Welding Alloys

Composite Wear Plate Range

Enhancing protection for better output and quality

For Welding **Professionals**

Contents

Our company

Welding Alloys is a global leader in the production of advanced welding consumables and automated welding equipment for hardfacing, cladding, joining and repair.

We also offer an industry-leading range of engineered wear services in our Integra™ workshops or in situ, as well as a wide range of wear plates, pipes and components. For more than 50 years, industrial users across the globe have relied on the expertise of Welding Alloys to increase productivity and reduce costs through effective repair and maintenance solutions.

Since 1966, the name Welding Alloys has been synonymous with excellence in research and development (R&D), resulting in a steady stream of innovative products and advanced technical solutions and services.

Today, our R&D and technical teams remain at the heart of the business, able to solve the most complex industrial wear protection challenges by leveraging the latest scientific and engineering practices.

Many of our technological innovations are a result of tapping into our network of academia, standards organisations, welding associations, and research partnerships across the world. We deliver fast-track wear protection solutions in the most challenging environments and industries, through multidisciplinary teams located around the globe.

Welding Alloys is a participating member of the United Nations Global Compact and supports all principles relating to the environment, labour, human rights, and anti-corruption. With this in mind, we have developed welding wires that emit less harmful fumes, and we manufacture a range of our wires using processes that produce less harmful waste for the environment. Our service solutions also contribute to decreased energy consumption and carbon dioxide emissions by extending the life of new and existing parts through repair and maintenance. We continue to improve our products and processes in order to reduce the negative impact on both the welder and the environment.

Engineered
wear services

Welding Alloys provides a comprehensive range of engineered wear services, both in our workshops and onsite, tailored to meet the specific needs of various industries. Our globally positioned service engineers specialise in delivering customised wear protection solutions that enhance equipment uptime and reduce the total cost of ownership (TCO). With over 50 years of experience and more than 80,000 projects completed, we conduct thorough wear audits and analyses to propose the most effective and economical solutions for our clients.

Our services encompass hardfacing, cladding, and the restoration of components affected by wear phenomena such as abrasion, erosion, impact, and corrosion. Utilising our advanced welding consumables and state-of-the-art equipment, we ensure that our solutions not only meet but often exceed international quality and safety standards. This commitment to excellence guarantees that the performance and lifespan of your equipment are significantly improved.

Industries

As experts in wear protection, our specialised products, equipment, solutions, and capabilities are beneficial for short and long-term plant efficiency, across a wide range of industries.

Our goal is to deliver flexible solutions that are customer-based, with a focus on the reduction of total cost of ownership.

We cater to a range of industries including but not limited to:

- Cement
- Steel Making
- Mining, Quarries & Earthmoving
- Power
- Sugar
- Recycling & Waste
- Pulp & Paper
- Oil & Gas/Petrochemical
- Hydropower
- Railways
- Agriculture & Food
- Forging

Welding Alloys composite wear plates: our offer

Welding Alloys has been a market leader in the manufacture of composite wear plates for many years. Our range of composite overlay wear plates consists of a construction steel base plate, hardfaced with a selection of chromium and complex carbide-based cored welding consumables.

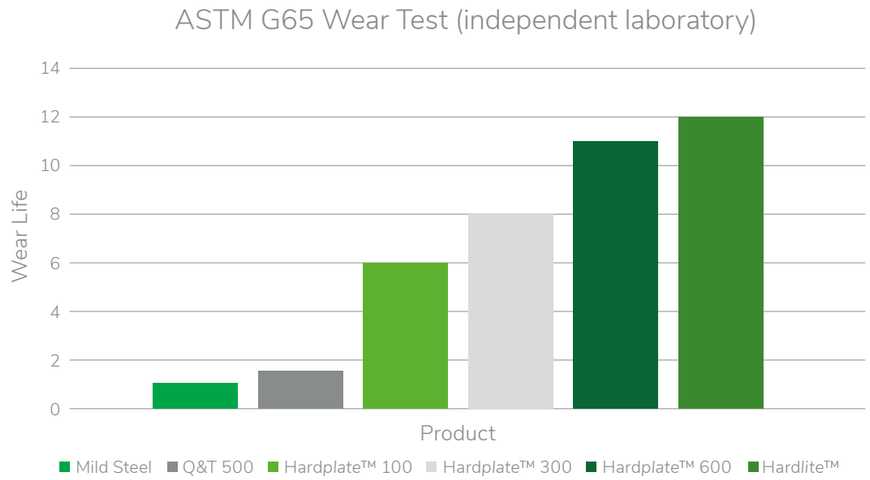
Our standard and complex carbide ranges of welded overlay plates offer wear-resistant properties that far exceed those of quenched and tempered abrasion-resistant steels. All our composite wear plates are manufactured globally using our own technology and state-of-the-art equipment.

