



Helping manufacturers across the globe achieve sustainable leaner manufacturing processes



Aluminium Products

CUT TO LENGTH
WIRE & COIL

Commercially Pure
Aluminium Alloys
Clad Aluminium

Fast
Turnaround
Processing



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

WIDE
STOCK
RANGE

Over
75 years
Experience



FM 02114



Aluminium

Aluminium is the third most abundant resource on the planet and is used widely across many manufacturing sectors due to the ease of machining and forming, requiring low energy input making it highly cost efficient and ideally suited for extrusion work, milling, drilling, cutting, punching and bending in large or small volumes.

Though commonly found within the Construction industry, the physical properties of Aluminium and its alloys make it an essential material for Aerospace, Automotive and Transport sectors. Aluminium has further environmental advantages with zero toxicity and is easily recyclable, without losing its integral properties in the process. The low cost combined with material availability, physical properties and ease of formability makes it an ideal choice for large volume production of beverage packaging but also has wider use within Food and beverage production.

Aluminium is a lightweight, soft, ductile metal with non-magnetic and corrosion resistant properties. Aluminium has approximately a third of the density of steel, but this does not impact its strength. It is more durable at lower temperatures and unlike steels will not become brittle, but actually becomes stronger at low temperatures, however, heat above 100°C can affect strength.

A range of surface finishes ranging from dull to reflective, also make Aluminium ideal for decorative features and metal products.

| ALUMINIUM STOCK RANGE | | | |
|--|------------|--------------------|------------------------------|
| COIL STOCK RANGE | | WIRE STOCK RANGE | |
| Thickness (mm) | Width (mm) | Round | Shaped |
| 1000 SERIES PURE ALUMINIUM | | | |
| 0.01 - 3.0 | 3 - 1000 | 0.1 – 10.00 mm dia | Upto 45 mm ² area |
| 2000 SERIES ALUMINIUM COPPER ALLOY | | | |
| 0.01 - 3.0 | 3 - 1000 | 0.1 – 10.0 mm dia | Upto 45 mm ² area |
| 3000 SERIES ALUMINIUM MANGANESE ALLOY | | | |
| 0.01 - 3.0 | 3 - 1000 | 0.1 – 10.00 mm dia | Upto 45 mm ² area |
| 5000 SERIES ALUMINIUM MAGNESIUM ALLOY | | | |
| 0.01 - 3.0 | 3 - 1000 | 0.1 – 10.00 mm dia | Upto 45 mm ² area |
| 6000 SERIES ALUMINIUM MAGNESIUM + SILICON ALLOY | | | |
| 0.01 - 3.0 | 3 - 1000 | 0.1 – 10.00 mm dia | Upto 45 mm ² area |
| 7000 SERIES ALUMINIUM ZINC ALLOY | | | |
| Please contact us with your exact specifications | | | |
| Other specifications supplied upon request, please contact us with your requirements | | | |



Types

1000 Series Pure Aluminium

1000 series are essentially pure Aluminium, offering excellent corrosion resistance, high thermal and electrical conductivity and good formability. 1000 series can also be work hardened, but have relatively low strength.

2000 Series Aluminium Copper Alloy

2000 series metals are alloyed with Copper, providing good mechanical properties that can exceed those of Carbon Steel, but are less corrosion resistant than other alloys. 2000 series can be precipitation hardened to increase strength.

3000 Series Aluminium Manganese Alloy

3000 series are alloyed with manganese and are approximately 20% stronger than pure Aluminium (1000 series) and are particularly resistant to pitting corrosion. It can be work hardened to increase strength.

