Helping manufacturers across the globe achieve sustainable leaner manufacturing processes

Copper Alloys

Aerospace Approved

(R)

Commercially Pure High Conductivity Coppers Brasses Phosphor Bronzes Nickel Silvers Cupronickels Beryllium Copper Pfinodal® Alloys

Fast Turnaround Processing

> WIDE STOCK RANGE

> > Low Width Thickness Ratio 3:1 unique to the industry (normal minimum is 8:1)

Over 75 years Experience

Knight Group

Visit our websites: Main: www.knight-group.co.uk Offcuts: www.ksmdirect.co.uk

www.pmdirect.be

Head Office Linkside, Summit Road

Linkside, Summit Road Cranborne Industrial Estate Potters Bar, Hertfordshire EN6 3JL United Kingdom Main Office : +44(0)1707 650251 Fax: +44(0)1707 651238 info@knight-group.co.uk

Knight Strip Metals Ltd

Sales, Processing & Warehouse Saltley Business Park Cumbria Way, Saltley Birmingham B8 1BH United Kingdom Telephone: +44 (0)121 322 8400

Fax: +44 (0)121 322 8401 Sales 08456 447 977 sales@knight-group.co.uk

Precision Metals EU

Industriezone Mechelen-Noord (D) Omega Business Park Wayenborgstraat 25 2800 Mechelen Belgium Telephone: +32 (0) 15 44 89 89 Fax: +32 (0) 15 44 89 90 export.sales@knight-group.co.uk 01 Company

Information

O2 Quality & Approvals









About Us

The Knight Group is a family owned business that has built a reputation for providing the highest quality products and solutions to global manufacturers since 1940. We are now one of the largest Precision Strip Stockholding and Processing facilities in Europe.

Comprised of Knight Strip Metals Ltd (KSM), with production facilities in the UK and Precision Metals EU (PM) in Belgium, the Knight Group is a multi-metal stockist and processor, providing coil, strip and wire across 6 continents.

Our reputation for quality, innovation and reliability, has led to us being the favoured supplier across a wide range of sectors and our continued growth. Whilst we have an impressive existing operation, our commitment to investing in further processing capabilities, expanding our product ranges and developing the expertise of our team, ensures the continued expansion of the Knight Group.

We offer a comprehensive range of precision strip and wire, stocking one of the biggest ranges in Europe, including: Stainless Steel, Nickel Alloys, Titanium Alloys, Aluminium Alloys, Copper Alloys, Mild Steel and Clad and Plated Metals. We have established exclusive agreements with a number of mills to offer specialist and bespoke materials.

Our Key Benefits

Our People

At the heart of any business is people. At the Knight Group we have developed a dedicated team of people with a valued wealth of knowledge and experience within the metals industry. No matter what your metal needs are, our team will provide you with individual customer support and the best customer experience in the industry.

Products

We offer a comprehensive range of precision strip and wire, stocking one of the biggest ranges in Europe. We maintain a stock 2500 individual items of the most popular materials, adapting to suit our customers production needs. With established exclusive agreements with a number of mills to offer specialist and bespoke material, we can source most materials including those outside of our standard range.

Quality

Being able to supply high quality materials, reliably and ethically sourced is key to our business and one of the reasons we are a favoured supplier of manufacturers across the globe. Our materials are fully traceable and Certificates of Conformity can be supplied on request or downloaded from our website.

Extensive Processing Capabilities

We provide bespoke processing services to help reduce our customers costs and manufacturing times. We can supply you with material cut and finished to your specifications and production ready delivered.

Competitive Pricing

We know two of the key factors in purchasing decisions are quality and cost. We have established partnerships with key mills across the globe, and as one of the largest suppliers in Europe, we can negotiate the best price for material, meaning you don't have to compromise quality for cost.

AVAILABLE AS FOIL, COIL, SHEET AND WIRE **STAINLESS STEEL ALLOYS TITANIUM ALLOYS NICKEL ALLOYS ALUMINIUM ALLOYS CLAD ALUMINIUM COPPER ALLOYS MILD STEEL** CLAD AND PLATED METALS

Global Sourcing and Distribution

Thanks to our global exports network of freight providers, you can choose from air, land or sea freight so you can have your material where you want, when you want. We deliver to over 61 countries around the globe and each year that number grows. We ha preferred carriers who can offer short lead times on most products and custom packing solutions to ensure your materials arri and on time, wherever in the world you need them.

"Expertise and Experience Combined"

Our ongoing successful partnerships can be attributed to the specialist knowledge and expertise and the ability to understand customers' materials problems and apply our resources to find the appropriate solution. We continually invest in our sales and purchasing teams, building upon their experience with ongoing training and product knowledge support.

Our focus on developing partnerships with both our customer and supplier base have led to reducing costs and maximising efficiency in both directions, without compromising on quality or lead times. Through working closely together, and using innovation, experience and expertise, allows us to tailor make solutions for your individual needs.

With a diverse global customer base, the Knight Group supply materials to manufacturers across multiple sectors including: Aerospace, Automotive, Construction, Cryogenic, Defence, Energy, Oil and Gas, Telecommunications, Photo and Laser Etching, Medical and Pharmaceutical, Chemical and Precision Engineering.

