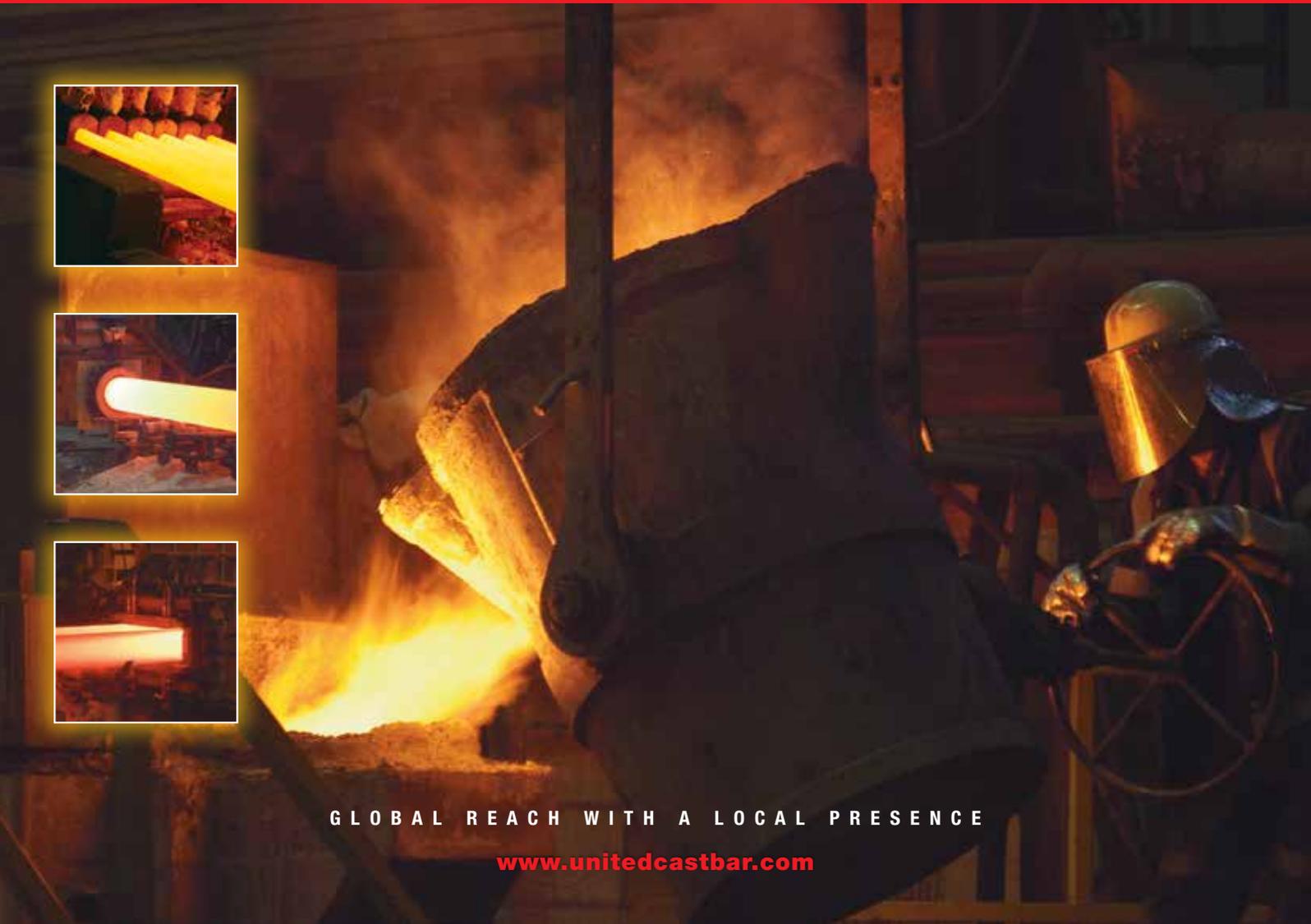




**United  
Cast Bar  
Limited**



GLOBAL REACH WITH A LOCAL PRESENCE

[www.unitedcastbar.com](http://www.unitedcastbar.com)

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## UNITED CAST BAR GROUP INTRODUCTION

UNITED CAST BAR GROUP, part of the Proclad Group, is one of the world's leading and most successful manufacturers of continuously cast iron bar. Incorporating more than 120 years of cumulative experience and expertise in the engineering of continuously cast iron, United Cast Bar has the largest portfolio of products available in the industry today.

