

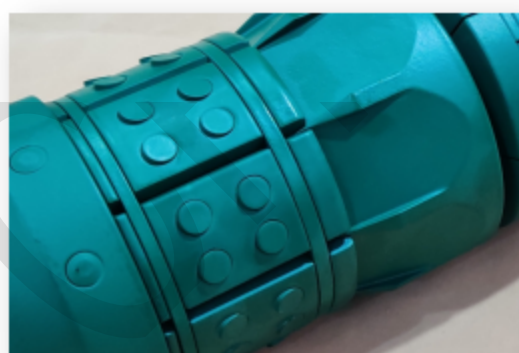
## Case Study - Vertechs D-ARMOR Coating Technology



D-ARMOR, Vertechs dissolution control technology effectively delays the dissolution of early phase during frac operations without compromising the total dissolution time of tools. D-ARMOR could be applied to Vertechs dissolvable plug for acidizing frac application. This technology has been field proven on unconventional applications in various regions.

### Features:

- Precisely delay dissolution reaction to guarantee the pressure holding performance of frac plugs without compromising dissolving performance after frac.
- Enable the application of dissolvable frac plugs/tools in harsh environment, such as extremely high temperature or acidizing frac operations.



### Operational Data:

Region	Product Applied	Application	Temp.	Max HCL concentration	Acid-Resistant Time
Middle East	Dissolvable plug & Frac Ball	Acid Frac	287degF	26%	Up to 12 hours

### Benefit:

- With D-ARMOR technology, the dissolvable plug & frac ball could withstand the high HCL concentration.
- The dissolvable plug with D-ARMOR could cope with high temperature & high-pressure challenges.
- D-ARMOR technology has been applied to hundreds of plugs & frac balls and achieved continuous success in acid frac applications worldwide.