



# Diemitech® HD17.7

## Faster Die Casting, Fewer Rejects.

### Optimize Die Casting Productivity with Diemitech® Die Casting Mold Material

Reject castings can be very costly and detrimental to production at a die casting facility. At specific locations in the mold, Diemitech® solves heat transfer issues that cause rejects. You can reduce rejects from casting porosity at drilled and tapped holes, castings susceptible to leakage or solder building up on core pins.

Optimizing die casting productivity involves many factors such as part design, die casting mold dynamics and process dynamics. The high thermal conductivity of Diemitech® facilitates faster solidification of the casting. When you decrease cycle times, you improve productivity at your facility and increase capacity.

No other die material can solve heat transfer issues like Mi-Tech's tungsten-based HD17.7 Diemitech®.



	H13 Tool Steel	Diemitech® HD17.7	Anvilloy 1150	Mi-Tech HD18.5
<b>Density (g/cm³)</b>	7.76	17.7	17.25	18.5
<b>Ultimate Tensile Strength (PSI)</b>	233,000	134,400	140,000	130,000
<b>Yield Strength (PSI)</b>	192,000	92,000	125,000	93,000
<b>% Elongation</b>	13	12	3	11
<b>Hardness (HRC)</b>	45	32 max	34	28
<b>Thermal Conductivity @ 500°C (W/m-K)</b>	28	73	70	~90

## Reduce Downtime While Improving Quality

As Diemitech® has a high thermal conductivity and low affinity for the iron content in aluminum, core pins will stay cool and aluminum will not adhere to the core pin. By eliminating die solder, you won't need to clean, polish or replace core pins, and you'll reduce reject parts, resulting in less downtime and improved part quality.

Heat transfer issues can lead to porosity in castings. Porosity at drilled and tapped holes or porosity resulting in casting leakage may lead to an unnecessarily high reject rate. Porosity issues can be solved by speeding up solidification at these locations with an alloy like Diemitech® with high thermal conductivity.

## Mi-Tech Metals, Inc Tungsten-Based HD 17.7 Diemitech®

Indianapolis-based Mi-Tech Metals, Inc. has manufactured tungsten-based high-density metals and composites since 1978. Mi-Tech Metals uses a powdered metal process and special high-temperature sintering to make HD17.7 Diemitech®.

Diemitech® was developed for demanding tooling applications such as die casting molds. When used at specific die locations, the unique characteristics of Diemitech® can reduce porosity in castings, eliminate die solder, reduce machine downtime and improve cycle times.

By solving heat transfer issues, Diemitech® increases the productivity of your die casting facility.

## Diemitech®: a Unique Alternative to H-13 Tool Steel

Diemitech®'s unique characteristics lead to a number of benefits and results:

- Low coefficient of thermal expansion minimizes heat checking and improves tool life.
- High thermal conductivity draws heat out of the die faster and reduces heat transfer issues.
- Faster solidification leads to improved cycle times and increased plant productivity.
- Aluminum will not adhere to Diemitech®, which eliminates die solder and reduces reject rate.
- Lower machine downtime to clean off or replace broken core pins results in better machine efficiencies.

## Reduce Cycle Times to Increase Plant Capacity

The high thermal conductivity of Diemitech® will pull heat out of the die faster. Inserting Diemitech® at thick sections of a casting dramatically improves solidification rates.

A significant location to improve cycle time is at the shot block area. When you use Diemitech® at the shot block, solidification of the biscuit occurs up to 10 seconds faster than in dies that use H-13 tool steel shot blocks.

## Improve Die Cast Tooling

What if you could find a way to increase tool life, reduce machine downtime and increase the capacity of your die casting facility? These things are possible with the tungsten alloy die material HD17.7 Diemitech® from Mi-Tech Metals, Inc. Diemitech®'s benefits include:

- **Three times the ductility** of comparable material, making it significantly less brittle and more durable for longer tool life.
- **Three times the thermal conductivity** of tool steel, which improves cycle times and solves heat transfer issues such as porosity and shrinkage.
- **Low affinity** for iron, which eliminates die solder issues and improves casting quality.

## Greater Durability for Longer Tool Life

The combination of low thermal expansion and high thermal conductivity gives our material increased thermal fatigue resistance. Diemitech® details have low susceptibility to heat checking, which improves tool life.

Core pins and insert details are less susceptible to breakages because HD17.7 Diemitech® has strong tensile properties and high thermal conductivity. Unlike other alloys used in die cast tooling, Diemitech® resists chipping and breakages, leading to less machine downtime to change out broken cores.

## Troubleshoot Difficult Dies with Diemitech®

Diemitech® is a tungsten-based die material that solves specific issues that die casters face. This material has been proven to reduce the number of castings rejected for porosity or because of solder build up. Die casting productivity is increased by improved cycle times and reduced machine downtime from core pin breakages and details chipping.

**Have Questions? Contact Us Today!**

800-624-1895 or 317-549-4290



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