### UNITED CAST BAR GROUP HISTORY

- **1998** three of Europe's most renowned continuous cast iron bar foundries merged, to form the United Cast Bar Group.
  - Eurocast Bar Limited (UK)
  - Starkey's Technicast Limited (UK)
  - Cast Profil SA (Spain)
- **2001** Creation of the UNIBAR brand, synonymous with high quality standards and broad choice of products.
- **1998 – 2006** Further strategic acquisitions of manufacturing and distribution businesses, creating a Group with the ability to supply over 80,000 tons, with 4 active foundries and 13 distribution locations, more than 400 employees.
- **2007 – 2009** UCB Group restructured its operations concentrating manufacturing to two foundry locations in UK and Spain, and 8 distribution locations across Europe.
- **2009 – 2010** Investment in United Cast Bar (UK) Ltd melting facilities to increase Group output to 75,000 tonnes, with the focus being on low-cost and low BEP production strategies.
- Further investment in distribution facilities, with the opening of UCB Korea, UCB Gulf and UCB Turkey, and the incorporation of the local distributors for UK and Spain in the foundries.
- **2013** Investment of new melting facilities in Cast Profil, Spain to increase output and reduce operating costs. UK negotiated an additional 10,000 sq. metres of land to improve efficiency of stock and stock control along with the installation of 4 additional efficient heat treatment furnaces and improved machining facilities. Group capacity 85,000 tonnes plus.
- **2014** United Cast Bar are constantly looking to the future and are committed to the ongoing development of excellence in manufacturing, and to further enhance their distribution and supply facilities throughout the world.



## PRODUCTION PROCESS

The continuous casting process was originally developed in Europe after World War II as a method of producing cast iron. It eliminated the high cost of pattern equipment and quality problems, usually associated with other conventional moulding and casting techniques for ferrous metals.

### THE UNIBAR CONTINUOUS CASTING PROCESS

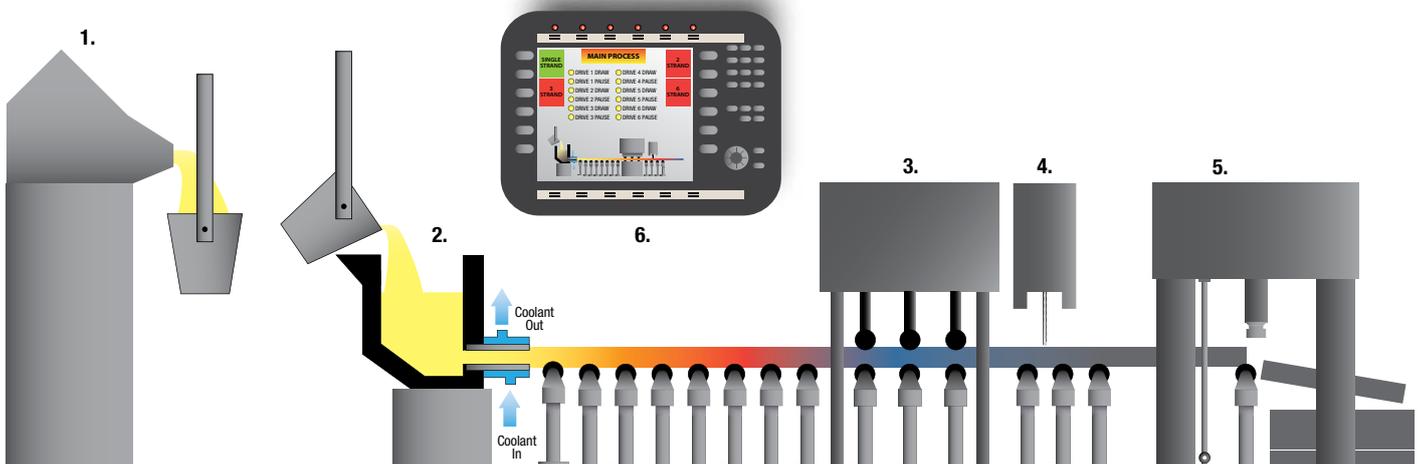
The Unibar Continuous Casting machine consists of 6 major units:

1. Primary melting unit.
2. Refractory lined holding unit (receiver) with a water cooled graphite die attached to the front section
3. Pulling unit
4. Cut off saw
5. Notching and hydraulic breaking device.
6. Control panel to regulate flow of coolant (water), speed of pull, length of pull (stroke) and to coordinate the system

Liquid metal is stored in the receiver and enters the die through a closed system.