Our Key Sectors Automotive Aerospace





Petrochemical, Oil and Gas





Chemical and Photo Etch



Precision Stamping & Springs



Renewable Energy



Medical

Our History

ESTABLISHED

E.A. Knight &

Sons, started

as family metals

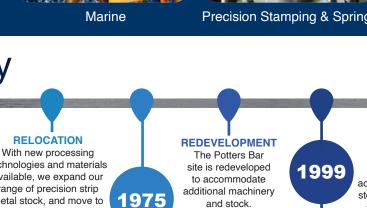
business in North

London, supplying

manufactures

across the UK.

1940



EXPANSION Our Processing and

warehouse facility is relocated to Saltley, accommodating additional stock lines and machinery and our growing team.

Today

EXPANSION Today we supply over 61 countries. As one of the largest independent Precision Strip and Wire Stock holding and Processing suppliers in Europe, we continue to invest in the skills and expertise of our team, extending out stock range and our facilities.

technologies and materials 1958 available, we expand our range of precision strip metal stock, and move to a purpose built combined warehouse processing **EXPANSION** and offices facility in

Potters Bar.

1971

Adapting to the growing metal needs of an expanding customer base, the business is relocated to a larger, combined office, warehouse and processing facility in Potters Bar,

Hertfordshire

EXPANSION Precision Metals EU was opened to provide further support and stock holding facilities to our growing European customer base.

and stock.

1985

ACQUISITION Knight Group acquired

slitting machine manufacturer and metals processing company. Charles Harbage. The increase in capability makes the Knight Group one of 2000 the largest independent precision strip processors in Europe



Approvals



Customers purchasing decisions are not driven solely by price, but factor in quality, reliability and increasingly, ethical and environmental concerns. With growing pressures for transparency of practices, the Knight Group are proud to hold multiple approvals and accreditations, granted by national and international authorities, sector manufacturers and agencies. We continue to expand our range of approvals and accreditations in line with the needs of customers.

Our memberships of a number of key institutions, including the British Stainless Steel Association (BSSA), offer further assurance of our commitment to promoting manufacturing, whilst working to the highest standards of quality and integrity. All of our approvals are available to view and download from our website www.knight-group.co.uk

We hold a number of Approvals Including:

British Standard Approvals

- BS EN ISO 9001, 9120 No. FM 02114
- BS EN ISO 9001 No. FM 611455

Customer Approvals

- Rolls-Royce: Approval No. 01679
- Rolls-Royce Deutchland No. 118990 / 02
- Airbus UK: Approval No.20099 and 228990
- BAE Systems Regional Aircraft: Approval No. RALOA/00254/2
- BAE Systems: Approval No. BAE/AG/20384/MAA Airbus UK: Approval No.20099 and 228990
- Westland Helicopters: Approval No. SQA / V00246
- Safran DK6000
- Hawker Beachcraft Approval HBIFSAS/PART2/0595
- UTC Aerospace Systems/ HS Marston Aerospace Limited Approval Certificate AS 132
- Spirit Aero Approval Certificate No: SPIRIT1298
- Meggitt Certificate: MQAG/2012/MCSD/MCSC/D/115

Specialist Accreditations

- EcoVadis Silver Award
- Forestry Commission: Wood Packaging Certificate Number FC1051

For the most up to date list of our approvals and accreditations, please see our website for details.

Quality





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Our key objective is to provide our customers complete assurance and satisfaction in the quality of our products and services. We are the favoured supplier of manufacturers across the globe, owing to the reliable quality of the products and services our customers receive and their continued confidence that our competitive cost does not compromise quality.

Our companies work to a Quality Management System, as defined in ISO 9001/9120, and approved by the BSI. We work in partnership with the BSI, who carry out regular audits to ensure compliance with these standards and that we are operating with efficiency and accountability at all times.

Working within the framework of ISO 9001 and ISO 9120, our quality system meets or exceeds the criteria. We review our processes regularly to ensure an efficient and robust process is in place at all times, with necessary support and resources available. All of the Knight Group employees receive regular training to maintain familiarity and adherence to our Quality Management System. The commitment from our employees ensures the supply and processing of all material, meets the standards set. As a result, we are consistently able to comply with customers' demands, delivering quality products and processing.

To facilitate fast turnaround times, we offer in-house tensile, hardness and chemical analysis testing. We can also supply fully traceable records for our materials by request and Certificates of Conformity are issued as standard when materials are supplied. For further assurance of our integrity and longevity, we are long standing members of a number of institutions including the British Stainless Steel Association (BSSA), Institute of Spring Technology (IST), Midlands Aerospace Association (MAA) and the Photo Chemical Machining Institute (PCMI).

The Knight Group at all times complies with statutory and regulatory requirements. Additionally, we conduct our business in strict compliance with all applicable domestic and international legal standards. We strive to ensure business ethics are practiced with particular emphasis on free competition and rejection of any form of corruption.



Copper, Brasses & Bronzes





Copper and Copper alloys form an important group of metals with many excellent properties. They have very good electrical and thermal conductivities, are easy to fabricate and include some alloys of exceptional strength (notably Copper Beryllium Alloys) and corrosion resistance. The characteristics of Copper and Copper alloys have resulted in extensive use of those alloys in a very wide range of applications. They can be formed, pressed, deep drawn or photochemically etched into the most complex of shapes.