5000 Series Aluminium Magnesium Alloy

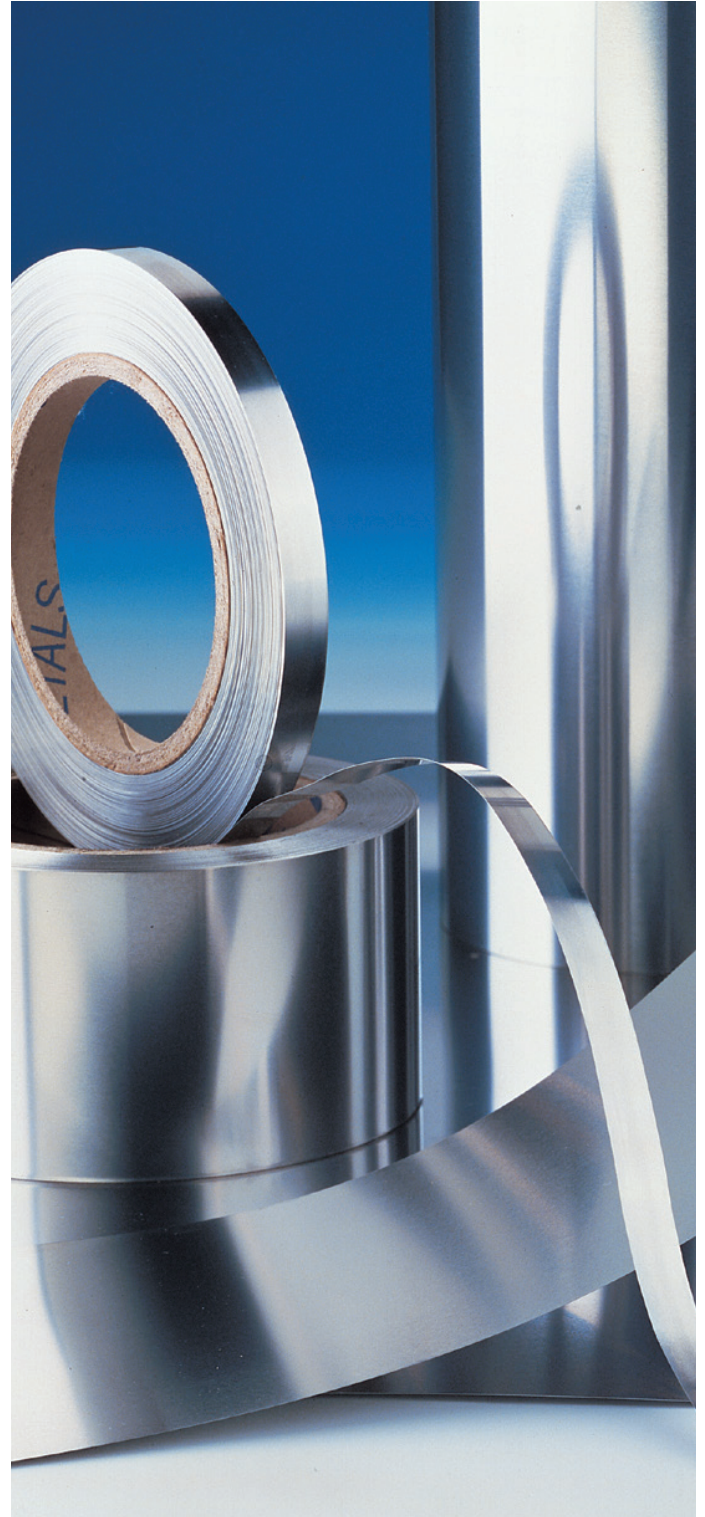
5000 series offers moderate to high mechanical strength, anodises well, with good welding characteristics, good corrosion resistance, particularly in marine environments. 5000 series is not work hardenable.

6000 Series Aluminium Magnesium + Silicon Alloy

6000 series is alloyed with both Magnesium and silicon, offering medium mechanical strength, good formability, weldability and machinability in addition to good corrosion resistance. 6000 series can be work hardened.

7000 Series Aluminium Zinc Alloy

7000 series has exceptionally high mechanical strength and is machinable and work hardenable. However it has poor corrosion resistance compared to other Aluminium alloys.



We can also supply 8000 series and 4000 series on request.