The bar is pulled horizontally through a graphite die, the metal flowing uniformly, and subjected to a much higher Ferro static pressure, achieving:

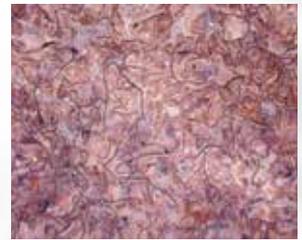
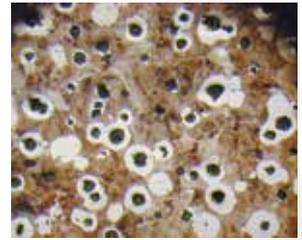
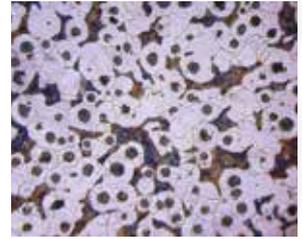
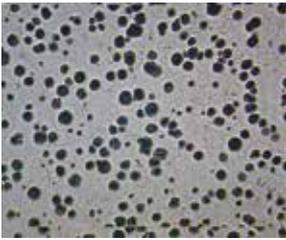
- Superior product soundness
- Excellent surface finish
- Homogenous structure across the largest of sections
- Excellent structural cohesion, throughout the section



## UNIBAR GRADES

UNIBAR FLAKE	EUROPEAN STANDARD	COMPARATIVE SPEC
UNIBAR 200	EN 16482	EN-GJL-200C
UNIBAR 250	EN 16482	EN-GJL-250C
UNIBAR 300	EN 16482	EN-GJL-300C
UNIBAR 350		
UNIBAR GF (fully annealed)		Contains D type graphite (Fully Ferritic)
UNIBAR GFP		Contains D type graphite (Ferritic/Pearlitic)
UNIBAR GFMV (fully annealed)		Contains D type graphite (Predominantly Ferritic)
NR-F (Ni Resist)		EN-GJLA-XNiCuCr15-6-2
SG/NODULAR	EUROPEAN STANDARD	COMPARATIVE SPEC
UNIBAR 400-18LT	EN 16482	EN-GJS-400-18C-LT
UNIBAR 400-18	EN 16482	EN-GJS-400-18C
UNIBAR 400-15	EN 16482	EN-GJS 400-15C
UNIBAR 500+		UNIBAR specification will conform to EN-GJS-500-7C
UNIBAR 500-7	EN 16482	EN-GJS-500-7C
UNIBAR 600-3	EN 16482	EN-GJS-600-3C
UNIBAR 700-2	EN 16482	EN-GJS-700-2C
UNIBAR 800-2		
NR-S (Ni Resist)		EN-GJSA-XNiCr20-2
UNIBAR ADI		ISO/FDIS 17804, BS EN 1564: 2011 (EN-GJS 800-10 TO EN GJS 1400-1, ASTM A897/A 897M – 06

Other grades available to meet customer requirements,  
subject to discussion and customer order.



## UNIBAR PROFILE & SIZE RANGE

### ROUND

25mm – 700mm

### SQUARE

25mm x 25mm – 550mm x 550mm

### RECTANGLE

Up to 780mm x 550mm

### INGOTS

Size range available on request.

### INGOT BLOCKS

Size range available on request.

### STANDARD LENGTH

3080mm

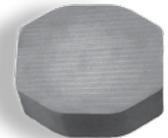
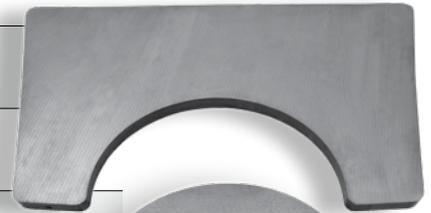
### SUPPLY CONDITION

As-cast turned peeled milled cut.

### NON STANDARD

Sizes and profiles to customer design, available on request and to special order.

Size and profiles see United Cast Bar Unibar standard sizes list or contact you're nearest UCB distribution centre. Standard cut length 3080mm (other lengths available on request).



## UNIBAR PROPERTIES

### THE FAMILY OF IRONS PROPERTIES

Cast Iron is a material with a history stretching over hundreds of years. Within the continuous casting process, cast iron grades were developed as engineering materials to meet the demands of ever more challenging environments, to compete

with and improve on the properties of some existing steel grades. These have been developed from production of the original low alloy grey/flake irons material through to today's family of irons including the alloyed Nodular/SG irons.