COPPER, BRASS & BRONZE STOCK RANGE												
COIL STOCK RANGE WIRE STOCK RANGE												
Thickness (mm) Width (mm) Round Shaped												
COMMERCIALLY PURE HIGH CONDUCTIVITY COPPERS												
0.01 - 3.0	3 - 1220	0.1 – 10.00 mm dia	upto 45 mm2 area									
BRASSES												
0.01 - 3.0	3 - 1220	0.1 – 10.00 mm dia	upto 45 mm2 area									
PHOSPHOR BRONZES												
0.01 - 3.0	3 - 1220	0.1 – 10.00 mm dia	upto 45 mm2 area									
	NICKEL	SILVERS										
0.01 - 3.0	3 - 1220	0.1 – 10.00 mm dia	upto 45 mm2 area									
CU	PRONICKEL & HIGH CO	OPPER CONTENT ALL	OYS									
0.01 - 3.0	3 - 1220	0.1 – 10.00 mm dia	upto 45 mm2 area									
	COPPER BERY	LLIUM ALLOYS										
0.01 - 3.0	3 - 1220	0.1 – 10.00 mm dia	upto 45 mm2 area									
Othe	er specifications can be n Please contact us wit		uest.									



Types

operations.

tin is added.

spring properties.

matching Phosphor Bronze.

decorative applications.

The various Coppers within this group have

differing degrees of purity and consequently exhibit different characteristics. For high

conductivity requirements oxygen-free Coppers

are required and this extra purity enhances ductility and gives freedom from hydrogen

embrittlement or blistering during brazing

Brasses are Copper based Alloys with Zinc as the essential secondary ingredient. The addition of Zinc to Copper creates a lower cost alloy

with superior cold working strength to Copper but at the expense of reduced conductivity. The degree of alloying gives a range of colours for

Phosphor Bronzes are Copper Tin Alloys containing up to 7% tin and a small quantity of phosphorus, which is a residual from the

de-oxidation of the Copper melt before the

Phosphor Bronzes can be significantly hardened by cold working to give excellent

These alloys of Copper Nickel and Zinc contain

no Silver, but take their name from their

silvery appearance and ability to be polished

to a high lustre. Their mechanical properties

are somewhat higher than Brasses, but not

The most important commercial alloys are

Commercially Pure High Conductivity Coppers

The second s

Brasses

Mannang

Phosphor Bronzes

LINS OF

Nickel Silvers

Cupronickels & High Copper Content Alloys based on 90/10 Copper Nickel. Cupronickels have good formability and excellent resistance to sea water corrosion. An important high Copper content alloy is Alloy 194 which has 2.3% iron with small additions of phosphorus and Zinc. Particularly developed for the leadframe application, it has excellent resistance to softening, being able to withstand 300°C plus, for a few minutes.



AVAILABLE GRADES

Commercially Pure High Conductivity Coppers C101, C102, C103, C106

> Brasses CZ106, CZ107, CZ108

Phosphor Bronzes C51000, C51900

Nickel Silvers, Cupronickels & High Copper Content Alloys C74500, C75700, C76400, C77000, C72500

> Copper Beryllium Alloys C17410, C17200

> > Other Alloys C19400

Copper Beryllium Alloys

Copper Beryllium Alloys are precipitation hardening alloys of remarkable strength, elasticity and fatigue resistance, making them ideal for spring applications. The principal compositions are based around 1.6% to 2.0% beryllium, with a small addition of cobalt added to refine grain size. These alloys can be supplied in the following forms:

i) Solution Treated (Annealed), orii) Solution Treated & Temper rolled, i.e. ¹/4 Hard, ¹/2 Hard, Hard, etc.

