

BESSEY Precision Steel

# Competence in Steel

**BESSEY**  
Simply better.



# Quality from Tradition



## Expertise in steel since 1889

Traditionally, BESSEY has always stood for outstanding precision steels. Thanks to our extensive experience and expertise, as well as the latest production and test techniques, we know what really counts for our clients:

- customer-oriented solutions to demanding product requirements
- top quality
- outstanding quality assurance
- technological and metallurgical consulting
- excellent service
- flexible and punctual delivery

This knowledge has made us Germany's leading provider of high quality bright steel and stainless steels, independent of manufacturers and dealers. We supply the automotive industry, the mechanical engineering sector and the fastening technology industry – indeed, anywhere that maximum precision and durability are key, our guiding principle holds true for today and into the future: "BESSEY. Simply better."



## Top quality

We purchase and process only the best quality raw materials from selected suppliers. The steel is drawn, peeled and ground on our production equipment using tried and tested BESSEY methods. The result is outstanding bar steel with a wide range of sections, lengths of up to 7.5 m and diameters of up to 100 mm. Guaranteed top BESSEY quality.

## Outstanding quality assurance

Our first class quality management system makes sure that only optimized surface finishes and steel with special properties (that are suitable for precision turning and metal cutting) are delivered. There are several testing methods employed: ultrasonic testing with the "phased-array" process, eddy-current testing and ferro fluxing. BESSEY's on-site laboratory performs the necessary chemical and physical tests to ensure the delivery of only the highest quality steels. Only when the produced steels have passed all of these tests are they then delivered. You can count on it.

## Excellent service

An important factor for the success of BESSEY Präzisionsstahl is our intensive focus on the customer. Close contact and continuous dialogue with our customers is important to us. We can even cater to special requests very quickly and flexibly.

## Maximum flexibility

Shifting market trends and more demanding material requirements continue to present BESSEY with new and interesting challenges. However, with unmatched technological and metallurgical expertise, we succeed time and again in maintaining our innovative lead both for ourselves and our customers. The ability to reach decisions quickly and the wide array of machinery which we possess enable us to react quickly to changing market requirements. Our comprehensive range of products and services is testimony to this:

### Grades:

- Free-cutting steels
- Steels for general engineering use
- Case-hardening, tempering and anti-friction bearing steels
- Stainless and acid-resistant steels
- On request: cold-heading steels / nitriding steels

### Formats and techniques:

- Round, hexagonal, square, flat and other sections on request
- Drawing, peeling, grinding
- Eddy current testing, ultrasonic testing
- Sawing and many more

Stock/delivery range

## Bright steel, non alloy / alloy

Free cutting steels		Steels for general engineering use		Case hardening and tempering steels, anti-friction bearing steels	
	standard		standard		standard
11SMn30	EN 10277	S235JRC	EN 10277	C15R	EN 10277
11SMnPb30	EN 10277	E295GC	EN 10277	C16R	EN 10277
11SMn37	EN 10277	E335GC	EN 10277	16MnCrS5	EN 10277
11MnPb37	EN 10277	S355J2C	EN 10277	16MnCrS5Pb	EN 10277
11SMnPb30Te	EN 10277	C10	EN 10277	20MnCrS5	EN 10277
11SMnPb30Bi	EN 10277	C15	EN 10277	17NiCrMoS6-4	EN 10277
11SMnPb30TeBi	EN 10277	C15Pb	EN 10277	15CrNi6	EN 10277
11SMnPb37TeBi	EN 10277	C35	EN 10277	18CrNi8	EN 10277
10S20	EN 10277	C35Pb	EN 10277	C35E	EN 10277
10SPb20	EN 10277	C40	EN 10277	C45E	EN 10277
35S20	EN 10277	C40Pb	EN 10277	C45R	EN 10277
35S20Pb	EN 10277	C45	EN 10277	34CrS4	EN 10277
46S20	EN 10277	C45Pb	EN 10277	41CrS4	EN 10277
46S20Pb	EN 10277	C50	EN 10277	25CrMoS4	EN 10277
44MnPb28	EN 10277	C50Pb	EN 10277	42CrMoS4	EN 10277
36SMnPb14	EN 10277	C60	EN 10277	34CrNiMo6	EN 10277
		C60Pb	EN 10277	51CrV4	EN 10277
				30CrNiMo8	EN 10083-3
				100Cr6	EN 683-17

