



austempering

for enhanced strength and durability to
improve component performance

aalberts-ht.us



your solution is here

Aalberts surface technologies is part of Aalberts N.V. — the world's leading provider of heat treatment technologies, services and solutions representing more than 130 facilities in 30 countries, including 17 US locations in the HIP | braze | heat treatment division.

Aalberts delivers this core mission: unmatched solutions and services through skilled experience, innovations, shared learnings, and best practices.

At Aalberts, we have the resources for not just the right solutions ... but the best ones.






for components that need to be stronger and last longer

Austempering is an isothermal heat treatment that, when applied to ferrous materials, produces a microstructure that is stronger and more durable than comparable materials produced with conventional heat treatments.

During the austempering process, iron and steel parts are quenched in molten nitrate-nitrite salt instead of more traditional quench media, creating a preferred crystal structure and improving mechanical properties (tensile, yield, and elongation) and toughness.

For parts that need to perform day-in and day-out, the austempering process results in:

- The **higher strength, toughness** and structural integrity characteristics required for dependable performance
- **Enhanced wear resistance** resulting in longer in-service life and reduced downtime
- **Lighter weight designs** enabled by improved mechanical properties
- Reduction in needed material resulting in **lower total cost**
- Reduced total cost due to **extended part life**
- **Accurate, uniform and consistent** results, be it part-to-part or lot-to-lot



Aalberts is the worldwide leader in the development and refinement of the austempering process and operates multiple facilities in the US, each delivering the state-of-the-art resources and services needed for every form of austempering.



unequaled expertise

Regardless of project scope, material need, or treatment required, Aalberts has the austempering expertise, insights and capabilities you need.

Our austempering facility locations in the US are:

- Canton, Ohio
- Fort Smith, Arkansas
- Livonia, Michigan
- Oshkosh, Wisconsin

If your company requires the highest quality — often with aggressive lead times — contact us today for a free quote.

Five Standard Grades of ADI* For Virtually Every Application Need

Grade	Tensile Strength (MPa / ksi)	Yield Strength (MPa / ksi)	Elongation (%)	Typical Hardness (HBW)
1	900 / 130	650 / 90	9	269 - 341
2	1050 / 150	750 / 110	7	302 - 375
3	1200 / 175	850 / 125	4	341 - 444
4	1400 / 200	1100 / 155	2	388 - 477
5	1600 / 230	1300 / 185	1	402 - 512

*ASTM A897/897M Standard Specification for Austempered Ductile Iron Castings.

Improved Material Performance with ADI versus As-Cast

	Tensile (ksi)	Yield (ksi)	Elongation (Minimum)	Un-Notched Impact
As-Cast 80-55-06	80	55	6%	>=25J
Grade 2 ADI	150	110	7%	>=80J
Improvement	87.5%	100%	16%	3.2x

Austempered Ductile Iron

Austempered ductile iron (ADI) is a high strength-to-weight material at a component price typically 20-percent less than that of steel. ADI applications regularly include:

- Sprockets, Rollers, Idlers
- CV Joints
- Housings and Brackets
- Wear Plates
- Shafts
- Suspension Components
- Tillage Points
- Hitches
- Crankshafts

Austempered Steel

Austempered steel delivers a tough, high-strength component that resists embrittlement. This material offers superior toughness/durability and higher hardness than conventionally quenched and tempered steel. Austempered steel applications include:

- Turf Care Blades
- Fasteners
- Cutter and Mixer Blades
- Wear Plates
- Transmission Components
- Turf Aeration Tines
- Heavy Truck Fuel System Components

Austempered Gray Iron

Austempered gray iron (AGI) can dramatically improve strength and wear resistance in comparison to as-cast. Common AGI applications include:

- Brake Components
- Cylinder Liners
- Bearing Collars
- Light Duty Gears
- Machine Parts

Carbide Austempered Ductile Iron

CADI™ is an innovative material that uses a high-strength matrix of ausferrite with wear resistant as-cast carbides. Representative applications of CADI™ include:

- Rasp Bars
- Wear Plates
- Tillage Points
- Digger Teeth
- Tip Holders
- Pump Impellers
- Thrashing Elements
- Hammers
- Internal Tines
- Rollers

Carbo-Austempered™ Steel

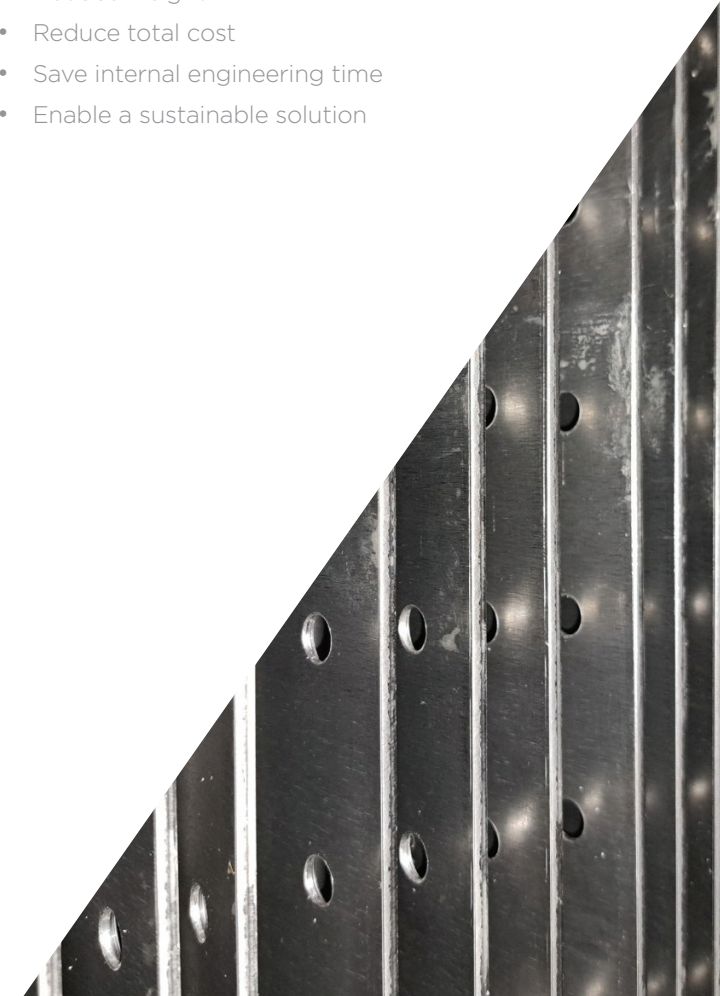
Carbo-Austempered™ components offer superior impact properties in comparison to carburized oil quench and temper steels. The process develops a tough, high carbon, bainitic case on high-performance components. Representative applications include:

- Transmission shafts
- Output Shafts
- Pump Shafts
- Differential Pinions
- Spline Drives
- Parking Pawls

Casting Conversions

Converting multi-piece fabrications to one-piece austempered ductile iron castings offers significant advantages, enabling our customers to:

- Increase product performance (strength, wear resistance, toughness)
- Reduce number of components
- Reduce weight
- Reduce total cost
- Save internal engineering time
- Enable a sustainable solution



Aalberts surface technologies

The world leader of austempering services, resources, technologies, and innovations

IATF 16949:2016 / ISO 9001:2015

aalberts-ht.us

