



Bisalloy
WEAR



ABRASION RESISTANT STEEL PLATE

BISALLOY® steel - performance for life.

KEY FACTS

BISALLOY® Wear steel has been Australia's performance steel product of choice for over 40 years in some of the toughest applications including:

- Demolition tools
- Ground engaging tools
- Earthmoving buckets
- Drag line buckets
- Wear plates
- Chutes

Since 1980, Bisalloy Steels has proudly been Australia's only manufacturer of quenched and tempered steel plate used for armour, structural and wear-resistant steel applications and has established an outstanding international reputation for quality products and technical support.

Putting performance first, we work closely with manufacturers, specifiers, distributors and channel partners to deliver innovative products and service solutions and have become the trusted performance steel partner to customers across Australia and the world.



Technical data at your fingertips

Visit www.bisalloy.com.au to quickly access detailed:

- **Information on Bisalloy Steels' products and solutions, services and distributors**
- **Reference materials including a range of Technical Guides with detailed information on fabrication, performance, specifications and product comparisons**
- **Case Studies on projects utilising Bisalloy Steels' performance steel products and also the latest company news**



Your performance steel partner

As a specialist supplier of quenched and tempered steel plate, Bisalloy Steels is highly responsive and agile in partnering with our customers to meet their demands, specialised needs and market challenges in Australia and across the globe.

- To fully meet the challenges of our customers, we focus on our performance first to ensure we consistently excel in our field of expertise and deliver the best in performance steel products
- We form strong partnerships with our customers and develop a deep understanding of their businesses and needs, enabling us to deliver value-added products and services that support their success
- We collaborate with leaders in science, technology and steel manufacture on intensive research programs involving critical testing and evaluation of materials to produce innovations at the forefront of steel technology worldwide



BISALLOY® Wear steel

With its remarkable hardness and ability to withstand the toughest wear and tear, BISALLOY® Wear steel is the number one choice of countless industries for use in the most highly demanding applications.

When the teeth of a giant earthmoving bucket bite into a mountain side, or a mighty machine wrests rich resources from the earth, only through-hardened BISALLOY® Wear steel grades are tough enough to withstand the unforgiving and unrelenting torture of the daily grind in such abrasive environments.

The hard and fast rule of big business will always be 'time is money', and when millions of dollars are at stake and every productive minute counts, nobody can afford unnecessary and costly downtime for repairs and replacement.

Wherever you find tough jobs involving unmerciful impacts and extraordinary abrasion, you will always find BISALLOY® Wear steel.

Keep that in mind the next time you see a chainsaw blade slice through timber, a farm plough turning a field, the ever-churning mixer of a cement truck, or a garbage truck with its ravenous compactor devouring waste.

Made to meet the serious demands on steel components in the world's harshest working environments, Bisalloy Steels' world class BISALLOY® Wear steel grades ensure that properties such as ductility, weldability and toughness are maximised, while also complying with the requisite hardness and strength requirements.





The benefits of choosing BISALLOY® Wear steel

Australian made

This represents the highest standards in quality and service, which customers in Australia and our global markets have relied upon for decades.

Known and trusted

You have the confidence of working with known and trusted, quality products from an Australian steel manufacturer with over 40 years of expertise in producing market-leading wear grade steel and other performance steel products for Australia and the world.

Technical expertise

Our people are experts in specifying, developing, manufacturing and using our products. Bisalloy Steels' range of wear plate grades are specifically designed, hot rolled and heat treated to provide the best solution in a wide range of demanding applications.

Product quality

Bisalloy Steels' product quality is second to none. The technology used in the manufacture of BISALLOY® steel is not only world class, but the demands of high strength and high hardness steels dictate the need for one of the most stringent process routes utilised in the manufacture of steel plate, anywhere in the world.

Partnership Focused

With Bisalloy Steels, you are partnering with a company that works closely with customers, and engages with leaders in science and technology, to deliver truly innovative and tailored product solutions and services.

Product range

We locally produce a wide range of quenched and tempered steel products to meet the varying requirements and needs of our many customers – and are committed to ongoing research and development to ensure Bisalloy Steels' product range remains at the leading edge of available quenched and tempered steels.

The BISALLOY® Wear steel range

Performance steels are well established in the Australian steel plate market, with designers, fabricators and end-users utilising the enhanced properties of these steels in a range of applications.

BISALLOY® Wear steel plate has long been a popular choice in the mining and resources sector for equipment such as dump truck bodies, storage bins, hoppers and chutes, where lighter weight, wear and impact resistance, combined with straightforward fabrication has facilitated ready adoption.

Performance steel is a material of the future – not only can BISALLOY® Wear steel offer a number of advantages which can be exploited in developing solutions to both every day and difficult or unusual engineering problems, performance steel can offer environmentally positive benefits such as mass savings, reduced manufacturing costs, the

possibility high load or high fatigue operations, and greater load carrying capacities.