Further steel grades available on request

Dimensions	Drawn	Peeled	Ground
Round	3 - 60 mm	20 - 100 mm	5 - 100 mm
Hexagonal	4 - 60 mm		
Square	5 - 40 mm		
Flat	auf Anfrage		
Sections	auf Anfrage		
Tolerance ranges	ISO 11 - ISO 9	ISO 11 - ISO 9	ISO 11 - ISO 6
	Special tolerances on request		
Crack detection	Eddy-current and US inspection		
Bar length	Manufactured lengths from 2.7 to 6.8 m, or fixed lengths on request		

always in stock

Stock/delivery range

## Stainless steel, high alloyed

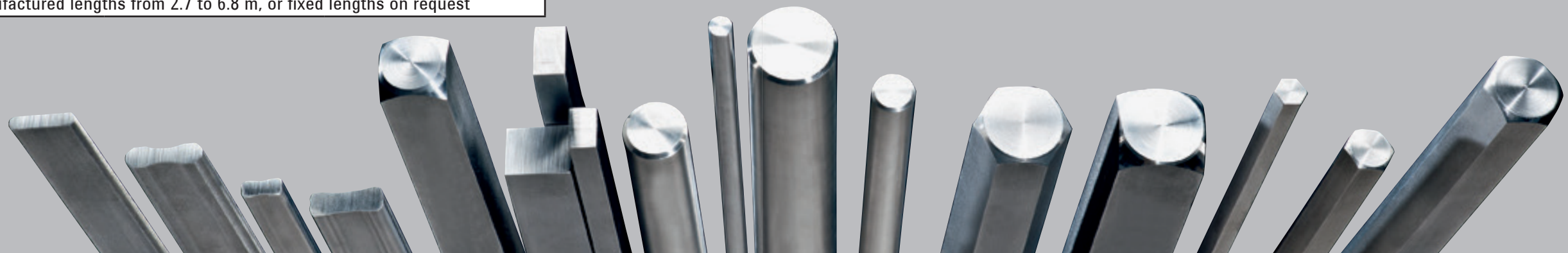
Rust and acid resistant (stainless) steels	
EN 10088-3 / AISI	
Ferritic and martensitic steels	Austenitic steels
all grades +A (annealed) +QT (quenched and tempered) on request	all grades quenched resp. +AT (solution annealed)
1.4005 / 416	1.4301* / 304
1.4016 / 430	1.4305* / 303
1.4021 / 420 A	1.4570 / 303 Cu
1.4028 / 420 F	1.4306 / 304 L
1.4034 / 420	1.4307* / 304 L
1.4057 / 431	1.4401* / 316
1.4104 / 430 F	1.4404* / 316 L
1.4105 / 430 F	1.4435 / 316 L
1.4112 / 430 B	1.4541 / 321
1.4122 / 430 C	1.4571 / 316 Ti

Further steel grades available on request

Dimensions	Drawn	Peeled	Ground
Round	3 - 32 mm	20 - 100 mm	3 - 100 mm
Hexagonal	5 - 55 mm		
Square	5 - 40 mm		
Flat	auf Anfrage		
Sections	auf Anfrage		
	ISO 11 - ISO 9	ISO 11 - ISO 9	ISO 11 - ISO 6
Tolerance ranges	Special tolerances on request		
	Special surface roughness requirements by arrangement		
Crack detection	Eddy-current and US inspection		
Bar length	Manufactured lengths from 2.7 to 6.2 m, or fixed lengths on request		

always in stock

\* also available in better machinable quality



# Test methods during production

## Ultrasonic inspection

Ultrasonic inspection at BESSEY is performed as an automatic continuous process, using phased-array technology. This describes grid-pattern examination for sq./oct. and for hex. sections as well as a 100 % volumetric inspection of the core area, either with or without inspection of the edge zone. Such testing is suited to all the types of steel we offer, from unalloyed structural steel to highly-alloyed stainless and acid-resistant grades.

Testable area	Test type	Max. registration limit*
Ø 10 - 44 mm	100 % volumetric inspection uninspected edge zone of 2 - 3 mm	FBH 0.7 mm
Ø 10 - 36 mm	100 % full volumetric inspection with inspected edge zone	FBH 0.7 mm
hexagonal 10 - 30 mm	Grid-pattern examination uninspected edge zone of 2 - 3 mm	FBH 1.0 mm
octagonal 10 - 30 mm	Grid-pattern examination uninspected edge zone of 2 - 3 mm	FBH 1.5 mm
square 10 - 22 mm	Grid-pattern examination uninspected edge zone of 2 - 3 mm	FBH 2.0 mm

- FBH-values are dependent upon the steelgrade  
 - Uninspected bar ends (50 mm on both sides)  
 - Inspection for min. defect length of 10 mm possible

