

## CASE STUDY



Tomorrow's  
Materials  
Solutions...  
Today.

# Magnaplate's Steel-Hard Coating On Aluminum Dies Improves Quality And Productivity For Custom Extruder

*By Corey Wesnitzer, General Magnaplate Corp.*

A leading custom profile extruder of plastics attains flawless surface finish quality while doubling die life and increasing productivity by the application of unique, steel-hard coatings to its aluminum extrusion dies.

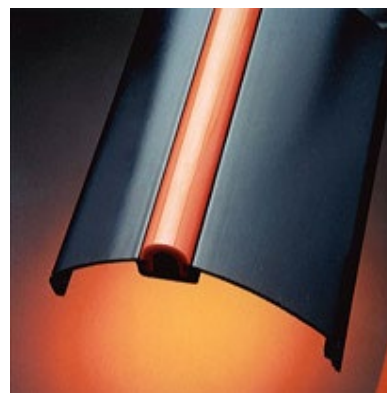
Its nine extruders produce hundreds of shapes of various thicknesses and lengths in some 20 different plastics. Extrusions range from 1/4" to 14" wide and up to 10"; in diameter. For this variety of shapes about 150 new sizing blocks are designed each year. A typical extruder runs a different die each day for a different product run.

Consistent high quality is the overriding theme pervading their varied production. Top product quality reflects both the company's own high standards and the esthetics of profiles demanded by its customers. The company provides these extrusions to the likes of IBM and Kodak and represent a broad spectrum of industries, ranging from automotive to electronics to point-of-purchase displays.

### **Unmarred Surfaces**

Quality means that every plastic profile emerges from the extruder with an unmarred finish. But before they learned how to prevent

it, surface imperfections would often crop up on the tools' and parts' surfaces. Raw plastics, especially abrasive ones, would eventually scratch the aluminum sizing blocks during extrusion. The operator would have to stop to repolish the tool by hand with an emery cloth. This had a dramatic negative impact on production throughput as well as on costs.



The company's production engineers tried several approaches to attain superior finishes but were not satisfied until they discovered steel-hard TUFGRAM®, one of many surface enhancement coatings developed by General Magnaplate.

The TUFGRAM coating imparts previously unattainable levels of hardness, wear



Tomorrow's  
Materials  
Solutions...  
Today.

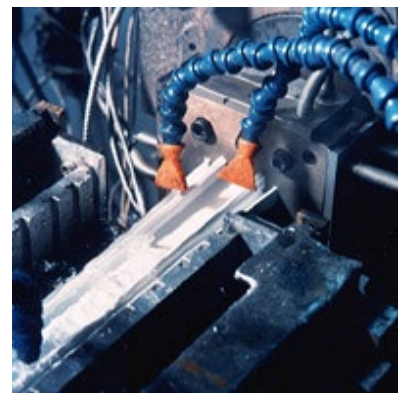
and permanent lubricity to the aluminum surfaces of the extruders. The enhancement has a hardness between Rc 40 and Rc 65, approximately that of nitrided steel. When applied to die surfaces, it protects them against scratches, blemishes, marks, and scoring. Taber abrasion tests show that TUFRAM has greater abrasion resistance than case-hardened steel or hard chrome plate. The TUFRAM surface enhancements increase Dande Plastics' productivity by doubling the wear life of the aluminum dies.

Long run and repeat-run products constitute a major share of output, and these are the ones which the company coats. It first prepares each tool by cleaning, then sends it to General Magnaplate for coating. Magnaplate does this in a proprietary multi-step process which combines the advantages of anodizing or hardcoat plating with controlled infusion of low-friction proprietary engineering polymers and/or dry lubricants. By combining the hardness of aluminum oxide ceramic with the proprietary polymers, the TUFRAM "synergistic" surface enhancement becomes an integral part of the aluminum basecoat and exhibits far better wear, friction, and non-slip properties than either the base coat or the coating components alone.

### **Increases Productivity**

The coatings further improved tool productivity by shortening tool preparation time and speeding changeovers. The coated tools better survive storage between runs, so are ready for reuse with minimal surface

preparation. Their design engineer, says, "When we take the tool out of storage, we just wipe it off, and we're ready to go." Previously, when taking uncoated tools out of storage, tool department personnel had to clean and polish the tool to eliminate the residue left by humidity and accumulated dust.



### **Increases Confidence**

The coated extrusion dies add a confidence level that makes the operation run smoother. Gone are any worries about scratches on the tool or part. Says their vice president, "Once the tool is coated, we don't worry about the surface any more. We have a greater feeling of confidence in our whole operation because we know that we can consistently produce a superior surface on our products every time, from run to run."

He says the coatings add some small extra cost, but are worth the price. We can produce the top quality, unmarred profiles that we and our customers insist on, while boosting productivity and reducing downtime.