Copper, Brasses & Bronzes Features

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	1800										
					COPPER ALLOY FEATURE	S					
	EN1652 or Alloy				Key Features	Key Markets	Applications				
			BS 2870								
1115	HIGH CONDUCTIVITY COPPERS										
(Same	Cu-ETP	CW004A	C11000	C101	Cu-ETP has no susceptibility to hydrogen embrittlement as well as a high electrical conductivity of 101% IACS. This is due to a high purity and an absence of deoxidisers.	Architectural, Chemical Engineering, Culinary, Electrical	Electrical Conductors, Chemical Process Equipment, Radiators, Kitchen Appliances				
The second	Cu-HCP	CW021A	C10300	C102	A de-oxidised,oxygen-free Copper with a low residual phosphorus content. Offers excellent formability and weldability, as well as good soldering and brazability.	Electrical, Manufacturing	Electrical Contacts & cable Industry, Pressure Vessels				
and	Cu-OF	CW008A	C10200	C103	Oxygen Free (maximum of 10ppm). High purity Copper alloy, offering 100% IACS. It is also immune from hydrogen embrittlement.	Electronics, Telecommunications	Printed Circuits, Electronic Components, Telecommunication Cables				
	Cu-DHP	CW024A	C12200	C106	A de-oxidised, non-arsenical, oxygen-free 99.9% pure Copper, with limited residual phosphorus content. Offers excellent formability and weldability, as well as good corrosion resistance. This makes it ideal for applications where electrical conductivity is only of secondary importance.	Architectural, Electrical, Plumbing	Piping & Fittings, Heat Exchangers, Transistors, Air/Hydraulic/Oil Lines				
1					BRASSES						
1	CuZn30	CW505L	C26000	CZ106	Solid Solution Strengthened Brass. The added 30% Zinc increases mechanical strength, but decreases conductivity.	Electronics, Decorative	Connectors, Electronic Components, Jewellery				
1	CuZn33	CW506L	C26800	CZ107	Solid Solution Strengthened Brass with 33% Zinc.	Automotive, Electrical Engineering	Electrical Components, Connectors, Clips, Springs				
	CuZn37	CW508L	C27200	CZ108	Zinc additions of 37%. Higher Zinc additions increase the inclination for Stress Cracking Corrosion.	Electronics, Plumbing, Decorative	Electric Brackets, Springs, Hose Couplings, Clips, Contacts, Radiator Cores				
					PHOSPHOR BRONZES						
	CuSn5	CW451K	C51000	PB102	Solid Solution Strengthened Brass with 5% tin. Good combination of conductivity and strength.	Automotive, Electrical Engineering	Connectors, Springs, Stamped Parts				
	CuSn6	CW452K	C51900	PB103	Higher tin content than CuSn5 gives higher strength and spring characteristics. Wear resistant and has good corrosion resistance.	Automotive, Electrical Engineering, Paper and Pulp Industry, Chemical Industry	Flexible Hoses, Springs, Conductive Springs				
			NICKE	EL SILVE	RS, CUPRONICKELS & HIGH COPPE	R CONTENT ALLO	YS				
	CuNi10Zn27	CW401J	C74500	NS103	Good corrosion resistance in rural and marine atmospheres. Excellent cold working properties and is suitable for various forming processes. Poor hot working characteristics however.	Decorative, Industrial	Nameplates, Light & Optical Fittings, Door Kicking Plates, Trophies.				
	CuNi12Zn24	CW403J	C75700	NS104	Good resistance to atmospheric corrosion. Also offers resistance to neutral and alkaline solutions, however resistance to oxidising acids is poor. Good cold forming properties but poor machinability.	Industrial, Telecommunications, Decorative	Relay Springs, Contact Springs, Connectors, Pressure Membranes, Engraved Name Plates				
	CuNi18Zn20	CW409J	C76400	NS106	Good resistance to atmospheric corrosion. Good cold formability and spring properties. Suitable for many decorative applications. Much lower sensitivity to SCC than Brasses.	Electronics, Telecommunications,	Shielding, Connectors, Relay Springs, Engraved Name Plates,				
	CuNi18Zn27	CW410J	C77000	NS107	Good corrosion resistance , good formability, good tarnish-resistance and colour make it ideal for decorative purposes.	Decorative	Decorative Purposes				
	CuNi9Sn2 (Alloy 725)	CW351H	C72500	-	A good combination of fatigue strength, formability and resistance to corrosion.	Telecommunications, Electronics	Circuit Breaker Components, Relay & Switch Springs, Bellows, Clamps				

COOPER BERYLLIUM ALLOYS												
(Alloy 1	74)	C17410	-	Mill hardened alloy.	Automotive, Telecommunications	Automotive Terminals, Spring Contacts						
(1.8% Be/Cu) (Alloy 25) CuBe2 CW101C		CB101	Highest Strength of any Copper alloy. Excellent ductility and formability. Greater Electrical conductivity than other high strength alloys.	Electronics	Electrical Contacts, Pressure Sensor Bellows, EM Shielding Gaskets							
	· · ·		-	OTHER ALLOYS								
Alloy 194 C19400		_	Excellent formability, high strength and good conductivity. Also offers good resistance to softening.	Telecommunications, Electronics	Circuit Breaker Components, Rela & Switch Springs, Bellows, Clamp							
128 14	1											

Copper, Brasses & Bronzes Chemical Properties

	Copp	oer & A	Alloys	s Grad	e Des	signa	tions	& Ch	emica	Comp	ositi	ons (%	6 by w	eight)		
MATE DESIGN EN1652	IATION	NEAF FI			TYPICAL CHEMICAL COMPOSITION %											
Symbol/ Name	Number	UNS	BS 2870	Cu	Be	Со	Fe max	Mn max	Ni	Р	Pb max	Sn	Zn	Others	Impurities max	
					Н	IGH CO	ONDUC	τινιτ	(СОРР	ERS						
Cu-ETP	CW004A	C11000	C101	99.90 min	-	-	-	-	-	-	0.005			Bi 0.0005 max O 0.040 max	0.3	
Cu-HCP	CW021A	C10300	C102	99.95 min				-		0.002 - 0.007						
Cu-OF	CW008A	C10200	C103	99.95 min	-	-	-	-	-	-	0.005			Bi 0.0005 max	0.3	
Cu-DHP	CW024A	C12200	C106	99.90 min	-			-		0.015 - 0.040	-			-		
		1		1			BR/	ASSES	\$						_	
CuZn30	CW505L	C26000	CZ106	69 - 71	-	-	0.05	-	0.30 max	-	0.05	0.10 max	Balance	Al 0.02 max	0.10	
CuZn33	CW506L	C26800	CZ107	66 - 68	-	-	0.05	-	0.30 max	-	0.05	0.10 max	Balance	Al 0.02 max	0.10	
CuZn37	CW508L	C27200	CZ108	62 - 64	-	-	0.10	-	0.30 max	-	0.10	0.10 max	Balance	Al 0.05 max	0.10	
						PH	OSPHC		ONZES							
CuSn5	CW451K	C51000	PB102	Balance	-	-	0.10	-	0.20 max	0.01 - 0.40	0.02	4.6 - 5.5	0.2 max	-	0.20	
CuSn6	CW452K	C51900	PB103	Balance	-	-	0.10	-		0.01 - 0.40	0.02	5.5 - 7.0	0.2 max	-	0.20	
	,	NI	CKEL	SILVER	s, cu	PRON	CKELS	6 & HIC	GH COF	PPER CC	ONTEN	IT ALLO	DYS			
CuNi10Zn27	CW401J	C74500	NS103	61 - 64	-	-	0.3	0.5	9.00 - 11.00		0.05		Balance		0.20	
CuNi12Zn24	CW403J	C75700	NS104	63 - 66	-	-	0.3	0.5	11.00 - 13.00		0.03	0.03 max	Balance		0.20	
CuNi18Zn20	CW409J	C75200	NS106	60 - 63	-	-	0.3	0.5	17.00 - 19.00		0.03	0.03 max	Balance		0.20	
CuNi18Zn27	CW410J	C77000	NS107	53 - 56	-	-	0.3	0.5	17.00 - 19.00		0.03	0.03 max	Balance		0.20	
CuNi9Sn2 (Alloy 725)	CW351H	C72500		Balance	-	-	0.3	0.3	8.50 - 10.50		0.03	1.8 - 2.8	0.10 max		0.10	
		·		· · ·	C	COOPE	R BER	YLLIU	MALLO	DYS						
(Alloy	174)	C17410	-	Balance	0.15 - 0.5	0.35 - 0.6		-		-	-	-	-	-	0.50	
(1.8% E	Be/Cu)			Balance	1.7 - 1.9	*		-	*	-		-	-	* (Ni + Co) 0.05 - 0.40	0.50	
(Alloy	25)	C17200	CB101	Balance	1.8 - 2.0	*	*	-	*	-	-	-	-	* (Ni + Co) 0.2 min *(Co + Ni + Fe) 0.6 max	0.50	
CuBe2	CW101C			Balance	1.8 - 2.1	0.30 max	0.20 max	-	0.30 max	-	-	-	-	-	0.50	
	·						OTHEF		OYS							
(Alloy 194)		C19400	-	Balance	-	-	2.10 - 2.60	-		0.015 - 0.15	0.03	0.03 max	0.05 - 0.20	-	0.15	
	The states	8 1			100					0.10			0.20			