**Other dimensions of FBH-values are available on request**

\* FBH = produced by means of a Flat Bottom Hole

## Eddy-current testing

	Surface quality grades (d = nominal diameter of the rod or distance between parallel surfaces on square and hexagonal bars)			
	1	2	3	4
Permitted defect depth	Max. 0.3 mm for $d \leq 15$ mm	Max. 0.3 mm for $d \leq 15$ mm	Max. 0.2 mm for $d \leq 20$ mm	Manufactured to be free of cracks (only possible with a subsequent machining)
	Max. $0.02 \times d$ for $15 < d \leq 100$ mm	Max. $0.02 \times d$ for $15 < d \leq 75$ mm	Max. $0.01 \times d$ for $20 < d \leq 75$ mm	
		Max. 1.5 mm for $d > 75$ mm	Max. 0.75 mm for $d > 75$ mm	
Max. percentage of delivery weight above the established defect limit	4 %	1 %	1 %	0.20 %

Test methods: Circograph (rotating scanning probes) and Defektomat (encircling through-type coils)

**Dimension: round 6 - 50 mm / hexagonal 6 - 36 mm / square on request**

# Test methods after production

## Quality assurance

At BESSEY Präzisionsstahl we put great emphasis on quality. For many decades already, the outstanding quality of our products has been the standard in the market. Our company complies with all the key international and industrial certification standards:

- DIN EN ISO 9001 : 2015

As the environment is very close to our heart, we additionally use an environmental management system for the continuing improvement of our environmental performance:

- DIN EN ISO 14001 : 2015
- DIN EN ISO 50001 : 2011

Expert supervisory and testing personnel ensure that customer requirements are adhered to and, that product certifications are maintained in accordance with:

- AD 2000 datasheet W0/TRD100
- Pressure Equipment Directive 97/23/EG Annex I, Para. 4.3 of the TÜV Süd.

## Test methods

### Mechanical testing:

With a 400 kN tear machine, strength and elongation values are determined in our company for all our products and attested upon request.

### Chemical testing:

Samples are taken from each BESSEY steel production lot. These are compared using an emission spectrometer on their chemical analysis (up to 20 material identifying elements) with the quality used as well as the desired quality, and documented. Thus, an accurate batch assignment is ensured.

### Hardness testing:

The required hardness values are determined with suitable hardness testers in HV or HB and attested upon request.

### Remagraph:

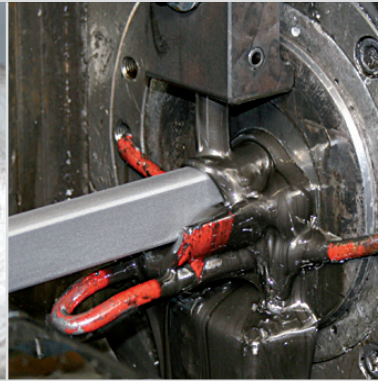
All requirements of the magnetic properties of a material, such as its coercivity field strength, permeability, etc. can be monitored with our Remagraph and if necessary, could also be documented.

### Metallographic examination:

Experienced personnel conducts research studies of structure and degree of purity using a microscope with magnification of up to 1000-fold.



# The BESSEY Group

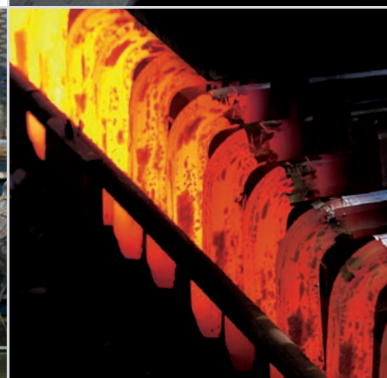


## BESSEY focuses on quality.

BESSEY Group arose from the long-established company BESSEY & Sohn, and was founded in 1889 in Stuttgart by Max Bessey as a bright steel drawing plant.

Production of hand tools began in 1936 with the original BESSEY malleable cast iron screw clamp. Other innovations in the area of clamps followed, such as the original BESSEY all-steel screw clamp, patented in 1952. In 1979 BESSEY took over Diener Werkzeugfabrik GmbH, a company equally rich in tradition, thus establishing its cutting technology unit with the renowned Erdi snips.

In 2005 BESSEY & Sohn was spun into two independent companies – BESSEY Tool GmbH & Co. KG, handling the clamping and cutting technology areas, and BESSEY Präzisionsstahl GmbH – both headquartered in Bietigheim-Bissingen, in south west Germany. In 2019 there was founded BESSEY Präzisionsstahl Vertriebsgesellschaft mbH.



[www.bessey.de](http://www.bessey.de)

BESSEY Präzisionsstahl Vertriebsgesellschaft mbH  
Mühlwiesenstraße 40  
74321 Bietigheim-Bissingen, Germany  
Fon: +49 7142 401-250 ■ Fax: +49 7142 401-453  
E-Mail: [info@bessey.de](mailto:info@bessey.de)

The video "Competence in Steel" from BESSEY precision steel can be found on:



YouTube [www.youtube.com/user/besseyprecisionsteel](https://www.youtube.com/user/besseyprecisionsteel)

The information and statements contained in this brochure are, even if this is to provide technical information, only to be understood as an example, and do not constitute a guarantee procurement.