Aluminium

Chemical Properties

ALUMINIUM CHARACTERISTICS

| ALLOY NUMBER | EUROPEAN NAME | ASTM NAME | TYPICAL CHEMICAL COMPOSITION % | | | | | | | | | | |
|---|---------------|-----------|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------|------|-----------|----------------------|
| | | UNS | Al | Cr | Cu | Fe | Mg | Mn | Si | Ti | V | Z | Others |
| 1000 SERIES (PURE) | | | | | | | | | | | | | |
| 1050 | AW-1050 | A91050 | Balance | - | 0.050 | 0.04 | 0.050 | 0.05 | 0.250 | 0.03 | 0.05 | 0.050 | - |
| 1050A | AW-1050A | A91050A | 99.5 | - | 0.050 | 0.04 | 0.050 | 0.05 | 0.250 | 0.05 | - | 0.070 | 0.03 |
| 1060 | AW-1060 | A91060 | 99.6 | - | 0.050 | 0.35 | 0.030 | 0.03 | 0.250 | 0.03 | 0.05 | 0.050 | 0.03 |
| 1070 | AW-1070 | A91070 | 99.7 | - | 0.04 | 0.25 | 0.03 | 0.03 | 0.200 | 0.03 | 0.05 | 0.04 | 0.03 |
| 1070A | AW-1070A | A91070A | 99.7 | - | 0.030 | 0.25 | 0.030 | 0.030 | 0.200 | 0.030 | - | 0.070 | 0.03 |
| 1100 | AW-1100 | A91100 | 99.00 | - | 0.05 - 0.20 | Si+Fe | - | 0.05 | 0.950 | - | - | 0.100 | 0.05 |
| 1145 | AW-1145 | A91145 | 99.45 | - | 0.050 | Si+Fe | - | 0.05 | 0.550 | - | - | - | 0.03 |
| 1200 | AW-1200 | A91200 | 99 | - | 0.05 | Si+Fe | - | 0.05 | 1 | 0.05 | - | 0.100 | 0.05 |
| 1230 | AW-1230 | A91230 | 99.3 | - | 0.10 | Si+Fe | 0.05 | 0.05 | 0.7 | 0.05 | 0.05 | 0.100 | 0.03 |
| 1235 | AW-1235 | A91235 | 99.35 | - | 0.05 | Si+Fe | 0.05 | 0.05 | 0.65 | 0.06 | 0.05 | 0.100 | 0.03 |
| 1350 | AW-1350 | A91350 | 99.5 | 0.01 | 0.05 | 0.4 | - | 0.01 | 0.1 | - | - | 0.050 | 0.10 |
| 2000 SERIES (ALLOYED WITH COPPER) | | | | | | | | | | | | | |
| 2024 | AW-2024 | A92024 | Balance | 0.10 | 3.80 - 4.90 | 0.5 | 1.2 - 1.8 | 0.30 - 0.90 | 0.5 | 0.15 | - | 0.250 | 0.05 |
| 3000 SERIES (ALLOYED WITH MANGANESE) | | | | | | | | | | | | | |
| 3003 | AW-3003 | A93003 | Balance | - | 0.20 | 0.70 | - | 1.00 - 1.50 | 0.600 | - | - | 0.100 | 0.05 |
