MetaLife NEWS

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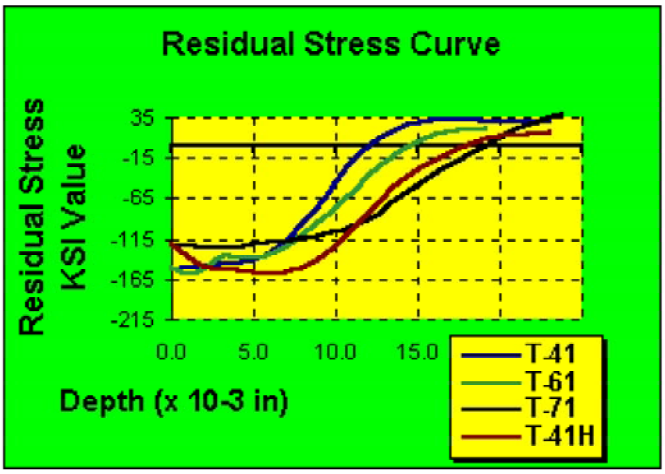
Improved T-41 Process

For many years Badger has offered a variety of **Metalife** compressive stress texturing ("T") processes. The majority of our customers currently specify the T-41 process because of its high compression factor along with minimal resulting texturing to the surface. More intense processes, such as the T-61 and T-71 can provide a greater depth of compression but also have a greater amount of surface texture which is sometimes not desired. Through modification of the T-41 process parameters, we now offer a T-41H process with higher maximum compressive depth and surface values but without the rougher texture of the T-61 or T-71 process. The improved T-41H also has greater crack closing ability than the standard T-41. The X-ray curves below show the comparison of popular **Metalife** processes. Call us toll free at 800-366-1973 for more information and details on the T-41H process and how to properly prepare your tooling to obtain maximum benefit from this improved process.



Digital Photo Capability

With our recent acquisition of digital photo equipment, Badger now has the capability of instantly recording and transmitting via email, or modem, photos of dies, components, processed areas, or other items that would be difficult to verbally communicate. Call us whenever this need arises. We now catalog every die this way and can digitally enhance or magnify any area that needs to be viewed utilizing most of the current computer imaging formats.

Their concern is that some of the processed areas do not ha bright silver appearance and therefore it is assumed that tl areas were missed during processing. Although there is a sibility of this, in most cases the color is not indicative of process. If the die has hard spots, welded areas, or a previ diffusion process, such as nitriding, the silver color and tex may not be present in these areas. In these cases it is bes examine these areas using a 10x magnifying glass to see if texture is present. We use a special 200% coverage method special marking of the process area which assures total proc ing of desired areas. In some cases the die may contain spots from welding or quenching which will impede surface turing. As discussed in our previous February 1999 newsle these areas still have compressive stress benefits. This is demonstrated in the following discussion of combination tes of surface diffusion and **Metalife** processes.

Combination Surface Diffusion Evaluation

Our February newsletter made reference to tests that were b conducted to evaluate the effects of heat-diffusion processe combination with **Metalife**. We have completed our prel nary X-ray diffraction measurements of some H-13 cou specimens using a combination of, **Metalife** (T-41H) and **DYNA-BLUE** (DB) ferritic nitrocarburizing diffusion process.

Lamba Research Labs conducted the measurement aspect of test with X-ray surface and electro-polished sub-surface r ings taken to generate compression curves for the combina processes tested. For the specimens we supplied four H test coupons that were milled, polished and then treated w **(A)** T-41H only, **(B)** DB only, **(C)** T-41H then DB, and DB then T-41H. The curves that resulted showed high c pressive values and depth for T-41H but shallow compres for the DB alone. When combined, however, both the "T- then DB" and "DB then T-41H" coupons exhibited very surface compression values along with significant depth.. fact, the surface compression of the "DB then T-41H" sam was over –200KSI. This resulted in an optimized maxim compressive profile for this combination. This suggests when combining processes such as this on NEW tooling, best to first perform DB followed by **Metalife**. For US tooling, it is recommended to close up as much existing checking as possible with **Metalife** prior to any planned t ment with **DYNA-BLUE** or other diffusion process.

Color v/s Compression Value v/s Texture

In rare instances some customers will call us to discuss variations in the color of the dies they receive back from us after processing.

Our next newsletter will discuss the results of this eval tion in greater depth and detail, however, call us if you w advance information.