All Welding Alloys plate products can be thermally processed using plasma or laser cutting and joined through welding. These thermal processes do not affect the wear resistance in the heat-affected zone, effectively eliminating the preferential wear often observed in such areas when quenched and tempered materials are used.

Why Welding Alloys composite wear plates?

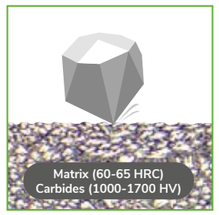
- Homogeneity throughout the welded deposit thickness
- Consistent appearance
- High-quality consistency
- Ability to be cut, formed, and welded to create fabrications – achieved through the use of low-carbon structural steel as the base material for all Welding Alloys' overlay materials

ASTM G65 Wear Test (independent laboratory)
The ASTM (American Society for Testing and Materials) G65 wear test measures the abrasion resistance of materials, ensuring consistent performance evaluation across industries. Independent laboratory results demonstrate the superior wear resistance of Welding Alloys' composite overlay plates. For example, Hardplate™ 100 was 4 times more wear resistant than 500 BHN quenched and tempered steel, while Hardplate™ 300 was 7 times more wear resistant - proving the exceptional durability of Welding Alloys' solutions.



Comparative wear test
This image illustrates the results of a comparative wear test between abrasion-resistant steel plates and Welding Alloys' composite wear plates. It demonstrates how abrasive particles cause large chips in steel plates, whereas Welding Alloys' composite wear plates, with their harder matrix and carbides, produce smaller chips—offering significantly improved wear resistance and durability.

Abrasion resistant steel plate



Welding Alloys' composite wear plate

Our range

Hardplate™
A heavy-duty composite overlay wear plate designed to withstand high operating temperatures, harsh environments, and extreme levels of abrasion. It consists of a low-carbon base material with a welded overlay layer made from various chromium and complex carbide-based alloys. The plate thickness and alloy type are selected based on the specific wear phenomenon, operating conditions, and application requirements.

Versatile and adaptable, Hardplate™ provides exceptional resistance to abrasion, high temperatures, erosion, impact, and corrosion. Its wear-resistant properties far exceed those of quenched and tempered abrasion-resistant steels, with resistance maintained at temperatures of up to 700°C (1290°F), depending on the plate type.

Manufactured in accordance with proven welding procedures and stringent quality assurance standards, Hardplate™ consistently meets the highest expectations of customers and industry standards. Tailored products and solutions are available upon request.

Specifications:
- Tubular products are supplied in lengths up to 3000 mm, with a 75 mm minimum internal diameter after welding
- Both flat and tubular products can be hardfaced on single or both sides
- Products can also be supplied as pre-cut profiles to drawing, or as manufactured components
- Various fitment options are available upon request

Hardplate™ 100	Hardplate™ 300	Hardplate™ 600
Chromium carbides	Chromium + niobium carbides	Complex carbides
Excellent wear resistance	Superior wear resistance	Superior wear resistance
Optimum solution for most applications	For severe conditions of service up to 300°C	Keeps its outstanding properties up to 600°C
Fair corrosion resistance – Designed to withstand moderate impact		
Hardness 60 – 62 HRC	Hardness 61 – 63 HRC	Hardness 62 – 64 HRC
Dimensions (width x length)		
1500 mm x 3000 mm & 2000 mm x 3000 mm		
Thickness		
Base plate: 5 to 15 mm		
Coating: 3 to 15 mm		
Other sizes available on request		

