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Recapping Benefits

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MetaLife® offers other significant benefits to proactive die casters besides the compressive stress layer that protects against initial metal fatigue and crack propagation. These benefits are just as REAL and show up on the bottom line as cost justified savings. Our resulting topography should not be compared with processes that cause only a cosmetic change to the surface. These types of topography do not protect the tool from premature or subsequent heat checking. Beneath the readily distinct **MetaLife®** topography, however, is a proactive layer of residual compressive stress. This layer raises the effective yield strength of the die steel. Metallurgical existing cracks are prohibited from propagating into or through the layer. Smaller cracks that may already exist are closed and put into compression to retard future site cracking. Texturing by acid or photo etching does not generate this compressive layer and can only create a cosmetic change to the surface. The difference is like comparing apples to oranges. Here is a recap of some of the other proactive benefits that **MetaLife®** provides.

Lubricity **The generated micro pockets trap lubricant which assist in casting release and reduce soldering.**

Flow Enhancement **Molten metal distribution in the die is enhanced to provide more effective fill characteristics. This phenomenon is optimized and most apparent when BOTH sides of the tool are processed.**

Blends Porosity **The MetaLife® surface produces turbulation of the molten metal coming into the die which breaks up the large trapped gas deposits in the metal. This homogenizes existing porosity along with reducing washout.**

Polishable **The metallurgical subsurface depth of the process (.010" to .020") allows subsequent polishing operations to be performed without loss of the compressive stress benefits.**

More Facts About MetaLife®

Break out conditions in tooling show up as raised protrusions on die castings. These are signs that die steel has been dislodged and is missing. **MetaLife®** cannot totally repair this condition. In some instances, such as with zinc dies and depending on the degree and hardness of the tool, minor pitting can be corrected or improved.

Areas that are welded after heat treating often exhibit a greater degree of hardness than the virgin material. **MetaLife®** will show these areas, especially on new tooling. The same goes for hidden weld porosity. The **MetaLife®** process, therefore, performs a die surface hardness integrity check by exposing far in advance the areas that will later be problems when the tool starts producing production parts. The condition can therefore be dealt with on a proactive instead of reactive basis.

Diffusion surface treatments alter the steel's micro structure, and make subsequent welding and machining more difficult.

MetaLife® is an unadulterated surface treatment and does not suffer from this shortcoming.

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