

SPECIAL SEMI-FINISHED PRODUCTS

Melting and Forming of Special Semi-finished Products

With more than 60 years of experience in metal forming, heat treatment and melting technology, GfE Fremat GmbH is an expert in the area of semi-finished products.

Our service offering:

- **Melting of alloys** according customer requirements in quantities up to several hundred kilogram
- **Forging and rolling** in quantities up to several tons
- **Heat treatment** in air or high vacuum

Melting of Alloys

GfE melts the alloy required by a customer in a high vacuum induction melting and casting furnace (die casting). Typical materials based on nickel, copper, chromium, cobalt as well as on tin and bismuth.

- Melting temperature for max. melting volume up to 1650 °C
- Different shapes of mould
- max. block length 600 mm, max. width 300 mm, max. diameter 110 mm
- max. weight of charge 120 kg

Forging and Rolling

Blocks casted at GfE or purchased / provided material are mainly processed by forming technologies to following dimensions:

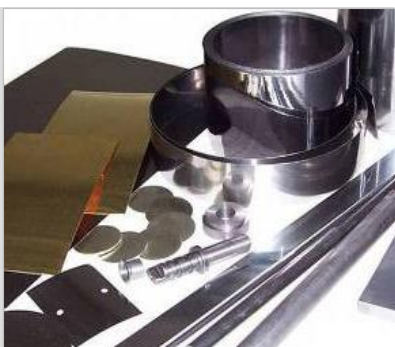
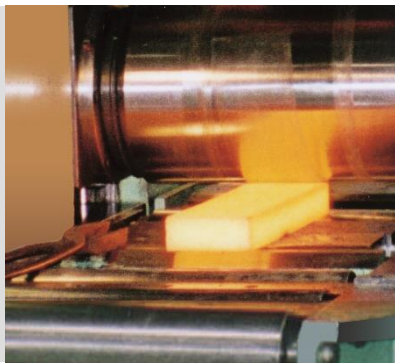
Plate	<i>thickness 6 - 30 mm</i>	<i>width max. 350 mm</i>
Sheet	<i>thickness 1 - 10 mm</i>	<i>width max. 1000 mm</i>
Strip material	<i>thickness 0.1 - 2 mm</i>	<i>width max. 200 mm</i>
Rod	<i>Ø ≥ 20 mm</i>	

Other dimensions, special sizes, special shaped parts, plates on request.

Heat Treatment and Supplementary Technologies

Beside the forming technologies forging and rolling the following manufacturing processes are used:

- Machining (planing, turning, milling, grinding, polishing)
- Pickling
- Flattening, cutting, stamping
- Intermediate and final annealing (high vacuum, air) up to approx. 1250 °C





Primary Material

If the primary material is not produced as an ingot in the own melting furnace, either purchased material (ingot, slab, plate, coil) or material provided by the customer is processed. GfE purchases primary material at certified suppliers, such as:

- Soft solder alloys
- Copper and nickel alloys, such as brass, bronze, nickel silver
- Special steels
- Refractory metals as tantalum, niobium, titanium, zirconium

Analytics and Diagnostics

For technology and product development for customers, we use the longtime experiences and know-how of our laboratories for chemical analytics, diagnostics and material testing:

- Qualitative and quantitative chemical analysis
- Materialography / metallography (lightmicroscopy, SEM, microanalysis)
- Testing of material characteristics

References

Material / Application	Start / Product	Essential Requirements
CuNiMn Resistance strain gauges	Melting; Band 0.25 mm	Development of alloys, tolerances chemical compositions
NiW Superconductor backing film	Melting; Band 0.15 mm	Development of alloys, chemical purity, thickness tolerance
Nb, Nb RRR Particle accelerator	Rolling; Sheet 2 mm	Development of technology, thickness tolerance, surface finish
Nb Pace maker	Forging; Band 0.1 mm	Setting material properties
Ta Flow control unit	Forging; Blank 0.1 mm	Shining finish, free from defects
Spring steel High-precision watch parts	Rolling; Stamped part > 0.3 mm	Evenness, surface finish, mechanical properties



Who we are

With more than 100 years of experience, GfE is one of the world's leading manufacturers and suppliers of high-performance metals and materials. Based on our comprehensive materials science know-how, we develop high-quality tailor-made solutions for a wide range of industrial applications. We offer our customers fast service and qualified technical advice.



Certification in accordance with DIN EN ISO 9001, DIN EN ISO 14001, DIN EN ISO 50001, DIN ISO 45001 and DIN EN ISO/IEC 17025 support our claim to the highest quality and safety. We can thus guarantee products that meet the specific requirements of our customers. Your trust and satisfaction are the cornerstone of our business.

GfE is a subsidiary of AMG Advanced Metallurgical Group N.V., Netherlands, a global leader in the production of specialty metals and metallurgical vacuum furnace systems.

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