓	✓	✓✓

*Categories are based on the typical performance requirements of the application listed and serve as a guide only.



SERVICE

A superior supply chain and logistics base allows us to serve the Australian market with high efficiency and respond quickly to variations in demand, lowering the risk of project delays. Vendor Managed Inventory systems and next day delivery give customers maximum efficiency and hassle free bulk delivery.



QUALITY

Qenos quality is driven by world class systems that are independently verified:

- Alkadyne® PE100 Black grades comply with AS/NZS 4131 for PE100 type compounds and are intended to be used in pipes conforming to AS/NZS 4130
- Alkadyne® PE100 Black grades are type test certified to AS4131 by SAI Global (Lic. 20138)
- Qenos laboratories conduct all quality assurance on Alkadyne® PE100
- Product development and technical support for customers are performed in the Qenos Technical Centre which is NATA accredited for key PE100 resin quality and performance tests
- Qenos third party registrations provide independent confirmation of compliance to recognised standards including ISO 9001



SUPPORT

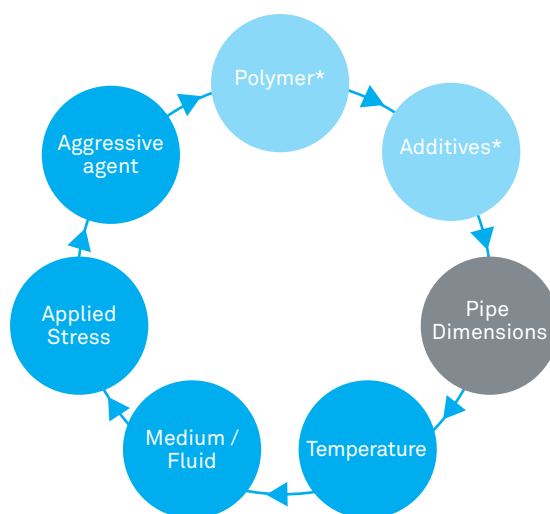
Qenos Technical Service Staff are widely recognized for their analytical capabilities and expertise and are supported by extensive Technical Centre facilities. This support not only ensures Qenos can provide advice and support for the set-up and optimisation of Alkadyne® PE100 grades at any manufacturing facility in Australia but also provides an extensive range of processing equipment to support application development and troubleshooting for customers. This capability has been critical in the design, installation and commissioning of numerous major projects.



TESTED TO GO THE DISTANCE

Polyethylene pipe is an engineered product, required to withstand internal pressure and external influences for up to 100 years. Qenos has invested in the largest pipe pressure testing facility in the southern hemisphere where pipe is extruded for testing, and then subjected to high pressures and heat for up to three years.

Qenos also has the capability to perform Condition Assessment of PE pipelines. Service life depends on a number of factors as seen in the diagram below. These factors relate to pipe material, pipe quality and network design which need to be considered when performing a condition assessment. The pipe material testing required to make an assessment of the pipe condition requires in-depth polymer expertise. Qenos has extensive experience in testing and analysing PE pipes from the field to provide support in pipeline Condition Assessment.



● PE Material ● Pipe Design ● Service Conditions

*Pipe extrusion can impact these factors

Qenos Pty Ltd

ABN 62 054 196 771
NZBN 9429047198722

471 Kororoit Creek Road
Altona, Victoria, 3018
Australia

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qenos.com

Australia

Private Mail Bag 3
Altona, Victoria, 3018

Toll free: 1800 331 230
Local: (03) 9258 7333
International: +61 3 9258 7333

Qenos, the Qenos brandmark and Alkadyne are trade marks
of Qenos Pty Ltd

New Zealand

PO Box 112321
Penrose, Auckland, 1061

Toll free: 0800 440 901
Local: (09) 884 4103
International: +64 9 884 4103

