

## HTI "Heat Treat Specialists" Logansport, Indiana Vital Statistics

- HTI "Heat Treat Specialists" has been a Commercial heat treater since 1976, is ISO 9001:2000 Certified and Ford Approved, a 24 hour operation with 4 continuous wire mesh belt Austempering Furnaces.
- **Specializing in**
  - Austempering
  - Age Hardening Beryllium Copper Alloy 25(C172) and Alloy 165(C170) to HT Temper from H Temper
  - Stress relieving
- **Austempering Details**
  - **Material Types:** AISI
    - 1045 thru 1095 Carbon Steels
    - 4130
    - 4140
    - 5060
    - 5160
    - 6150
    - 8660
    - E52100
  - **Thickness Limits:** 0.005" to 0.150
  - **Length Limits:** 8" Max
  - **Loading Options:**
    - Hand Placed and oriented
    - Hand Placed
    - Sample bags to prevent loss of prototypes
    - Hand Sprinkled
    - Bulk Loaded w/Automatic Loaders for consistent loading
  - **Rust Prevention:** Post rust preventative oil, dip, and spin capable for aggressive rust protection. (this will not replace a plated or coated finish)
  - **Case harden** up to 0.005 inch case depth
- **Target Products**
  - Springs
  - Clips
  - Safety Restraint Components
  - Hangers
  - Brackets
  - Ballistic Nails
  - Automotive Door Components
  - Auger bits
  - Washer Races
  - Spacers
  - Tubes
  - Screw Drivers blades
- **Contact Information:**

For all inquiries, call **Ph 574-722-2814**  
**Fax 574-753-8460**  
[www.callhti.com](http://www.callhti.com)  
**Chico Rodriguez - [chirod@callhti.com](mailto:chirod@callhti.com)**  
**Vice President & General Manager**  
**hti "Heat Treat Specialists"**  
**500 W. Clinton Street**  
**Logansport, IN 46947**

**AUSTEMPERING IS A HARDENING PROCESS...** for ferrous alloys in which the material being treated is quenched from the hardening temperature into a molten salt bath with precisely controlled temperatures. The material isothermally transforms to a structure known as bainite; this transformation takes place just above the temperature at which the hard and brittle phase occurs in conventional heat treatments. The material is quenched directly to the hardness desired by adjusting the temperature of the quench bath. Heating and salt quenching are the key process steps.

Austempering will produce better mechanical properties, particularly higher ductility, resistance to shock, and fatigue stresses in ferrous alloys. Parts equal in ductility to conventionally quenched and tempered materials will run as much as 10 points harder on the Rockwell "C" hardness scale. The hot salt quench drastically reduces the likelihood of cracking and distortion. In addition, the slightly oxidizing quench salts provide a thin protective dark blue oxide film that is both protective and attractive, and which can be readily removed by a light pickle, leaving a base surface ideal for subsequent plating operations. The large salt quench tank at Heat Treat Specialists quenches parts continuously and rapidly from the high heat temperatures to the closely controlled salt bath temperatures, producing uniform hardness in piece part after piece part, and lot after lot.

The advantages of austempering over conventional heat treat have long been recognized by metallurgical and material engineers since the invention of the process by research metallurgists at U.S. Steel Corporation some 30 years ago.

However, the process was performed almost exclusively in batch type neutral salt furnaces for both heating and cooling operations. This method had disadvantages inasmuch as 1) a large labor input was required, 2) work fixtures lowered heating efficiency, and 3) high temperature heating salts transferred during the quench gradually dilute low temperature quench salts and cause non-uniform hardness.

Recent engineering innovations have solved problems relating to the use of continuous atmosphere furnaces with hot salt quenches. HEAT TREAT SPECIALISTS has the most modern continuous equipment of this type available today - equipment that produces the highest quality heat treating available anywhere. The large production capability of this automated equipment provides all of the advantages of austempering at prices competitive with conventional heat treating.

#### **ADVANTAGES OF AUSTEMPERING**

- Greater ductility
- Less distortion and cracking of part
- Salvage of overcased screws
- No hydrogen embrittlement

Plating of parts is much improved, due to clean surface from quenching in salt.

Salt quenching is superior to regular quench and temper processes because it yields improvements in:

- Tensile strength
- Yield strength
- Elongation
- Reduction of area
- Brinell hardness
- Fatigue cycles