PRODUCT BULLETIN

ENERPRIME™

Canadian Energy
SERVICES

ENERPRIME™

HIGH FLUID LOSS REMEDIATION SQUEEZE

PRODUCT DESCRIPTION

EnerPrime™ is a proprietary mixture of granular fibrous solids used to effectively mitigate extreme cases of lost circulation. **EnerPrime**™ is a high fluid-loss dewatering squeeze designed to seal and strengthen troublesome loss zones while drilling. **EnerPrime**™ has proven very beneficial when used for seepage and lost circulation events that traditionally require pumping cement pills.

PRODUCT FEATURES AND BENEFITS

- **EnerPrime**™ provides a plug sealing solution for difficult thief zones, fractures, and formations.
- **EnerPrime**™ can be pumped through directional tools and most BHAs. (Note: **EnerPrime C**™ is larger in particle size distribution, and use should be monitored when pumping through directional tools and bit nozzles.)
- It is compatible with oil, synthetic, brine and water-based drilling fluid systems.

COMPRESSIVE STRENGTH OF OVER 1.1 MPa

RECOMMENDED TREATMENT

EnerPrime™ is prepared as a pill with a minimum concentration of 300 kg/m^3. **EnerPrime**™ is compatible and can be pumped in oil, synthetic and water-based drilling fluid systems. However, optimal yield is with fresh water and semi-saturated brines. An addition of a minimum of 10 – 100 kg/m^3 of **EnerPrime C**™ can be supplemented to the **EnerPrime**™ pill in the case of fracture openings larger than 1/4in.

AVAILABILITY

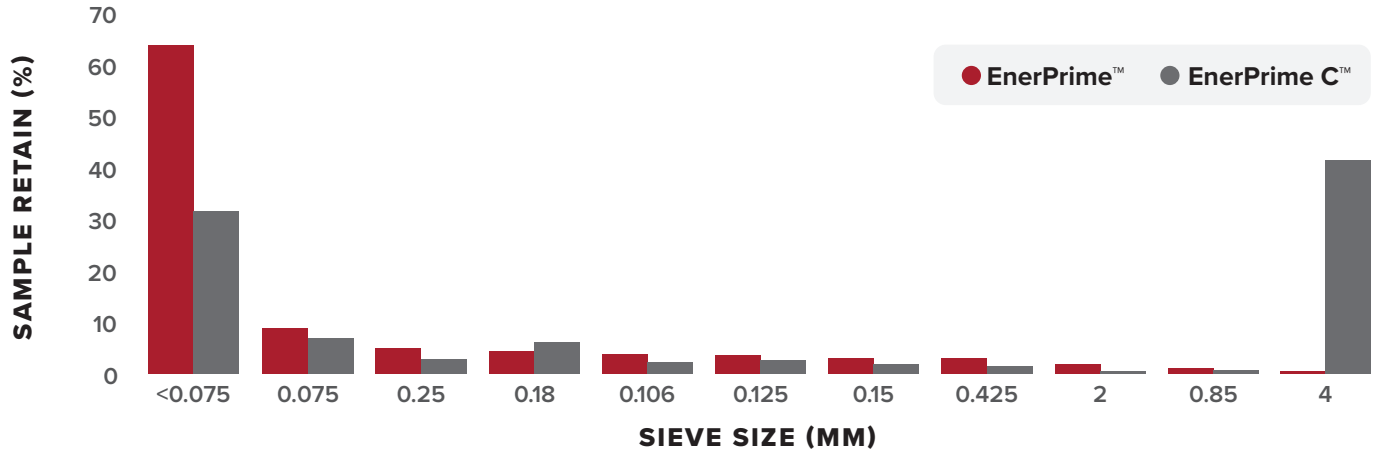
EnerPrime™ is a single sack product available in regular and coarse grades (**EnerPrime**™ and **EnerPrime C**™). **EnerPrime**™ is available in 20 kg sacks.

HANDLING

Reduce exposure to **EnerPrime**™ dust to a minimum. Standard precautions apply, Personal Protective Equipment (PPE) must be worn while handling **EnerPrime**™. It may not be pleasant to bare skin and eyes. Follow SDS and rinse well with fresh water if skin or eyes are exposed to the product.

TYPICAL PHYSICAL PROPERTIES	
Appearance	Gray
Odour	None
Relative Density	2.19

SIZE DISTRIBUTION OF ENERPRIME™ AND ENERPRIME C™ BY SIEVE ANALYSIS



CASE STUDY I

TERMINATING LOSSES IN BRINE LATERALS (VALHALLA, AB, CANADA)

TARGET FORMATION: CHARLIE LAKE

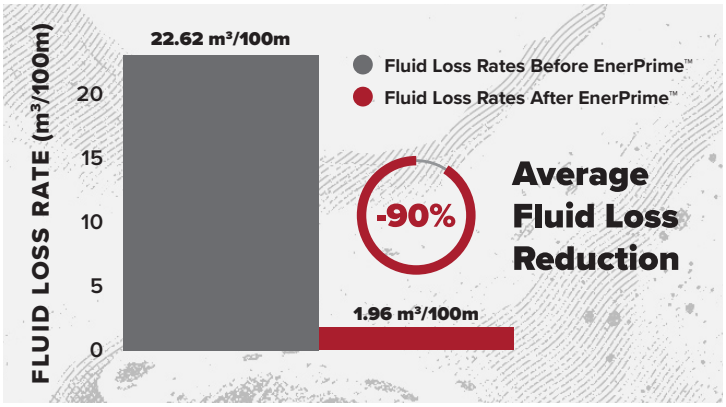
CHALLENGE

A major Albertan operator encountered severe losses while drilling a horizontal wellbore in the Charlie Lake Formation (Triassic Evaporite, with interbedded Carbonates).
After encountering a suspected fracture, severe losses occurred with an initial volume loss of 220m^3 to the suspected thief zone. This increased the average loss rate to 22.62m^3 per 100m drilled. Initially, conventional high concentration LCM pills (5 in total) were used, but they were unsuccessful in healing losses.

