

Additive
Manufacturing

Bainidur® 1300

Bainidur® AM

Bainidur® 7980 CN



Serial
Production

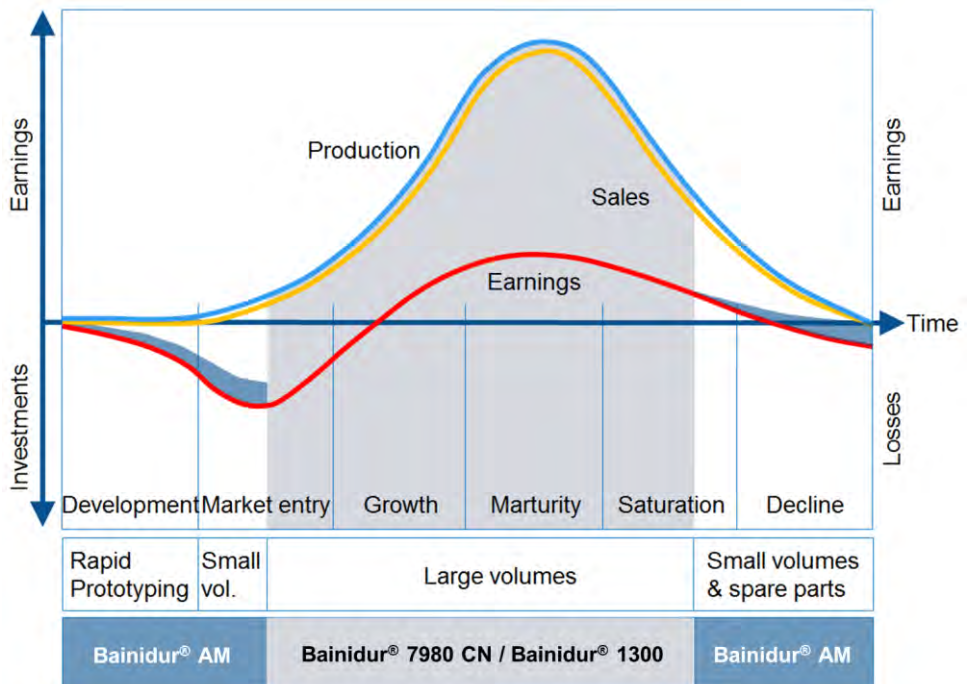
The Bainidur®-portfolio
from additive manufacturing to serial production

Bainidur®

From additive manufacturing to serial production.

Deutsche Edelstahlwerke meet this demand with the established special steels Bainidur® 1300 and Bainidur® 7980 CN. The new bainitic steels do not only expand the large-scale production via electric arc furnace but also with Bainidur® AM (= Additive Manufacturing) the metal powder portfolio. One steel type can be used through the complete life cycle of a product.

Bainidur®: one alloy for the whole product life cycle without drawing modifications