Copper, Brasses & Bronzes Mechanical Properties

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COPPER, BRASSES & BRONZES MECHANICAL PROPERTIES											
	MATERIAL DESIGNATION EN1652 or Alloy		NEAR	EST FIT	Material Condition (R Value)	Proof Strength 0.2% Min (N/mm2)	Tensile Strength (N/ mm2)	Elong. % Min. (50mm Gauge Length)	Hardness Max (VPN)		
	Symbol/ Name	Number	UNS	BS 2870		()	····· _ ,				
					HIGH CONDUCTIVITY	COPPERS					
					R220	140 Max	220-260	33	40-65		
					R240	180 Min	240-360	8	65-95		
	Cu-ETP	CW004A	C11000	C101	R290	250 Max	290-360	4	90-110		
					R360	320 Min	360 Min	2	110 Min		
			ĺ		R220	140 Max	220-260	33	40-65		
III III	Cu-HCP	CW021A	C10300	C102	R240	180 Min	240-360	8	65-95		
-	Cu-HCF	GWUZTA	010300	0102	R290	250 Max	290-360	4	90-110		
2					R360	320 Min	360 Min	2	110 Min		
					R220	140 Max	220-260	33	40-65		
	Cu-OF	CW008A	C26000	C103	R240	180 Min	240-360	8	65-95		
	04 01		020000	0.00	R290	250 Max	290-360	4	90-110		
					R360	320 Min	360 Min	2	110 Min		
					R220	140 Max	220-260	33	40-65		
-1	Cu-DHP	CW024A	C12200	C106	R240	180 Min	240-360	8	65-95		
1					R290	250 Max	290-360	4	90-110		
					R360	320 Min	360 Min	2	110 Min		
/			1	1	BRASSES	1		1			
9					R270	160 Max	270-320	40	55-95		
4	CuZn30	CW505L	C26000	CZ106	R350	170 Min	350-430	21	95-125		
					R410	260 Min	410-490	9	120-155		
-					R480	430 Min	480 Min	-	150 Min		
					R280 R350	170 Max 170 Min	280-380 350-430	40 23	55-90 90-125		
	CuZn33	CW506L	C26800	CZ107	R350	300 min	420-500	6	125-155		
					R500	450 Min	500 Min	-	155 Min		
					R300	180 Max	300-370	38	55-95		
6					R350	170 Min	350-440	19	95-125		
2	CuZn37	CW508L	C27200	CZ108	R410	300 Min	410-490	8	120-155		
					R480	430 Min	480-560	3	150-180		
1					R550	500 Min	550 Min	-	170 Min		
		l	·	۱ــــــــــــــــــــــــــــــــــــ	PHOSPHOR BRO	ONZES		·			
					R310	250 Max	310-390	45	75-105		
					R400	240 Min	400-500	14	120-160		
	0.05	0.111-111		DDUG	R490	450 Min	490-580	8	160-190		
	CuSn5	CW451K	C51000	PB102	R550	520 Min	550-640	4	180-210		
					R630	600 Min	630-720	3	200-230		
					R690	670 Min	690 Min	-	220 Min		
					R350	300 Max	350-420	45	80-110		
					R420	260 Min	420-520	17	125-165		
	CuSn6	CW452K	C51900	PB103	R500	450 Min	500-590	8	160-190		
	00010	UVV+02IX	031900	10105	R560	500 Min	560-650	5	180-210		
					R640	600 Min	640-730	3	200-230		
					R720	690 Min	720 Min	-	220 Min		