| 3004 | AW-3004 | A93004 | Balance | - | 0.25 | 0.70 | 0.80 - 1.30 | 1.00 - 1.50 | 0.3 | - | - | 0.250 | 0.05 |
| 3103 | AW-3103 | A93103 | Balance | 0.10 | 0.10 | 0.70 | 0.30 | 0.90 - 1.50 | 0.5 | - | - | 0.200 | 0.05 |
| 3104 | AW-3104 | A93104 | Balance | - | 0.05 - 0.25 | 0.80 | 0.80 - 1.30 | 0.8 - 1.4 | 0.600 | 0.1 | 0.05 | 0.250 | Ga: 0.05, 0.05 other |
| 4000 SERIES (ALLOYED WITH SILICON) | | | | | | | | | | | | | |
| Available on Request | | | | | | | | | | | | | |
| 5000 SERIES (ALLOYED WITH Magnesium) | | | | | | | | | | | | | |
| 5005 | AW-5005 | A95005 | Balance | 0.10 | 0.2 | 0.70 | 0.50 - 1.10 | 0.20 | 0.3 | - | - | 0.250 | 0.05 |
| 5050 | AW-5050 | A95050 | Balance | 0.10 | 0.2 | 0.70 | 1.10 - 1.80 | 0.10 | 0.4 | - | - | 0.250 | 0.05 |
| 5052 | AW-5052 | A95052 | Balance | 0.15 - 0.35 | 0.10 | Si+Fe | 2.20 - 2.80 | 0.10 | 0.45 | - | - | 0.100 | 0.05 |
| 5251 | AW-5251 | A95251 | Balance | 0.15 | 0.15 | 0.50 | 1.70 - 2.40 | 0.10 - 0.50 | 0.4 | 0.15 | - | 0.150 | 0.05 |
| 5754 | AW-5754 | A95754 | Balance | 0.30 | 0.10 | 0.40 | 2.60 - 3.60 | 0.50 | 0.4 | 0.15 | - | 0.200 | 0.05 |
| 6000 SERIES (ALLOYED WITH Magnesium & SILICON) | | | | | | | | | | | | | |
| 6061 | AW-6061 | A96061 | Balance | 0.04 - 0.35 | 0.15 - 0.40 | 0.70 | 0.80 - 1.20 | 0.15 | 0.40 - 0.80 | 0.15 | - | 0.250 | 0.05 |
| 6082 | AW-6082 | A96082 | Balance | 0.25 | 0.10 | 0.50 | 0.60 - 1.20 | 0.40 - 1.00 | 0.70 - 1.30 | 0.1 | - | 0.200 | 0.05 |
| 7000 SERIES (ALLOYED WITH Zinc) | | | | | | | | | | | | | |
| 7072 | W-7072 | A97072 | Balance | - | 0.10 | Si+Fe | 0.10 | 0.1 | 0.7 | - | - | 0.8 - 1.3 | 0.05 |
| 8000 SERIES (ALLOYED WITH OTHER) | | | | | | | | | | | | | |
| 8011 | AW-8011 | A98011 | 97.3 - 98.9 | 0.05 | 0.1 | 0.60 - 1.00 | 0.05 | 0.2 | 0.50 - 0.90 | 0.08 | - | 0.1 | 0.05 |
| 8111 | AW-8111 | A9811 | Balance | 0.05 | 0.10 | 0.40 - 1.00 | 0.05 | 0.05 | 0.30 - 1.10 | 0.08 | - | 0.100 | 0.05 |