SOLUTION

Canadian Energy Services recommended an **EnerPrime**™ squeeze approach to mitigate the losses. **EnerPrime**™ and **EnerPrime C**™ were mixed at a 2:1 ratio into a 17m^3 pill, spotted across the thief zone and squeezed into the formation to stabilize the losses. The pill was pumped through the already open-ended drill pipe as a result of previous large particle size LCM pills.

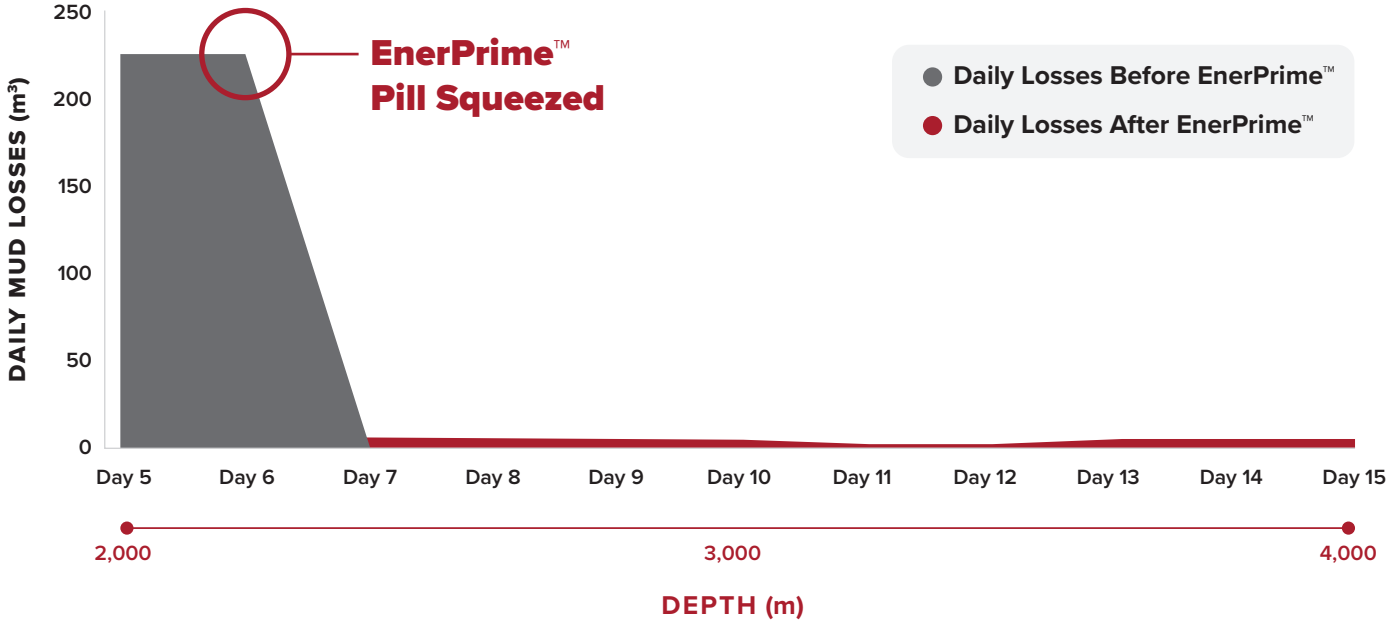
A 1,000 kPA squeeze procedure was carried out over 45 minutes. After the successful squeeze, they tripped out to pick up BHA and continued drilling ahead to TD.



RESULTS

After completely squeezing **EnerPrime**™ into the formation, the instantaneous loss rate drastically reduced from 231 m^3/100m to 2.08 m^3/100m. **This represents a 99% reduction in instantaneous losses without calling out cementers**. They drilled with no loss circulation problems and maintained an average loss rate of 2.0 m^3/100m to TD.

THE ENERPRIME™ EFFECT



CASE STUDY II

STOPPING MAJOR SURFACE LOSSES WITHOUT CEMENT (KAWKA, AB, CANADA)

CHALLENGE

EnerPrime™ was used instead of time-consuming cement plugs to seal surface losses in 6 different Kakwa wells. In these wells, significant losses were expected based on offsets and were usually encountered anywhere between 100m to 280m vertical depth.

SOLUTION

EnerPrime™ pills were prepared and successfully spotted/squeezed in the loss zones. The pills were 6.5m^3 and mixed to 300kg/m^3 of **EnerPrime**™ and **EnerPrime C**™ at a 5:1 ratio. After drilling past the loss zone, the premixed pill was spotted across the thief zone open-ended. After spotting, a backpressure of 350 kPa was squeezed for 2 hours.

OVER A 90% FLUID LOSS REDUCTION IS ACHIEVABLE WITH ENERPRIME™

RESULTS

The **EnerPrime**™ slugs formed an impervious seal that drastically reduced whole mud losses. Losses were minimal drilling to TD, after the squeeze. This resulted in overall well cost savings and a reduction in NPT without waiting on cementers. The casing was run, and good cement returns were seen on the surface.