Bisalloy Steels has recently introduced a new product nomenclature. The following table details the grade equivalents.

Note: Only the designation has changed – not the product

Previous Name	New Name
BISPLATE® 320	BISALLOY® Wear 320 steel
BISPLATE® 400	BISALLOY® Wear 400 steel
BISPLATE® 450	BISALLOY® Wear 450 steel
BISPLATE® 500	BISALLOY® Wear 500 steel
BISPLATE® 600	BISALLOY® Wear 600 steel



BISALLOY® WEAR 320 STEEL

Introduction

BISALLOY® WEAR 320 steel is a through hardened, abrasion resistant steel plate. While being a wear plate, BISALLOY® WEAR 320 steel offers the optimum combination of hardness, impact resistance and formability for wear applications requiring extensive forming/drilling or fabrication in abrasive applications.

Applications

With a nominal hardness of 340 HBW, BISALLOY® WEAR 320 steel is an ideal choice for applications that require a balance of hardness and toughness, including:

- Deflector Plates
- Demolition Tools
- Rippers and Lifting Tynes
- Chutes
- Storage Bins
- Dump Truck Liners
- Civil and Earthmoving Buckets

Mechanical properties

Properties	Specification	Typical
0.2% Proof Stress	-	970 MPa
Tensile Strength	-	1070 MPa
Elongation in 50 mm G.L.	-	16%
Charpy Impact (Longitudinal) -40°C (10 mm x 10 mm)	-	35 J
Hardness	320 - 360 HB	340 HB

Chemical composition

Thickness (mm)	Weight %	C	P	Mn	Si	S	Cr	Mo	B	CE(IIW)*	CET*
5 - <30	Maximum	0.18	0.025	1.2	0.60	0.008	1.00	0.25	0.002	0.44	0.26
≥30 - 80	Maximum	0.18	0.025	1.3	0.60	0.008	1.00	0.25	0.002	0.54	0.32
>80 - 100	Maximum	0.18	0.025	1.5	0.60	0.008	1.20	0.25	0.002	0.58	0.34

*Typical average

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BISALLOY® WEAR 400 STEEL

Introduction

BISALLOY® WEAR 400 steel is a highly versatile, through hardened, abrasion-resistant steel plate with the ability to withstand high impact and medium level abrasion applications. Bisalloy Steels has been producing BISALLOY® WEAR 400 steel for over 40 years in Australia and it has become the product synonymous with many applications across a range of market segments.

Applications

BISALLOY® WEAR 400 steel is ideal for wear and abrasion resistance applications with some impacts. As a nominally 400 HBW hardness steel, BISALLOY® WEAR 400 steel applications include:

- Dump Truck Wear Liners
- Screw Conveyors
- Chutes
- Storage Bins
- Earthmoving Buckets
- Cyclones
- Deflector Plates
- Ground Engaging Tools
- Cutting Edges

Mechanical properties

Properties	Specification	Typical
0.2% Proof Stress	-	1070 MPa
Tensile Strength	-	1320 MPa
Elongation in 50 mm G.L.	-	14%
Charpy Impact (Longitudinal) -40°C (10 mm x 10 mm)	-	35 J
Hardness	370 - 430 HB	400 HB

Chemical composition

Thickness (mm)	Weight %	C	P	Mn	Si	S	Cr	Mo	B	CE(IIW)*	CET*
5 - <30	Maximum	0.18	0.025	1.2	0.60	0.008	1.00	0.25	0.002	0.44	0.26
≥30 - 80	Maximum	0.18	0.025	1.3	0.60	0.008	1.00	0.25	0.002	0.54	0.32
>80 - 100	Maximum	0.18	0.025	1.5	0.60	0.008	1.20	0.25	0.002	0.58	0.34

*Typical average

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BISALLOY® WEAR 450 STEEL

Introduction

BISALLOY® WEAR 450 steel may be considered the 'all-rounder' of Bisalloy Steels' wear grades range. With a nominal hardness of 450 HBW but formulated to be readily usable and easily bent, formed, welded, cut and drilled, BISALLOY® WEAR 450 steel is ideal not only for components encountering wear but also structures subject to wear such as tipper truck trailers, rubbish skip bins and concrete agitators.

Applications

On request, Bisalloy Steels can offer impact guarantees for BISALLOY® WEAR 450 steel.