Copper, Brasses & Bronzes Mechanical Properties continued

		NICKEL	SILVERS	, CUPRONICKELS & HIG	H COPPER C	ONTENT ALL	.OYS	
				R360	230 Max	360-430	35	80-110
				R430	230 Min	430-510	8	110-150
CuNi10Zn27	uNi10Zn27 CW401J		NS103	R490	400 Min	490-580	8	150-180
				R550	480 Min	550-640	-	170-200
				R620	580 Min	620 Min	2	190 Min
		İ		R360	230 Max	360-430	35	80-110
				R430	230 Min	430-510	8	110-150
CuNi12Zn24	CW403J	C75700	NS104	R490	400 Min	490-580	8	150-180
				R550	480 Min	550-640	-	170-200
				R620	580 Min	620 Min	2	190 Min
				R380	250 Max	380-450	27	85-115
				R450	250 Min	450-520	9	115-160
CuNi18Zn20	CW409J	C76400	NS106	R500	410 Min	500-590	3	160-190
				R580	510 Min	580-670	-	180-210
					600 Min	640-730	-	200-230
		1		R390	280 Max	390-470	30	90-120
				R470	280 Min	470-540	11	120-170
CuNi18Zn27	CW410J	C77000	NS107	R540	450 Min	540-630	3	170-200
Guivino2h27	0004100			R600	550 Min	600-700	-	190-220
					660 Min	700-800	2	220-250
				R340	250 Max	340-410	30	70-100
CuNi9Sn2	014/05411	C72500		R380	200 Min	380-470	8	110-150
(Alloy 725)	(3W351H)		-	R450	370 Min	450-530	4	140-170
				R500	450 Min	500-580	2	160-190
				R560	520 Min	560-650	-	180-210
				COPPER BERYLLIUN	ALLOYS			
(• •		017410		172 Hard (Solution Heat Treated, Cold Rolled and Precipitation Hardened at the Mill)	410 Min	650 Min	10	180-230
(Alloy ⁻	174)	C17410	-	Hard (Solution Heat Treated, Cold Rolled and Precipitation Hardened at the Mill)	480 Min	760 Min	7	210-280
(1.8% B	e/Cu)			R410* (Solution Heat Treated & Cold Rolled)	250 Max	410 Min	20	90-150
(Alloy	25)			R580* (Solution Heat Treated & Cold Rolled)	510 Min	580 Min	8	180-250
		C17200	CB101	R1130** (Solution Heat Treated, Cold Rolled and Precipitation Hardened at the Mill)	890 Min	1130 Min	3	340-410
CuBe2	CuBe2 CW101C			R1200** (Solution Heat Treated, Cold Rolled and Precipitation Hardened at the Mill)	980 Min	1200 Min	2	360-420
		·		OTHER ALLO	YS	·	·	·
				R300	240 Max	300-340	16	80-100
				R340	240 Min	340-390	8	100-120
				R370	330 Min	370-430	6	120-140
(Alloy	194)	C19400	-	R420	380 Min	420-480	6	130-150
				R470	440 Min	470-530	4	140-160
				R520	440 Min 470 Min	520-580	3	150-165
		1	1	1.020		020.000		100-100



Processing

YOUR MATERIAL YOUR WAY

The Knight Group are industry leaders in the supply and processing of strip, coil and wire, consistently exceeding expectations of quality, service and performance. With a number of accreditations, including BS EN ISO 9001 and BS EN AS 9120, we are the supplier of choice for global manufacturers where quality, reliability and lean manufacturing at the heart of their priorities. Most manufacturers are facing increasing demands for goods to be delivered with tighter time frames and even tighter margins. By selecting the processing to meet your specific needs, your material can be prepared and delivered to the exact size, length and finish you need, saving valuable production time and costs. Our processing is offered at a comprehensive price and with a flexibility to select only the services you need and want, giving you maximum versatility and minimum cost.

We have invested heavily in our bespoke machinery and training our established team of operators, so that we can offer a truly comprehensive range of processing to complement our extensive range of stocked material



Reduced Machine Downtime Longer Production Runs Reduced Storage and Scrap Safer Material Handling Reduced Production Time and Costs TRAVERSE WINDING LINES
 5 EDGE FINISHING LINES
 8 CUT TO LENGTH LINES
 27 RECOILING LINES
 26 SLITTING LINES



Low Width Thickness Ratio 3:1 unique to the industry (normal minimum is 8:1)

Ability to offer Ultrafine Width Tolerances down to +/- 0.025mm (0.001")

> Thicknesses 0.013mm to 6.5mm (0.0005" to 0.26")

> Widths 0.64mm to 1100mm (0.025" to 43")

Packaging

BESPOKE PACKAGING

If you need bespoke material sizes and processing, then you probably want bespoke packaging as well. Thanks to our in house packaging design team, we can offer bespoke packaging solutions to protect your materials in transit. Whatever processing and finishing options you have chosen, your products will packaged to arrive safely and ready to use

You can choose to have strip material as pancake coils, traverse wound coil, flat blanks and sheets. Wire can be supplied as cut lengths, coils, formers or spools to suit your needs.









CHOOSE FROM OUR TRUSTED PARTNERS OR YOUR PREFERRED CARRIER

We firmly believe that all of our customers should be able to have your material, your way. Thanks to our global network of freight providers, you can choose from air, land or sea freight so you can have your material where you want, when you want.

There is also the option to arrange your own collection from our site in Birmingham, which can be organised through our sales team.



Standard Stock

WE ARE DRIVEN TO CONTINUE BUILDING A BETTER BUSINESS, BY WORKING CLOSELY WITH OUR CUSTOMERS TO GROW THEIRS.

