ION+ Armor Shaped Elements

Providing superior protection and increased depth of cut in interbedded and hard rock drilling.

ReedHycalog's ION+™ Armor shaped, rock failing, diamond elements for premium fixed cutter drill bits protect the primary cutting structure from impact events and reduce severe torque fluctuations. Unlike traditional protection inserts, the ION+ Armor shaped elements promote higher rate of penetration (ROP) by pre-fracturing the formation. This allows the adjacent cutters to propagate these fractures and achieve a higher depth of cut more efficiently. Incorporating ION+ Armor elements consistently results in higher average ROP, better dulls, and longer runs that ultimately delivers lower drilling cost to our customers.

We offer two distinct shapes, chisel and conical. These optimized shapes have significantly thicker diamond layers that provide four times greater impact resistance than a polycrystalline diamond compact (PDC) cutter. This higher compressive strength allows for a more efficient geometry that imparts higher localized stress for pre-fracture than traditional protection inserts.

Chisel ION+ Armor PDC cutter

Conical ION+ Armor PDC cutter

Our drill bit design engineers strategically place the ION+ Armor chisel and conical elements in secondary cutting positions to enable the primary ION+™ cutters to be aggressive even in applications with hard stringers or conglomerates and aid tool face control.

ION+ Armor features and benefits:

- Two distinct shapes: Chisel and Conical
- 400% higher impact resistance compared to PDC cutters
- ION+ Cutter Technology
  - Customized thermal-abrasion and impact resistance for application-specific performance
- Ideal for high chert concentration, conglomerates, and highly interbedded applications
  - Withstands shock loads while drilling interbedded and nodular lithologies
- Pre-fractures formation to promote primary cutter drilling efficiency
- Reduces premature cutter damage to drill longer intervals

For more information on ION+ Armor shaped elements, contact your local NOV representative or visit **nov.com/ARMOR**.