Other applications for BISALLOY® WEAR 450 steel include:

- Drag Line Buckets
- Dump Truck Wear Liners
- Liner Plates
- Chutes
- Storage Bins
- Earthmoving Buckets
- Deflector Plates
- Ground Engaging Tools
- Cutting Edges

Mechanical properties

Properties	Specification	Typical
0.2% Proof Stress	-	1150 MPa
Tensile Strength	-	1400 MPa
Elongation in 50 mm G.L.	-	12%
Charpy Impact (Longitudinal) -40°C (10 mm x 10 mm)	-	30 J
Hardness	425 - 475 HB	450 HB

Chemical composition

Thickness (mm)	Weight %	C	P	Mn	Si	S	Ni	Cr	Mo	B	CE(IIW)*	CET*
6 - 20	Maximum	0.23	0.025	1.00	0.60	0.008	0.35	1.00	0.25	0.002	0.46	0.30
25 - 50	Maximum	0.25	0.025	1.20	0.60	0.008	0.35	1.20	0.35	0.002	0.58	0.36
>50 - 100	Maximum	0.30	0.025	1.20	0.35	0.008	0.50	1.50	0.50	0.002	0.72	0.47

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BISALLOY® WEAR 500 STEEL

Introduction

One of the original grades manufactured by Bisalloy Steels, BISALLOY® WEAR 500 steel has been continually manufactured in Australia for over 40 years and is a very high-hardness and abrasion-resistant steel plate that is still readily weldable and usable for a range of applications.

Applications

Being through hardened with a nominal hardness of 500 HBW, BISALLOY® WEAR 500 steel has been developed for highly demanding applications and can offer an increased life expectancy in sliding and gouging abrasion situations.

BISALLOY® WEAR 500 steel is best suited to applications such as:

- Dump Truck Wear Liner 'Dove Tails'
- Ground Engaging Tools
- Bucket Lips and Edges
- Cutting Edges
- Rock Buckets
- Wear Liners
- Chutes

Mechanical properties

Properties		Specification	Typical
0.2% Proof Stress		-	1400 MPa
Tensile Strength		-	1640 MPa
Elongation in 50 mm G.L.		-	10%
Charpy Impact (Longitudinal) -40°C (10 mm x 10 mm)		-	25 J
Hardness	8 - 40 mm	477 - 530 HB	500 HB
	>40 - 100 mm	450 - 530 HB	500 HB

Chemical composition

Thickness (mm)	Weight %	C	P	Mn	Si	S	Ni	Cr	Mo	B	CE(IIW)*	CET*
8 - 40	Max	0.32	0.025	0.40	0.35	0.008	0.35	1.20	0.30	0.002	0.62	0.40
>40 - 100	Max	0.30	0.025	1.20	0.35	0.008	0.50	1.50	0.50	0.002	0.72	0.47

*Typical average

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BISALLOY® WEAR 600 STEEL

Introduction

BISALLOY® WEAR 600 steel is the hardest abrasion-resistant steel currently produced by Bisalloy Steels. With a nominal hardness of 600 HBW or 57.0 Rockwell Hardness (HRC), BISALLOY® WEAR 600 steel provides the highest level of wear resistance for abrasion applications, while still being tough enough to absorb impacts.

Applications

Specifically developed for use in highly abrasive and harsh environments encountered in mining, quarrying and earthworks applications, BISALLOY® WEAR 600 offers exceptionally long life in applications with maximum sliding and minimal impact such as:

- Wear Liners for Chutes
- Ground Engaging Tools
- Cutters and Cutting Edges
- Shredders
- Hammers

Mechanical properties

Properties	Specification	Typical
Charpy Impact (Longitudinal)* -40°C (10 mm x 10 mm)	-	12 J
Hardness	570 - 640 HB	600 HB

Chemical composition

Thickness (mm)	Weight %	C	P	Mn	Si	S	Ni	Cr	Mo	B	CE(IIW)*	CET*
12 - 50	Maximum	0.45	0.020	0.40	0.35	0.005	1.0	1.2	0.30	0.002	0.75	0.52

*Typical average

BISALLOY® WEAR 600 steel obtains its superior mechanical properties by quenching and when necessary by means of subsequent tempering. The properties of the delivered condition cannot be retained after exposure to temperatures in excess of 250°C and BISALLOY® WEAR 600 steel is not intended for further heat treatment.

Safety Considerations and Advice

BISALLOY® WEAR 600 steel is designed for wear applications and should not be used in any structural applications.

It is recommended that all fabrication of BISALLOY® WEAR 600 steel should be undertaken in strict accordance with these recommendations to avoid personal and/or equipment damage.

Bisalloy Steels' recommendations for the processing and handling of BISALLOY® WEAR 600 steel are provided to prevent any harm or injury which may result from the inappropriate unsafe use and handling of very high hardness steels.

All appropriate and/or necessary safety measures are the responsibility of the buyer and/or user in order to prevent personal injury or equipment damage during handling and/or processing of BISALLOY® WEAR 600 steel.

Due to the very high hardness of this BISALLOY® WEAR 600 steel product, the plant and equipment used for lifting and loading must be suitable for the job.

In particular, the following should be noted:

- If using vertical lifting dogs/clamps, ensure they are suitable for lifting such high hardness plate
- Avoid shock loading/dropping and other sudden impact during plate lifting/handling

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