### THE CAST IRON FAMILY PRODUCT DESCRIPTION

#### Grey Flake irons

**Unibar 200** is a fully ferritic iron, the softest grade available in the Unibar portfolio and has limited strength. It offers excellent machinability, heat and electrical conductivity and noise and vibration damping.

**Unibar 250** offers a good combination of strength and wear resistance, while still possessing good machinability and produces excellent surface finishes. Noise and vibration damping are excellent in this grade.

**Unibar 300** is alloyed to achieve the properties, to give excellent wear resistance, strength & heat-treatment response compared to Unibar-200 and Unibar-250, while still possessing reasonable machinability and an excellent surface finish.

**Unibar 350** a fully pearlitic iron, offers reasonable machinability compared to some steels with a similar hardness, but gives significantly improved wear resistance, damping is still good in this grade.

#### Nodular/SG Irons

**Unibar 400-15** is the softest grade, offering strengths, excellent machinability combined with good tensile, impact and fatigue strengths.

**Unibar 500-7** increased wear resistance, strength & heat-treatment response while still possessing good machinability and excellent surface finish.

**Unibar 600-3** offers reasonable machinability and excellent surface finish, improved wear resistance, strength & heat treatment response.

**Unibar 700-2** offers high strength but with reduced ductility, machinability is reasonable with an excellent surface finish, offers extremely good wear resistance.

Other grades available see Unibar data sheets.



## MECHANICAL PROPERTIES

### GREY/FLAKE CAST IRON MECHANICAL PROPERTIES

MATERIAL GRADE		MATERIAL SECTION	TENSILE	HARDNESS (BHN)	MATRIX NORM
UNIBAR	EUROPEAN STANDARD				
200	EN 16482 EN GJL-200C Conforms to EN 16482 EN GJL-150C	20 < D ≤ 50	155	120 - 200	Predominantly Ferritic
		50 < D ≤ 100	140		
		100 < D ≤ 200	125		
		200 < D ≤ 400	115		
		400 < D ≤ 700	115		
250	EN 16482 EN-GJL-250C	20 < D ≤ 50	195	160 - 230	Pearlitic - Ferritic
		50 < D ≤ 100	180		
		100 < D ≤ 200	165		
		200 < D ≤ 400	155		
		400 < D ≤ 700	155		
300	EN 16482 EN-GJL-300C	20 < D ≤ 50	220	190 - 260	Predominantly Pearlitic
		50 < D ≤ 100	205		
		100 < D ≤ 200	195		
		200 < D ≤ 400	185		
		400 < D ≤ 700	185		
350	EN 1561 EN-GJL-350	20 < D ≤ 50	315	230 - 300	Pearlitic
		50 < D ≤ 100	280		
		100 < D ≤ 200	250		
		200 < D ≤ 400	225		
		400 < D ≤ 700	225		

