

Extreme Coatings™

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Case History # 2005-1

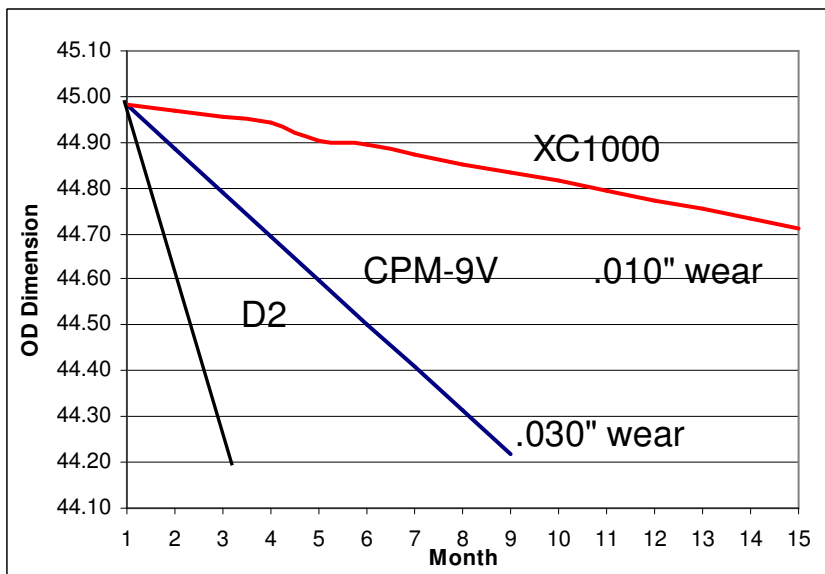
Abrasive wear

Injection Molding

A customer processing a 40% glass filled nylon material replaced their original equipment 45 mm D2 screw after about 3-½ months of operation. The metering portion of the screw was completely removed and the root severely eroded. They next tried an OEM supplied carbide coated feed screw. Problems with coating delamination caused them to conclude that carbide coating was an unproven technology.

Then they purchased a nitrided CPM-9V feed screw for this process. The screw had a nitride case depth of .020" (0,5 mm) with a hardness of approximately 59 - 60 Rockwell C. This screw operated for about 9 months at which time it was discarded with .030" (0,3 mm) of OD wear. Root erosion was also evident on this screw.

Extreme Coatings met with representatives of this company at a trade show and suggested that not all coated feed screws are the same and that another evaluation was warranted. A 45 mm XC1000 tungsten carbide coated screw went into service on July 2005. As of October 2005 no adjustments have been made to compensate for screw wear. The screw has been measured twice in 15 months of operation, the results are graphed below.



Screw: 45 mm, 16:1, 3:1 compression with an accelerated lead

Coating: XC1000 encapsulated at .010" (0,25 mm) or .020" (0,5 mm) overall

Process conditions:

Cycle: 10-12 sec.

Shot size: 60% (80 grams)

Schedule: 24/7

PA 6/6 (nylon) 40% glass filled

Maximum temp.: 560° F (295° C)

Tolerance for wear: approximately 0.030" (0,75 mm)