Aluminium

Mechanical Properties



ALUMINIUM CHARACTERISTICS

| ALLOY NUMBER | EUROPEAN NAME | ASTM NAME | Proof Strength 0.2% Min (N/mm ²) | Tensile Strength | Elong. % Min. (50mm Gauge Length) | Hardness Max (VPN) | Tempers Available |
|---|---------------|-----------|--|------------------|--|-----------------------|--|
| | | UNS | | | | | |
| 1000 SERIES (PURE) | | | | | | | |
| 1050 | AW-1050 | A91050 | Mechanical Properties available on request | | | | |
| 1050A | AW-1050A | A91050A | 20 min | 65-95 | 20 min | 20HBW | 0, H111, H112, H12, H14, H16, H18, H19, H22, H24, H26, H28 |
| 1060 | AW-1060 | A91060 | Mechanical Properties available on request | | | | |
| 1070 | AW-1070 | A91070 | Mechanical Properties available on request | | | | |
| 1070A | AW-1070A | A91070A | 15 min | 60-90 | 23 min | 18HBW | 0, H111, H112, H12, H14, H16, H18, H22, H24, H26 |
| 1100 | AW-1100 | A91100 | Mechanical Properties available on request | | | | |
| 1145 | AW-1145 | A91145 | Mechanical Properties available on request | | | | |
| 1200 | AW-1200 | A91200 | 25 min | 75-105 | 19 min | 23HBW | 0, H111, H112, H12, H14, H16, H18, H19, H22, H24, H26 |
| 1230 | AW-1230 | A91230 | Mechanical Properties available on request | | | | |
| 1235 | AW-1235 | A91235 | Mechanical Properties available on request | | | | |
| 1350 | AW-1350 | A91350 | 20 min | 65-95 | 20 min | 20HBW | 0, H111, H112, H12, H14, H16, H18, H19, H22, H24, H26, H28 |
| 2000 SERIES (ALLOYED WITH COPPER) | | | | | | | |
| 2024 | AW-2024 | A92024 | 140 max | 220 max | 12 min | 55HBW | 0, T4, T3, T351, T42, T8, T851, T62 |
| 3000 SERIES (ALLOYED WITH MANGANESE) | | | | | | | |
| 3003 | AW-3003 | A93003 | 35 min | 95-135 | 15 min | 28HBW | 0, H111, H112, H12, H14, H16, H18, H19, H22, H24, H26, H28 |
| 3004 | AW-3004 | A93004 | 60 min | 155-200 | 13 min | 45HBW | 0, H111, H12, H14, H16, H18, H19, H22, H24, H26, H28, H32, H34, H36, H38 |
| 3103 | AW-3103 | A93103 | 35 min | 90-130 | 17 min | 27HBW | 0, H111, H112, H12, H14, H16, H18, H19, H22, H24, H26, H28 |
| 3104 | AW-3104 | A93104 | Mechanical Properties available on request | | | | |
| 4000 SERIES (ALLOYED WITH SILICON) | | | | | | | |
| AVAILABLE ON REQUEST | | | | | | | |
| 5000 SERIES (ALLOYED WITH Magnesium) | | | | | | | |
| 5005 | AW-5005 | A95005 | 35 min | 100-145 | 15 min | 29HBW | 0, H111, H112, H12, H14, H16, H18, H19, H22, H24, H26, H28, H32, H34, H36, H38 |
| 5050 | AW-5050 | A95050 | 45 min | 130-170 | 16 min | 36HBW | 0, H111, H112, H12, H14, H16, H18, H22, H24, H26, H28, H32, H34, H36, H38 |
| 5052 | AW-5052 | A95052 | 65 min | 170-215 | 12 min | 47HBW | 0, H111, H112, H12, H14, H16, H18, H22, H24, H26, H28, H32, H34, H36, H38 |
| 5251 | AW-5251 | A95251 | 60 min | 160-200 | 13 min | 44HBW | 0, H111, H12, H14, H16, H18, H22, H24, H26, H28, H32, H34, H36, H38 |
| 5754 | AW-5754 | A95754 | 80 min | 190-240 | 12 min | 52HBW | 0, H111, H112, H12, H14, H16, H18, H22, H24, H26, H28, H32, H34, H36, H38 |
| 6000 SERIES (ALLOYED WITH Magnesium & SILICON) | | | | | | | |
| 6061 | AW-6061 | A96061 | 85 max | 150 max | 14 min | 40HBW | 0, T4, T451, T42, T6, T651, T62 |
| 6082 | AW-6082 | A96082 | 85 max | 150 max | 14 min | 40HBW | 0, T4, T451, T42, T6, T651, T62, T61, T6151 |
| 7000 SERIES (ALLOYED WITH Zinc) | | | | | | | |
| 7072 | W-7072 | A97072 | Mechanical Properties available on request | | | | |
| 8000 SERIES (ALLOYED WITH OTHER) | | | | | | | |
| 8011 | AW-8011 | A98011 | Mechanical Properties available on request | | | | |
| 8111 | AW-8111 | A9811 | Mechanical Properties available on request | | | | |



Clad Products

Clad Metals are created when two or more metals are joined together through a laminating process. Clad products are ideal when a product requires material characteristics and properties that cannot be found in a single metal. By combining metals, the superior properties for each, such as strength, corrosion resistance, thermal and electric conductivity, weight, surface finish, availability, cost, even material availability, clad material can create the exact blend of properties needed.

As a result, Clad Metals offer designers, engineers and manufactures the freedom to create new solutions with targeted properties for even the most unique design challenges. This makes Clad products an ideal material of choice for a number of sectors including Petrochemical, Oil and Gas, Construction, Aerospace, Telecommunications, Domestic Appliances, Electronics, Medical and Defence.



Clad Aluminium

Clad Aluminium is becoming widely used as a lower cost alternative to Copper, with better durability and lighter weight. It has a high heat transfer and corrosion resistance, which lends itself to many applications including heat exchangers.

In an era of manufacturing where environmental concerns are increasingly a priority, Clad Aluminium offers several environmental benefits as it is easy, quick and cost effective to recycle.