Hardplate™ FlowMax
A smooth, wear-resistant plate product welded using a process that minimises crack formation. Fine chromium carbide particles are uniformly dispersed within a ductile matrix, enhancing through-thickness wear resistance. Its smooth surface provides a low coefficient of friction, significantly reducing material build-up. In cold environments or when handling naturally sticky materials, build-up has been reduced by up to 75%.

Hardplate™ FlowMax Plus
For applications involving extreme impact, we have developed Hardplate™ FlowMax Plus. This smooth plate incorporates chromium and complex carbides, uniformly distributed within a tough, ductile matrix to deliver exceptional wear and impact resistance.

Specifications:
- Plates are supplied in flat product form, or as rolled pipe and tube, with the minimum rolling radius taken into account
- Products can also be supplied as pre-cut profiles to drawings, or as manufactured components
- Various fitment options are available upon request

Hardplate™ FlowMax	Hardplate™ FlowMax Plus
Consistent and uniform carbide dispersion in the overlay weld material improves through-thickness wear resistance and properties.	Outstanding wear resistant properties are achieved through the formation of primary and eutectic chromium and complex carbides.
Keeps its outstanding properties up to 300°C.	Keeps its outstanding properties up to 450°C.
Provides excellent resistance to impact and abrasion in general applications.	Suitable for applications where severe abrasion and impact occur.
Smooth surface, welded through a process that ensures minimal crack formation	
Hardness 59 – 62 HRC	Hardness 59 – 62 HRC
Dimensions (width x length)	
3000 mm x 600 mm & 3000 mm x 1000 mm	600 mm x 3000 mm
Thickness	
Base plate: 5 to 13 mm	Base plate: 10 to 13 mm
Coating: 5 to 20 mm	Coating: 10 to 20 mm
Other sizes available on request	

Hard*lite*™
A ultra-thin, lightweight welded overlay wear plate that is easy to handle and form, despite its exceptionally high hardness. It is ideally suited to areas of severe wear caused by extreme abrasion and erosion with low levels of impact, making it perfect for wear protection on moving parts.

Hard*lite*™ features a total plate thickness ranging from 4 to 6 mm, achieved using our proprietary welding procedures and cored welding consumables. These processes minimise the effects of base material dilution, ensuring a refined microstructure with evenly distributed chromium carbide particles throughout the overlay material.

Hard*lite*™ can be shaped, formed, and fabricated, with additional features such as bolts, studs, and handles added.

Specifications:
- Both flat and rolled tubular products are only hardfaced on one side; all tubular products have a longitudinal seam.
- These products can also be supplied as pre-cut profiles to drawing or as manufactured components
- Various fitment options are available upon request

Hard*lite*™
Refined microstructure with high volume of chromium carbides
Extremely high wear resistance
Fair corrosion resistance – Designed to withstand moderate impact
Hardness 64 – 66 HRC
Dimensions (width x length)
1000 mm x 2000 mm
Thickness
Base plate: 2 or 3 mm
Coating: 2 or 3 mm

Tuff*plate*™
Tuff*plate*™ is a high-performance composite overlay wear plate designed by Welding Alloys to tackle both abrasion and impact in demanding applications. It consists of a low-carbon steel base hardfaced with an alloy containing finely dispersed titanium carbides within a high-chromium martensitic matrix. This innovative composition delivers outstanding resistance to wear and impact, making Tuff*plate*™ an ideal solution for environments where these challenges frequently occur.

Produced using Welding Alloys' specialised cored welding wire and rigorous quality control processes, Tuff*plate*™ ensures a uniform chemical composition and consistent distribution of carbide particles. This guarantees a reliable through-thickness wear rate, extending durability and performance.