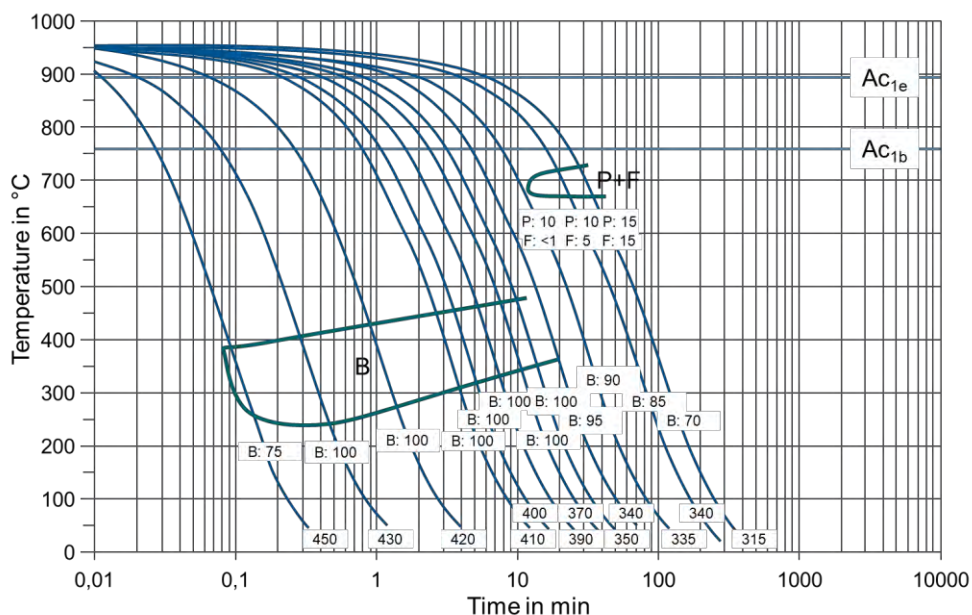
Bainidur® 1300

Bainidur® 1300 is specially designed for forgings.

Compared to conventional bainitic steels its characterized by an expanded range of cooling rates resulting in a complete bainitic micro structure. After forging the workpiece can be cooled like conventional forgings in an unregulated way without the risk of distortion. Bainidur® 1300 stands for robust processing with low dependence of mechanical properties on size and a low risk of cracks or distortion during cooling. This steel is the ideal solution for a lot of forging applications regarding economic, mechanical properties and process stability.

Advantages of Bainidur® 1300 at a glance

- No additional tempering and low risk of distortion
- Robust processing
- High strength of 1,250 MPa and high toughness
- The final strength/ hardness can be increased by a simple precipitation hardening at 600 °C.
- Strength of 1,250 MPa, can be increased on request
- Low dependency on the size of the component or the location in the component
- Good weldability
- High potential for lightweight construction



Bainidur® 7980 CN

Bainidur® 7980 CN is especially designed for case hardening and carbo-nitriding.

Bainidur® 7980 CN is a low-alloyed steel with a bainitic structure at ambient temperature. Its therefore the ideal solution for a lot of applications regarding economic efficiency, mechanical properties and process stability. Fields of applications are e.g. gears especially for e-mobility with high torque or large gears in wind mills.

Advantages of Bainidur® 7980 CN at a glance

- Low risk of distortion
- High strength and toughness
- No Ni
- Higher Through-hardenability than conventional case-hardening steels
- Excellent case hardening and carbo-nitriding properties



Bainidur® AM

Bainidur® AM is a specially designed modified Additive Manufacturing version of Bainidur® 1300 and Bainidur® 7980 CN.

It meets the increasing market demand for steels processed by Additive Manufacturing by allowing initial samples to be printed quickly and efficiently which also exhibit the later component properties. Heat treatment and thermochemical surface treatments can be tested and optimized with the same material as in the serial production. Even spare parts, when the forging dies no longer exist, can be produced by Additive Manufacturing with the same properties as the original. This is supported by its good transformation behavior into the bainite structure. This makes the material easy to handle during powder production and printing.

Advantages of Bainidur® AM at a glance

- Produced by gas atomization to ensure spherical powder particles in combination with excellent flow characteristics
- Good processability with LPBF (Laser Power Bed Fusion)
- Up to 100 % bainitic microstructure after 3D-printing
- High strength and high toughness in as-build-condition
- High thermal stability
- Lower alloying cost than conventional AM grades
- Mechanical properties after heat treatment at the same level as after conventional processing



General note (liability)

Printing errors, omissions and changes accepted. Product-specific data sheets have priority over the information providing in this brochure. The desired performances characteristics are binding only if they are exclusively agreed upon at the conclusion of the contract.

The logo for Bainite, featuring a stylized white circular graphic on a blue background.

Bainite

Deutsche Edelstahlwerke
Specialty Steel GmbH & Co. KG
Austr. 4
58452 Witten
GERMANY

Telefon: +49 (0)2302 29 - 0
Fax: +49 (0)2302 29 - 4000

info@dew-stahl.com
www.dew-stahl.com

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