Our materials and processing are carefully chosen to meet the exacting needs of manufacturers around the globe. We work alongside our suppliers to ensure we are at the forefront of material innovation, ensuring the availability of the highest quality material with the most competitive pricing. With over 2500 items in stock and sourcing of an extensive range or alloy grades, you can have your material, your way.

8 Cut To Length Lines 5 Edge Finishing Lines 27 Recoiling Lines 26 Slitting Lines 5 Traverse Winding Lines

Standard Stock Range

WE STOCK IN EXCESS OF 2500 ITEMS, AVAILABLE AS CUT LENGTHS/ STRAIGHTENED, COILS, FORMERS OR SPOOLS

М	laterial					Stainless Steel					Mild Steel				
т	emper			ANNE	ALED			HARD F	HARD ROLLED						
	iropean Norm		EN 10139:1998												
	ickness erances		EN10140:2006 (precision) C												
NOI	European Spec.		541 5526		404 401	1.4307 1.4301	1.4310 +C1300		1.4301 +C1300		DC01 C590				
DESCRIPTION	AISI	32	21	316/	316L	304L/304	3(01	3	04	-				
ESC	AMS	55	10	55	607	5511/5513	55	519	59	13	-				
	ASTM	A-2	240	A-240	, A-266	A-240, A-266	A-(666	A-	666	-				
			WIDTH (mm)												
THICK	NESS (mm)	610	980	305	610	610	305	610	305	610	610				
(0.025						√*		\checkmark	\checkmark					
	0.05	√*		1	1	\checkmark	1	1	1	1	\checkmark				
(0.076	\checkmark	\checkmark		<i>✓</i>	\checkmark	\checkmark		\checkmark	<i>√</i>	\checkmark				
	0.08	√*	<i>√</i> *	~							\checkmark				
	0.1	\checkmark	~		✓	√*		 ✓ 	<i>✓</i>	\checkmark	\checkmark				
(0.127	\checkmark	~		✓	\checkmark			~	~	\checkmark				
	0.15	\checkmark	\checkmark		✓	\checkmark		~	✓	\checkmark	\checkmark				
	0.18		~								\checkmark				
	0.2	\checkmark			\checkmark	\checkmark		<i>√</i>	\checkmark	\checkmark	\checkmark				
	0.25	\checkmark	\checkmark		<i>√</i>	\checkmark			<i>√</i>	\checkmark	\checkmark				
	0.3	\checkmark			\checkmark	\checkmark		\checkmark	<i>√</i>	\checkmark	\checkmark				
	0.38	\checkmark						<i>✓</i>			\checkmark				
	0.39				\checkmark	\checkmark	✓	✓	∕	✓					
	0.45	\checkmark				\checkmark									
	0.5	\checkmark			\checkmark	\checkmark	✓	\checkmark	✓	✓	\checkmark				
	0.6							<i>√</i>	<i>√</i>	\checkmark					
	0.7						\checkmark		✓	\checkmark					
	0.8						1		1	1					
	0.9								✓	✓					
	1						~	<i>√</i>	~	~	\checkmark				
	1.2						\checkmark		✓						
	1.5						\checkmark	✓	\checkmark						

