

# Superior Performance for Mud Rotors Coated with CARBIDE<sup>®</sup>X CPR: Better Than Hard Chrome Plating (HCP)

- **Industry:** Oil & Gas
- **Application:** Directional Drilling Mud Motor Rotors, Chrome Plated Rotors, Thru Tubing Rotors, Single Lobe Rotors
- **Environments:** Sub Sea, High Chloride Muds, Oil Based Muds, Air Drilling, Water Based Drilling

## The Problem

Mud rotors coated with Hard Chrome Plating experience corrosion problems when drilling in chloride environments due to the permeation of the micro cracks and pores in Hard Chrome Plating (HCP) resulting in damage to the underlying steel. When this happens the corroded surface subsequently damages the elastomer material in the stator causing power loss and undesirable expense. Ultimately this leads to **premature wear & motor failure**.

## Solution

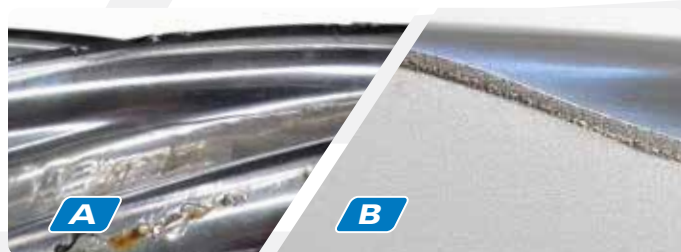
### Application of Our Chrome Plating Replacement (CPR)

CarbideX<sup>®</sup> CPR is a specifically formulated blend of carbon and chromium in a nickel matrix engineered to replace HCP on mud motor rotors.

- CPR is applied thicker and more uniform to the lobe sides than HCP resulting in better fluid wash protection.
- Full encapsulation of the entire working surface of the rotor including the major and minors.
- Highly polished to a <8 Ra ui mirror finish for better COF (coefficient of friction) and stator wear.
- Ability to strip away old coatings and repair and/or recoat for maximum utilization.



CarbideX C5000 (CPR) coated Mud Rotor after stripping, coating and polishing to a mirror finish.

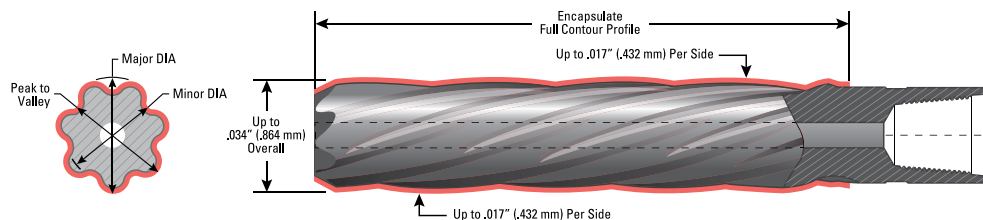


- A: A chrome plated rotor after corrosion permeated the micro cracks and removed from service.
- B: A cut away showing our protective coating layer uniformity.

## Results

### Increased Service Life and Improved Performance Output

- More corrosion resistant than HCP
- Maximize rotor life
- Reduce replacement cost
- Improve stator life
- Decrease cost per rotational hour
- More consistent rate of penetration (ROP)
- 3-5 times longer service life in high chlorides
- Can be recoated multiple times (extend asset life)
- More environmentally safe (HCP is carcinogenic)



# Improving the Performance and Service Life of Downhole Tools, Mud Rotors, Fracture Pump Plungers, Drive Shafts and Bearings

## About Extreme Coatings

Since 1997 Extreme Coatings has carbide coated more than 42,000 components with our high velocity thermal spray process. The high volume percentage of hard, fine carbides ensures exceptional wear resistance unmatched by common alloys, tool steels or bimetals. You can expect Extreme Coatings coated mud rotors to last two to five times longer than any standard mud rotor. Extreme Coatings is a recognized world leader in this technology.



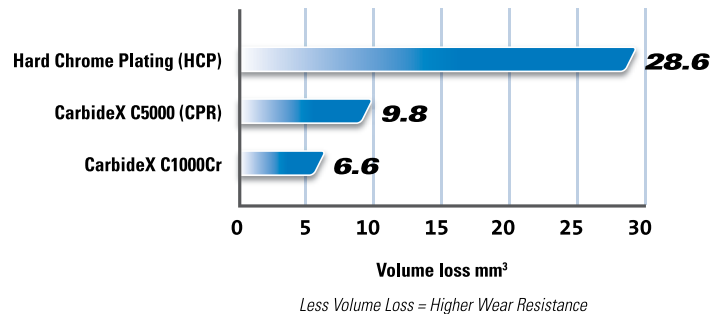
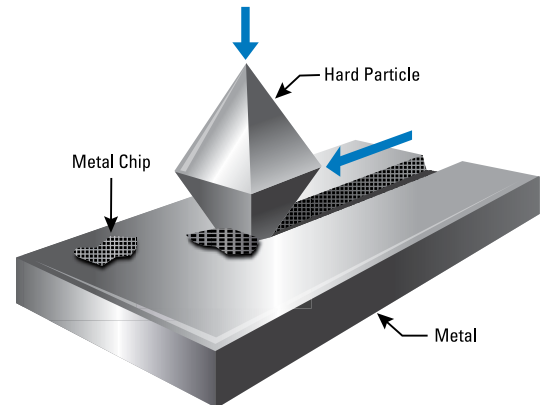
- A: Our high performance formulas
- B: HVOF thermal spray
- C: Extreme layer of protection

We manufacture most of our coating formulations in the USA to ensure maximum quality control and the highest quality standards.

Extensive process knowledge and years of coating experience gives us the confidence to offer a **Performance Guarantee**.

We are certain you will be completely satisfied with the results.

## Comparison of Alloy Materials Designed to Protect from Abrasive Wear



**Authorized Distributor:**



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