### SG/NODULAR MECHANICAL PROPERTIES

MATERIAL GRADE		MATERIAL SECTION	TENSILE (UTS) N/mm <sup>2</sup>	0.2% PROOF STRESS N/mm <sup>2</sup>	ELONGATION %	HARDNESS (BHN)	UNIBAR MATRIX
UNIBAR	EUROPEAN STANDARD						
UNIBAR 400 - 18 LT	EN 16482 EN-GJS-400-18C-LT	20 < D/B ≤ 60	400	240	18	120 - 180	Ferritic
		60 < D/B ≤ 120	380	230	15		
		120 < D/B ≤ 400	360	220	12		
		400 < D/B ≤ 700	360	220	12		
UNIBAR 400 - 18	EN 16482 EN-GJS 400-18C	20 < D/B ≤ 60	400	250	18	120 - 180	Ferritic
		60 < D/B ≤ 120	390	250	15		
		120 < D/B ≤ 400	370	240	12		
		400 < D/B ≤ 700	370	240	12		
UNIBAR 400 - 15 <sup>a</sup>	EN 16482 EN-GJS-400-15C	20 < D/B ≤ 60	400	250	15	120 - 180	Ferritic
		60 < D/B ≤ 120	390	250	14		
		120 < D/B ≤ 400	370	240	11		
		400 < D/B ≤ 700	370	240	11		
UNIBAR 500 - 7 <sup>a</sup>	EN 16482 EN-GJS-500-7C	20 < D/B ≤ 60	500	320	7	170 - 230	Ferritic - Pearlitic
		60 < D/B ≤ 120	450	300	7		
		120 < D/B ≤ 400	420	290	5		
		400 < D/B ≤ 700	420	290	5		
UNIBAR 500 +	UNIBAR Specification Will conform to EN-GJS-500-7C	20 < D/B ≤ 60	500	320	15	170 - 210	Ferritic
		60 < D/B ≤ 120	450	300	14		
		120 < D/B ≤ 400	420	290	11		
		400 < D/B ≤ 700	420	290	11		
UNIBAR 500 - 14 <sup>b</sup>	EN 16482 EN-GJS-500-14C	20 < D/B ≤ 60	500	400	14	180 - 210	Ferritic
		60 < D/B ≤ 120	480	390	12		
		120 < D/B ≤ 400	470	360	10		
		400 < D/B ≤ 700	470	360	10		
UNIBAR 600 - 3 <sup>a</sup>	EN 16482 EN-GJS-600-3C	20 < D/B ≤ 60	600	370	3	200 - 260	Pearlitic - Ferritic
		60 < D/B ≤ 120	600	360	2		
		120 < D/B ≤ 400	550	340	1		
		400 < D/B ≤ 700	550	340	1		
UNIBAR 700 - 2 <sup>a</sup>	EN 16482 EN-GJS-700-2C	20 < D/B ≤ 60	700	420	2	230 - 300	Predominantly Pearlitic
		60 < D/B ≤ 120	700	400	2		
		120 < D/B ≤ 400	650	380	1		
		400 < D/B ≤ 700	650	380	1		

<sup>a</sup> Dependant on the process, these grades may contain minor quantities of free carbides. <sup>b</sup> Solid-solution strengthened ferritic graphite cast iron.

## UNIBAR QUALITY & TOLERANCES

United Cast Bar Group specialise only in the production of cast iron. We have developed a synergy for technical and manufacturing procedures, control parameters, quality systems, commercial rationalisation and supply logistics. All this has been consolidated into United Cast Bars “Best Practice” guidelines, and resulting in our trademark production brand UNIBAR.

UNIBAR is a completely homogenous product that can boast the best manufacturing processes, quality controls and technical developments in the industry today. Our ongoing aim is to establish further high standards of quality, consistency and customer service, while also providing the best technical and commercial support.

It is UCB Group Company Policy that “Quality” of service and product is the prime objective of all UCB Employees. This is achieved by ‘top down’ commitment within the Organisation to achieve the performance standards required to satisfy our customers’ needs. We commit ourselves to work closely with our suppliers, recognising their necessary input to the quality of our products and services.

To meet this we are certified to the International Quality Standard BS EN ISO 9001:2008 and TÜV Rheinland ISO 9001:2008. These standards cover incoming materials, process controls, and verification of work carried out at all stages.



Certificate No. FM 20035  
BSEN-ISO-9001:2008



## UNIBAR TOLERANCES

### MACHINING ALLOWANCES

SECTION (D DIAMETER, B WIDTH)	MINIMUM MACHINING ALLOWANCE mm (per side)			
	GREY - FLAKE IRON PROFILE		SG - NODULAR IRON PROFILE	
	ROUND	SQUARE/ RECTANGLE	ROUND	SQUARE/ RECTANGLE
20 < (D OR B) ≤ 50	2	2.5	3	3.5
50 < (D OR B) ≤ 100	3	3.5	4	4.5
100 < (D OR B) ≤ 200	4	4.5	5	5.5
200 < (D OR B) ≤ 300	6	6.5	7	7.5
300 < (D OR B) ≤ 400	7	7.5	8	8.5
400 < (D OR B) ≤ 500	9	9.5	10	10.5
500 < (D OR B) ≤ 700	11	11.5	12	12.5

Rectangular bars – the width is the longer dimension of the cross section.

The machining allowance is the surface material on the cast bar that requires removal prior to finish machining.