Product Range

	RANGE CAN BE SUF	PLIED AS CUT LENG	GTHS/STRA	IGHTENED,	COILS, FO	RMERS OF	SPOOLS	
	OTHER GRADES AND	SPECIFICATIONS AVAILAI	BLE, PLEASE C	ONTACT OUR S	SALES TEAM		EQUEST	
	ТҮРЕ	GRADES AVAILABLE		TANDARD R	ANGE		DUND AND PROFILE E STANDARD RANGE	
			Tempers Available	Thickness (mm)	Width (mm)	Tempers Available	Specifications and Forms	
	AUSTENITIC	201, 301, 304L, 304, 305, 320, 321, 347, 316, 316L, 316Ti, 904L	Annealed All Other	0.01 - 2.5	3 - 1250 3 - 1250		Round Wire 0.1 to 10.00mm dia* Profile Wire Upto 45mm2 area For cold worked condition,	
Ē		310, 310L, 310H, 304L	Tempers Annealed	0.05 - 2.0	3 - 650		please contact us with your requirements.	
STE	FERRITIC	410S, 430, 430L, 430Ti (439), 441, 444	All Other			Annealed	Coils from 1kg to 1000kgs	
STAINLESS STEEL			Tempers	0.05 - 1.6	3 - 450	Light Drawn Hard Drawn	Formers from 500kgs to 1000kgs	
NLE	MARTENSITIC	410, 420, 431	Annealed	0.127 - 2.50	3 - 450	Specified Tensile	Spools - Wide Range Available Cut Lengths/ Straightened	
ЗТАІ	PRECIPITATION HARDENING	17/4PH, 17/7PH	Annealed	0.02 - 1.5	3 - 620	-	from 10mm to 4m * *Duplex	
0)			Condition 'C'	0.025 - 1.0	3 - 620	-	Round Wire 0.8 – 8.00mm dia*	
	HEAT RESISTING STEELS	309, 310	All Tempers Available	0.025 - 3.0	3 - 1000		Cut Lengths/ Straightened from 10mm to 10m	
MU	ALPHA	Grade 1, Grade 2, Grade 3, Grade 4		0.005 0.00		Annealed (soft) 1/8 Hard	Round Wire 0.1 to 10.00mm dia Profile Wire Upto 45mm2 area	
TITANIUM	ALPHA/BETA	Grade 5 (Ti 6Al-4V) Grade 9 (Ti 3Al 2.5V)	All Tempers Available	0.025 - 3.00	3 - 1000	1/4 Hard 1/2 Hard Hard	Coils from 1kg to 1000kgs Formers from 500kgs to 1000kgs Spools - Wide Range Available	
	BETA	21S				Spring Hard	Cut Lengths from 10mm to 10m	
	COMMERCIALLY PURE NICKELS	200, 201						
Š	NICKEL-COPPER ALLOYS	400	All Tempers Available	0.025 - 2.5	2 - 1000	Annealed Spring Hard	Round Wire 0.1 to 10.00 mm dia Upto 45 mm2 area	
NICKEL ALLOYS	NICKEL-CHROMIUM & NICKEL-CHROMIUM-IRON ALLOYS	alloy K500, alloy X, C22, alloy C2000, alloy 600, alloy 601, alloy 625, alloy C 276, alloy 718, alloy X750					Coils from 0.5 kg to 1000kgs Formers from 500kgs to 1000kgs Spools - Wide Range Available Cut Lengths/ Straightened	
ž	IRON-NICKEL-CHROMIUM ALLOYS	alloy 800, alloy 825					from 10mm to 10mm	
	CONTROLLED EXPANSION ALLOYS	29/18			3 - 610			
	PURE ALUMINIUM	1000 SERIES				Annealed	Round Wire 0.1 to 10.0 mm dia	
	ALUMINIUM COPPER ALLOY	2000 SERIES		0.01 - 3.0	3 - 1000	(soft)	Upto 45mm2 area	
ĭ S	ALUMINIUM MANGANESE ALLOY	3000 SERIES			Sheet up to	1/8 Hard 1/4 Hard	Coils from 1kg to 1000kgs Formers from 500kgs to 1000kgs	
N N	ALUMINIUM MAGNESIUM ALLOY	5000 SERIES	All Tempers Available	0.01 - 1.5	2000mm	1/2 Hard Hard	Spools - Wide Range Available	
ALUMINIUM	ALUMINIUM MAGNESIUM + SILICON ALLOY	6000 SERIES	Wallable	0.01 - 3.0		Spring Hard	Cut Lengths/ Straightened from 10 mm to 10m	
	ALUMINIUM ZINC ALLOY	7000 SERIES			Please cor	ntact us with yo	ur requirements	
	CLAD ALUMINIUM	n/a			Please cor	ntact us with yo	ur requirements	
s S	COMMERCIALLY PURE HIGH CONDUCTIVITY COPPER	C101, C102, C103, C106				Annealed	Round Wire 0.1 to 10.00 mm dia	
RAS TE	BRASS	CZ106, CZ107, CZ108				(soft) 1/8 Hard	Upto 45 mm2 area	
, BF ONZ	PHOSPHOR BRASS	PB102, PB103	All Tempers Available	0.01 - 3.0	3 - 1220	1/4 Hard	Coils from 1kg to 1000kgs Formers from 500kgs to 1000kgs	
COPPER, BRASS & BRONZE	NICKEL SILVERS CUPRONICKEL & HIGH COPPER CONTENT ALLOYS	NS103, NS104, NS106, NS107, C72500	, wallable			1/2 Hard Hard Spring Hard	Spools - Wide Range Available Cut Lengths/ Straightened from 10mm to 4m	
Ö	COPPER BERYLLIUM ALLOYS	CB101						
BON	LOW CARBON STEEL	DC01, DC03, DC04, DC05, DC06	Annealed All Other Tempers	0.01 - 3.0	3 - 1220 3 - 1000	Annealed (soft)	Round Wire 0.1 to 10.00 mm dia Upto 45 mm2 area	
AR EL			Annealed	0.05 - 3.0	3 - 650	1/8 Hard 1/4 Hard	Coils from 1kg to 1000kgs	
MILD & CARBON STEEL	HIGH CARBON STEEL	C55S, C60S, C67S, C75S, C85S, C90S, C100S, C125S, 48Si7,	All Other Tempers	0.05 - 1.6		1/2 Hard Hard	Formers from 500kgs to 1000kgs Spools - Wide Range Available Cut Lengths/ Straightened	
×		56Si7, 51CrV4, 80CrV2, 75Ni8, 125Cr2, 102Cr6	Hardened &	0.127 - 3.0	3 - 610	Spring Hard	from 10mm to 10m	

Tempered CLAD METALS AND PLATED METALS AVAILABLE, PLEASE CONTACT US WITH YOUR REQUIREMENTS

Knight Group Head Office

Linkside, Summit Road Cranborne Industrial Estate Potters Bar, Hertfordshire EN6 3JL United Kingdom Main Office : +44(0)1707 650251 Fax: +44(0)1707 651238 info@knight-group.co.uk

Knight Strip Metals Ltd Sales, Processing & Warehouse

Saltley Business Park Cumbria Way, Saltley Birmingham B8 1BH United Kingdom Telephone: +44 (0)121 322 8400 Fax: +44 (0)121 322 8401 Sales 08456 447 977 sales@knight-group.co.uk

Precision Metals EU

Industriezone Mechelen-Noord (D) Omega Business Park Wayenborgstraat 25 2800 Mechelen Belgium Telephone: +32 (0) 15 44 89 89 Fax: +32 (0) 15 44 89 90 export.sales@knight-group.co.uk

Visit our websites: Main: www.knight-group.co.uk Offcuts: www.ksmdirect.co.uk www.pmdirect.be

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