

## Protech DRB<sup>SM</sup> and Protech CRB<sup>SM</sup> Centralizer Service

Deep, hot, and highly deviated or horizontal well sections, sticking and wear are just some of the complications operators are now facing every day. Add to that, new and unusual applications such as slimhole, multi-lateral or abrasive environments and the need for versatile and robust casing attachments is more essential than ever before. Halliburton's Protech DRB™ and Protech CRB™ casing attachments answer these needs, and more, with a unique solution that utilizes the latest resin, carbon fiber and ceramic technologies to apply wear resistant and/or flow enhancing centralizers, deflectors or protectors directly to customer tubulars. Protech DRB (Drillpipe Resin Blend) and Protech CRB (Casing Resin Blend) centralizers are deployed in deepwater, extended reach, and slimhole wells around the world with excellent results.

Protech DRB and Protech CRB Centralizer Service and product lines provide composite technology centralizers through a licensed agreement with Eni S.p.A.\* Protech DRB and Protech CRB centralizers are currently provided through three facilities located in Ravenna, Italy; Aberdeen, Scotland; and Houston, Texas.

The Protech CRB centralizer is a solid-type centralizer mechanically formed and chemically bonded directly to the customer's pipe surface. The proprietary bonding process uses a carbon fiber ceramic composite material. The customer has the option to choose any size, shape, or location of the composite blades. The material can be used for other applications such as wear bands, deflection wedges, cuttings bed cleaners, screen protection devices, and for general friction reduction applications.

### Protech CRB Centralizer Features

- Non API rated
- Carbon fiber ceramic material molded onto customer's casing
- Designed to fit specific well applications
- Can be installed on any grade of pipe including CRA alloys
- Patented bonding process helps assure a strong mechanical bond

\* Eni S.p.A. ("Eni") is the owner of Patent Applications and Patents regarding the technologies of the process of centralization of OCTG utilizing composite ceramic centralizers. Halliburton is the exclusive licensee worldwide regarding the technologies of the aforementioned process.



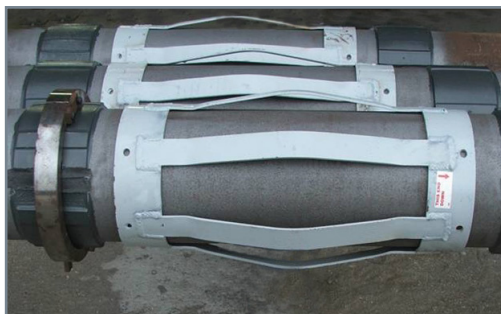
*Protech CRB Centralizers*

- Provides centralization option for close tolerance wellbores
- Provides smooth, uninterrupted flow during circulation due to the absence of any banded product placed around the casing
- Composite material exhibits extreme abrasion and impact resistance
- Ideal for deviated sections of borehole as material provides a low coefficient of friction
- Field proven technology
- Material is CO<sub>2</sub> and H<sub>2</sub>S resistant
- A high thermal degradation temperature and excellent impact resistance at -25°F
- Composite centralizers successfully used in both conventional and slim profile wells
- Helps enable homogeneous cement slurry distribution
- Product applications are usually performed in a pipe yard where customer's pipe is stored. Field location installations are available.

Almost any shape or application is possible



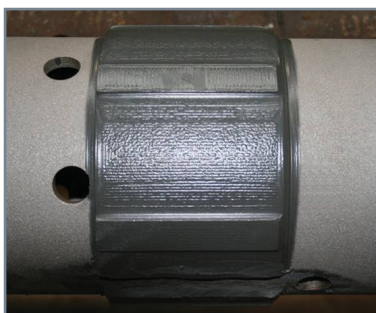
Drag buttons



Integral bow spring centralizers



Wear bands



Slotted liner hanger application



On perforated casing



Protech CRB rigid centralizers

**For more information about Halliburton's Protech DRB™ and Protech CRB™ Centralizer Service please contact your local Halliburton representative.**

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