Machining allowances can be adjusted to meet customer requirement, subject to discussion, prior agreement and special order, contact our nearest distributor or email [info@unitedcastbar.com](mailto:info@unitedcastbar.com)

### TOLERANCES ROUND SQUARES AND RECTANGLES

SECTION (D DIAMETER, B WIDTH)	OVALITY ALLOWANCES ROUND BARS		MAXIMUM SWELL ALLOWANCE	
	GREY FLAKE	SG/NODULAR	GREY FLAKE	SG/NODULAR
20 < (D OR B) ≤ 50	-	-	5	5
50 < (D OR B) ≤ 100	1	2	7	7
100 < (D OR B) ≤ 200	2	3	10	10
200 < (D OR B) ≤ 300	4	4	12	12
300 < (D OR B) ≤ 400	5	5	15	15
>400	By agreement	By agreement	By agreement	By agreement

Ovality tolerance is to compensate for out of roundness.

Swell tolerance is to compensate for any change of section on square and rectangles.

### STRAIGHTNESS TOLERANCE

LENGTH mm	MAXIMUM DEVIATION FROM STRAIGHT LINE mm	
	AS CAST	ANNNEALED
1,000	2	3
2,000	4	6
3,000	6	9

The straightness of as cast and annealed flake and spheroidal continuously cast iron bars diameter ≥ 50mm.

Tolerance on smaller diametres shall be agreed by the customer and the manufacturer at the time of order.



## ANCILLARY PROCESSES

UNIBAR offers various services to deliver effectiveness and eliminate waste in your pre machined product to your yard. Pre production, allowing you to focus on the key machined material will save valuable design elements of your products. production time, and improve the cost

We are able to offer in house machining facilities and operations both in our foundries and in our strategically placed and well equipped local distributor centres:

### CUTTING

Cutting to specified length in quantities as little as 1 piece to large volumes, prepared to meet the requirement of your automatic machining systems.

### TURNING

Turning of round bars to required size to meet your requirements, or if standard stock does not match your requirement or surface requirements exist.

### MILLING

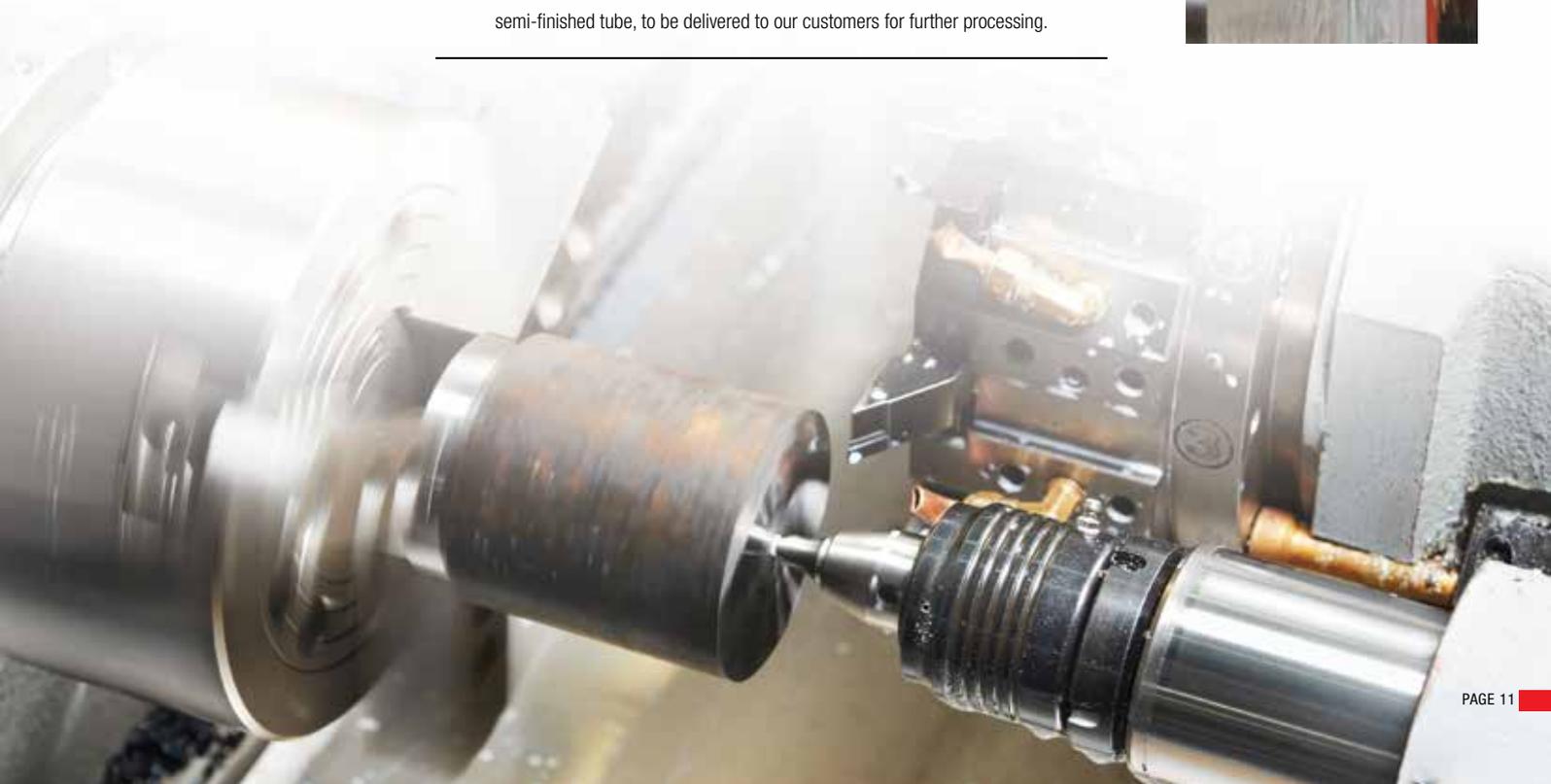
Single and duplex machines offer milling of square and rectangular bars, to specified dimension and agreed tolerances. Combined with Cutting, we offer 6 side proof machined blocks for further processing.

