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# MetaLife NEWS ThermalLife



## Gross Die Cracking A Hard to Quantify Failure Mode

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Badger Metal Tech, Inc.

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For almost 26 years Badger Metal Tech has been extending the life and improving the performance of tooling for die casting dies, drawing forming stamping tools and other perishable tooling.

For Die Casting dies, there is one failure mode that Badger Metal cannot remedy or prevent and is the most expensive mode of failure that can happen. Yet, many times the true cause is hard to determine and nail down since the culprit cannot be definitively identified.

We trust by this newsletter that some useful information can be supplied as a reference tool should this problem ever happen to your tooling.

By clicking the sidebar buttons, you can find out more about this often misunderstood failure.

These side bar buttons link to specific sections on our web site. There you will find useful information on what is believed to be the primary cause of these failures as identified by NADCA's Die Materials Committee.

### Steel Quality Heat Treat Quality Statistical Process Controls

Gross Cracking is one mode of failure that cannot be fixed with [MetalLife®](#), [ThermalLife®](#) or any other surface engineering technology. It is usually catastrophic in nature and most often requires replacement of the tooling. On the other hand, this failure mode is not related to [MetalLife®](#), [ThermalLife®](#) or any other surface engineering technology. Its root cause is one of the above.

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The first step in solving a problem is recognizing that you have one. In the case of a Gross Cracking failure, it is imperative that the steel's metallurgical properties be thoroughly analyzed.

They do, however, tell you whether the steel was of a proper grade and impact toughness which is critical. The reports indicate the micro structure of the heat treat and whether it was adequate. Sometimes the analysis will also

The links page on our web site has direct links to commonly used companies that perform this service. You may also click on a sidebar button in this newsletter. This will also take you directly to these companies web page.

The reports from these companies provide a detailed roadmap to help identify suspect causes of what happened and why.

Although definitive, they do not point a finger at the root cause.

indicate stresses that may have been placed on the tool from an operations stand point.

These reports coupled with increasing awareness and education regarding this failure mode can, hopefully, help to prevent it from occurring a second time.

The DMC has done some testing regarding this phenomena which is contained on the DMC CD available "No Charge" from Badger Metal Tech, Inc.

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