Specifications:
- Tubular products are supplied in 3000 mm maximum length, with a 75 mm minimum internal diameter after welding
- Both flat and tubular products can be hardfaced as single or double sided products
- Based on customer requirements, products can also be supplied as pre-cut and profiled liners, conforming to drawing specifications, or as complete manufactured components, ready to install
- Various fitment options are available, based on installation requirements and customer specifications

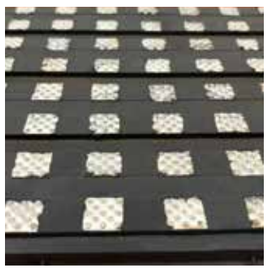
Tuff*plate*™
Finely dispersed carbides within a tool steel matrix. Ideal for areas with a combination of abrasion, pressure and impact
Hardness 56 – 58 HRC
Dimensions (width x length)
1500 mm x 3000 mm
Thickness
Base plate: 5 to 15 mm
Coating: 3 to 15 mm
Other sizes available on request

Advanced wear plates

Hardplate™ UltraThick
Designed for extreme operating conditions, this wear plate offers exceptional resistance to impact and abrasion. Chromium and complex carbide-based alloys are combined with advanced manufacturing techniques to enhance carbide formation, size, orientation and matrix toughness - resulting in a highly durable final product.

Ceramic composite wear plates
Suited to high-speed sliding applications, these plates combine ultra-hard cylindrical alumina pellets with a resilient rubber base to deliver exceptional wear resistance and impact absorption. This design extends liner life by 4 to 12 times, helping to reduce downtime and minimise production losses.

Rubber wear plates
Designed for high-impact applications, these plates offer excellent shock absorption and wear resistance, especially when profiled to optimise material flow. Steel backing improves durability, while easy installation helps minimise downtime. Benefits include extended service life, reduced noise, minimal clogging and lower maintenance costs. A cost-effective alternative to traditional steel wear components.



Thermal sprayed wear plates
Ideal for harsh environments, these plates offer outstanding resistance to abrasion, corrosion and high temperatures. A dense, hard coating is applied to a steel substrate to improve durability, reduce downtime and extend equipment life - providing a cost-effective wear protection solution.

Wear plate applications

Separation cyclone
A mineral processing plant experienced breakouts in the lining of its magnetic separation cyclone. To enhance durability, Hard*plate*™ 100 lined with ceramic tiles was used, significantly improving the wear life of the component.

Wheel reclaimer bucket
In the mining industry, a wheel reclaimer bucket was upgraded with Hard*plate*™ 100 to combat abrasion. Wear life improved from 2 to 10 months, increasing production time and reducing maintenance downtime.

Classifier louvres
Classifier louvres fabricated from Hard*lite*™ lasted three times longer than the original wear plate, helping the customer extend production time.

Chute
Frequent repairs caused by abrasion and impact in the chute were reduced with Tuff*plate*™, a thick wear plate designed to resist both.

Innovation

Innovation is at the core of everything we do, we never stop learning.

Innovation is an integral part of Welding Alloys' approach to industrial solutions, and we have consistently invested in this area since our inception in 1966.

Our continuous development approach has aided the identification of new opportunities worldwide and given birth to numerous innovative solutions, always with customer satisfaction as our focus. Our simple philosophy allows us to continue to deliver best-in-class products and services to customers operating in various industries across the globe.

Our unique culture of continuous innovation forms the backbone of the company and our teams of engineers are constantly interacting to share knowledge, information and ideas. Collaboration across on-site operations and the consideration of customer requirements to improve existing products and develop new ones, are always based on sound scientific principles and engineering solutions.

Over the past three decades, Welding Alloys has built, and continues to grow, a global network of universities and research organisations. This allows us to remain at the forefront of the latest market trends and state-of-the-art technological innovations.

Our global footprint

Our specialists and industry experts are active in 150 countries across the world and have an in-depth understanding of the operating conditions and customer requirements across a wide range of sectors.

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Welding Alloys

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