### PEELING

Peeling off the oxidised surface layer of cast bar, giving a consistent product for use in bar feed machines and CNC automatic turning centers.

### BORING

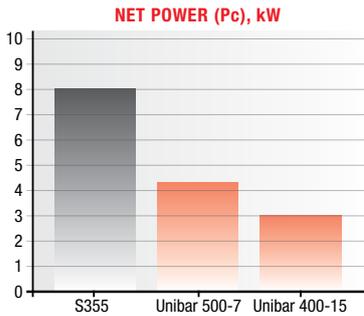
Longitudinal boring as deep as 1000mm using single head boring and trepanning machines, the latter for large internal cavities. This as cast and turned surface is ideal for semi-finished tube, to be delivered to our customers for further processing.



## UNIBAR ADVANTAGES

United Cast Bar is a world leader in the production of continuously cast iron, Unibar, with years of combined experience and expertise in the engineering and manufacture of continuously cast iron.

Unibar offers significant advantages over other materials and production methods, in cost savings, product, quality and inventory further details as follows:



### ECONOMY (cost savings)

#### Machining productivity and production economy, what is important?

- **Metal removal rate,  $\text{cm}^3/\text{min}$** 
  - Unibar improved feeds and speeds 35-50%

- **Tool life**
  - Improved tool (insert) life up to 60%

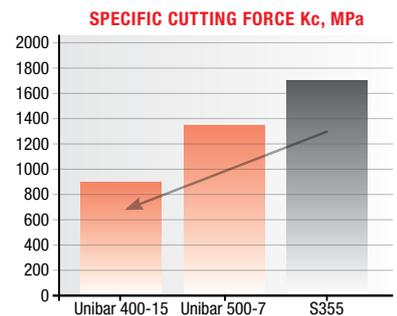
- **Power used, kWh**
  - Reduced torque, power requirements reduced up to 50%
  - Can be cut/machined dry eliminating expensive lubricants and coolants.
  - Excellent surface finish after the machining processes.

#### (Based on customer/supplier results and information)

- 10% lighter than comparative steel products.
- Availability of Unibar in a wide range of sizes and grades from stock.
- Avoidance of abortive machining costs.
- Eliminates need for costly patterns and dies, no restriction on design or volume changes.

### PRODUCT/QUALITY ADVANTAGES:

- Homogenous close grained structure.
- Strength and ductility in SG/Nodular iron comparable to steel.
- Freedom from usual defects associated with other production methods and materials.
- Excellent thermal conductivity.
- Low residual stress, a product of the Unibar casting process.
- Improved dimensional stability is in excellent under pressure.
- Improved wear resistance due to a self-lubricating network of graphite.
- Excellent bearing properties due to a self-lubricating network of graphite.



