

Extreme Coatings™

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Case History # 2003-1

Abrasive wear

Injection Molding

A dedicated molder processes a 60% filled nylon material (25% glass fiber, 35% mica) as a metal replacement for traditional metal parts in automobiles. The mica filler adds a fine particle abrasive wear component to the process which accelerates wear. Initial tests of this material employed a screw with hard facing and chrome and resulted in about .020" (0.5 mm) of total wear in three months of operation. Severe wear was observed in the last 4-6 turns of the metering section of the screw.

This is a dedicated application with a long life cycle (3+ years) producing Just-In-Time sub assemblies for a large automobile manufacturer. About 25,000 sub-assemblies are produced each month on four 70 mm Meiki machines operating on a 24/5-6 schedule. The program began in 2002.

Coated screws are installed in carbide lined barrels with a solid carbide non-return valve (See Extreme Coatings Cushion Master). One screw-barrel-tip combination installed in February 2005 was producing good parts as of November 2006 (21 months). The graph indicates the gain from carbide coating in this process.

Screw: 70 mm, 20:1, 3:1 compression

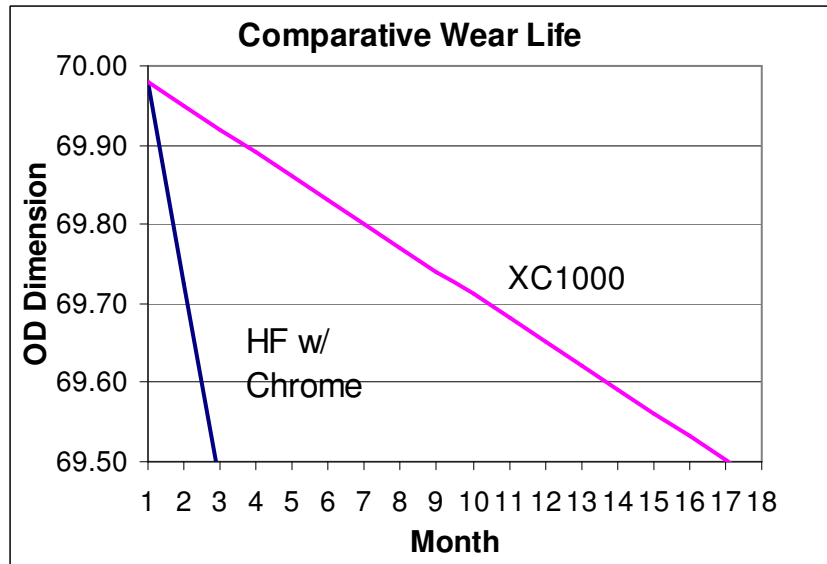
Coating: XC1000 at .010" (0,25 mm)
or 0.20" (0,5 mm) overall

Process conditions:

Cycle: 70-80 sec. Schedule: 24/5-6
Maximum temp.: 575° F (295° C)

Material processed: Modified Nylon
25% glass fill, 35% mica fill

Tolerance for wear: approximately
0.025" (0,62 mm)



Parts produced: automotive exterior sub assembly