

## Boedeker Plastics, Inc. Case History

### Boedeker Plastics, Inc. Helps a Major Motorcycle OEM Motocross Race Team Improve Wear Life and Reliability of Critical Motocross Motorcycle Wear Part Resulting in Less Downtime on Race Day

#### Intro

Motocross is an extreme and challenging off-road motorcycle racing sport. Motocross motorcycles are engineered to handle the most extreme conditions that include jumps, tight turns, steep inclines, high speeds, lots of dirt, sand and many other challenging conditions. The racing motorcycles that are engineered for motocross are made to handle these extreme conditions and the punishment that the professional riders put them through.



#### Challenge: Improve Wear Life of Motocross Motorcycle Chain Guide

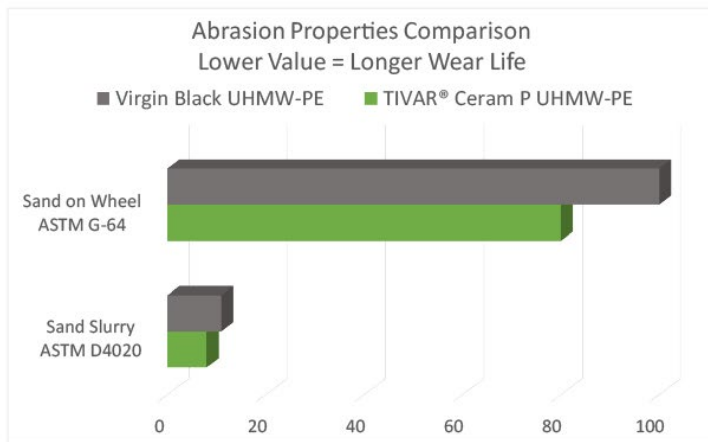
A major motorcycle OEM race team with a long and successful history in the sport of motocross was recently faced with a challenge to improve the life of their motocross racing bike's chain guide. The original chain guide material was virgin black Ultra High Molecular Weight Polyethylene (UHMW), a material known for its toughness and excellent wear resistance. The original chain guide is pictured below. These guides were having to be replaced 2 to 3 times for each motocross event, that typically includes two races and a practice run, resulting in additional downtime in servicing the motorcycle in between races and practice during the motocross event.



*Existing Virgin Black UHMW-PE Chain Guide*

**Solution: A Chain Guide that Lasts the Entire Motocross Event**

The motorcycle OEM motocross race team reached out to Boedeker Plastics, Inc’s Inside Sales Representative, Denise Sandelovic, to inquire about materials that would offer improved performance over the current UHMW material they were using. The race team was looking at PEEK and Nylon grades as alternate materials and wanted to get additional technical support for a replacement material. Denise put the race team in touch with Boedeker Business Development Staff Manager, Andrew Houbre. After discussing the overall application parameters, Andrew recommended the use of an enhanced UHMW material, TIVAR® Ceram-P, which offers improved wear resistance in harsh conditions. PEEK materials are much more expensive and overengineered for this application. There were no extreme temperature, high strength or tight tolerance requirements. Nylon did not look like the best fit either, since UHMW provides better wear resistance over Nylon in abrasive sliding wear applications. TIVAR® Ceram-P is often used in industrial chain guides and has in many applications increased the wear life over virgin UHMW by 3 to 5X and more. It excels in conditions that involve higher loads, speeds and abrasive particles like sand. The motorcycle OEM race team purchased TIVAR® Ceram-P and machined new chain guides from Boedeker Plastics, Inc. Below is wear data on TIVAR® Ceram-P Chain Guide and Virgin Black UHMW-PE, along with a visual comparison of the two chain guides after use.



The results for the TIVAR® Ceram-P Chain Guide were impressive resulting in 3 to 4X increased wear life over the virgin black UHMW-PE chain guide, which eliminated the downtime associated with replacing the previous chain guides in between motocross races. *With the TIVAR® Ceram-P Chain Guide the race team can complete the entire motocross event without replacing the chain guide. The previous chain guides were replaced 2 to 3 times during the event. The motorcycle OEM also experienced the added benefits of reducing their manufacturing hours and inventory requirements for the chain guide with the longer lasting material.* TIVAR® Ceram-P is now used as the primary chain guide material due to the longer wear life it provides. The longer lasting TIVAR® Ceram-P Chain Guide is pictured below.