### SOUND AND VIBRATION CHARACTERISTICS



## UNIBAR INDUSTRIES & APPLICATIONS



Unibar is a versatile material engineered to meet the stringent demands of modern design, and to compete with other materials such as steel, and production methods i.e. forging sand cast and cold rolled. Unibar was developed to be suitable for all applications, whose geometry is close to the standard sections in the Unibar portfolio. However Unibar is also be produced in a multitude of forms to meet customer

profiles and specifications. Unibar offers a completely flexible solution for existing and new customer's needs. This along with our production system and a strategic stock in both our foundries, we are able to supply a wide range of requirements from small to large volume applications.



## UNIBAR INDUSTRIES & APPLICATIONS

The following are examples of applications and markets and some applications that are currently use UNIBAR products to their advantage:



### HYDRAULICS AND PNEUMATICS

Manifold blocks, Cartridge valves, Hydraulic cylinders, End caps, Pistons Motors.

### FLUID POWER: PUMPS & COMPRESSORS

Screw compressor bodies, Vane compressor bodies, Roots compressors, vacuum pumps, gear pumps, piston pumps.

### MACHINERY & MACHINE TOOLS

Slides, tool heads, pallets and fixtures.

### GLASS MANUFACTURING

Moulds, neck rings, plungers.

### OIL & GAS EQUIPMENT

Pistons and liners.

### AUTOMOTIVE INDUSTRY

Braking and suspension components.

### STEEL PLANT & EQUIPMENT:

Guides and rollers.

### RENEWABLE ENERGY WIND TURBINE, SOLAR AND WAVE POWER:

Hydraulic manifolds, supports blocks, and guides.

### SUB CONTRACT INDUSTRIES

All components.



## UNIBAR DISTRIBUTORS LOCATIONS & CONTACTS

### UNIBAR DISTRIBUTION AND SUPPLY

United Cast Bar have developed a network of distribution/service centres strategically placed to meet our philosophy of a  
GLOBAL REACH WITH LOCAL PRESENCE

These centres of excellence are continuously evolving to satisfy the ever increasing demands and changes made by the market place and customers.

PRODUCTION CENTRES	TELEPHONE NUMBER	LOCATION	FAX NUMBER	EMAIL ADDRESS
United Cast Bar (UK) Limited (HO)	0044 1246 201194	Chesterfield – UK	0044 1246 540434	info@unitedcastbar.com
UCB Cast Profil S.A.	0034 976 185767	Zaragoza – Spain	0034 976 185775	sales.es@unitedcastbar.com
SERVICE CENTRES	TELEPHONE NUMBER	LOCATION	FAX NUMBER	EMAIL ADDRESS
UCB Germany GmbH	0049 6241 97240	Lampertheim Hofheim – Germany	0049 6241 83197	info.de@unitedcastbar.com
UCB Metalli SRL Unipersonale	0039 0523 781449	Rottofreno (Piacenza) – Italy	0039 0523 781494	piacenza2@unitedcastbar.com
UCB Austria GmbH	0043 3136 53029	Dobl – Austria	0043 3136 53029 - 28	sales.at@unitedcastbar.com
UCB Sweden AB	0046 155 33150	Oxelösund – Sweden	0046 155 33130	sales.se@unitedcastbar.com
UCB Cast Profil France SA	0033 472 247979	Communay – France	0033 472 247335	sales.fr@unitedcastbar.com
UCB Technometal sro	00420 313 033 300	Lodenice u Berouna – Czech Republic	00420 313 033 306	sales.cz@unitedcastbar.com
UCB Korea	0082 55 345 5701	Kimhae-si, Kyungnam-do – South Korea	0082 55 345 5815	sales.kr@unitedcastbar.com
UCB Turkey	0090 212 603 11 25	Istanbul – Turkey	0090 212 603 11 24	sales.tr@unitedcastbar.com



**United  
Cast Bar  
Limited**

United Cast Bar (UK) Limited (HO)	Chesterfield	UK
UCB Cast Profil S.A.	Zaragoza	Spain
UCB Germany GmbH	Lampertheim - Hofheim	Germany
UCB Metalli SPA Piacenza	Rottofreno (Piacenza)	Italy
UCB Austria GmbH	Dobl	Austria
UCB Sweden AB	Oxelösund	Sweden
UCB Cast Profil France SA	Communay	France
UCB Technometal sro	Lodenice u Berouna	Czech Republic
UCB Korea	Kimhae-si, Kyungnam-do	South Korea
UCB Turkey	Istanbul	Turkey

● Production Centres ● UCB Distributers ● Strategic Partners

GLOBAL REACH WITH A LOCAL PRESENCE

[www.unitedcastbar.com](http://www.unitedcastbar.com)