CLAD METALS: PUSHING THE FRONTIERS OF MANUFACTURING & DESIGN THROUGH INNOVATIVE MATERIAL SOLUTIONS



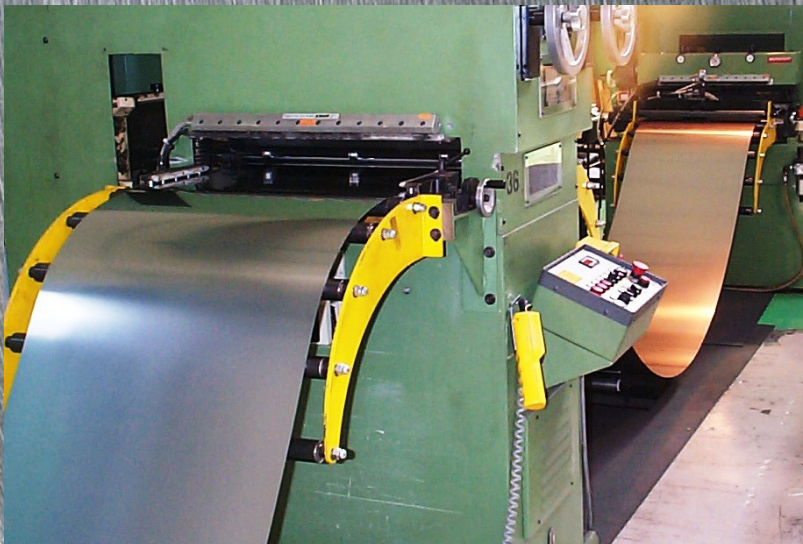


Processing

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



**8 Cut To Length Lines
5 Edge Finishing Lines
27 Recoiling Lines
26 Slitting Lines
4 Traverse Winding 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")**

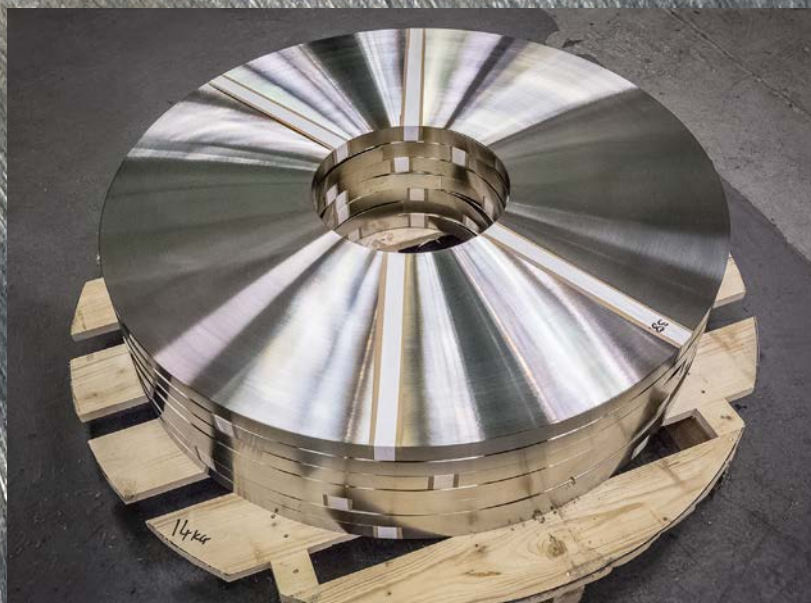
**Thicknesses -0.013mm to
6.5mm (0.0005" to 0.26")**

**Widths - 0.64mm to 1100mm
(0.025" to 43")**

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 be 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.

The information contained herein is given in good faith and is based on our present knowledge and experience. However, no liability will be accepted by The Knight Group and its subsidiaries in respect of any action taken by any third party in reliance thereon. Any advice given by the Company to any third party is given for that party's assistance only and without any liability on the part of the Company.

Any contract between the Company and a customer will be subject to the Company's Conditions of Sale. The extent of the Company's liabilities to any customer is clearly set out in those Conditions; a copy of which is available by request and can also be found at the back of this brochure and on our website.

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KNIGHT GROUP

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