Baldwin International

Catalog 2004

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E–Z Braze

CONTENTS:

Special points of interest:

E–Z Braze is beneficial wherever machining versatility and shock resistance are required.

With high levels of Nickel and Manganese, which promote wear resistance, E–Z Braze maintains its extended service life.

E–Z Braze is chemically engineered to be a "tough" alloy steel.

E–Z Braze is available in various stocking sizes and can be machined and formed to your application's specifications

E–Z Braze Reduces Costs

True to its name, E–Z Braze is easy to weld and easy to form. Use E–Z Braze where ease of fabrication and resistance to shock are required. E–Z Braze is a custom–made product. It is not a re–branded trade–named commercial plate.

Significant cost reduction, relative to service life and to reduction of lost time, has been proven in actual field conditions in almost every heavy industrial maintenance application.

Benefits of E–Z Braze

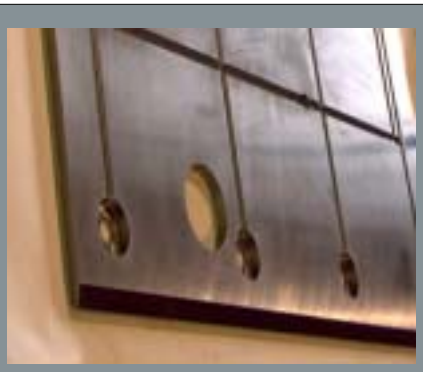
- High degree of wear resistance. The high levels of Nickel (1.3%) and Manganese (1.8%) allow special mill processing which increases wear resistance.
- Deep and uniform hardness
- Increased toughness. The high levels of Nickel and Manganese allow special mill processing which increases toughness.
- Predictable service
- Predictable response to fabrication
- Safer weld and repair characteristics
- Self–polishing. Continued abrasive service will cause the surface to become polished, which will reduce hang–up and promote material flow.
- Work hardening in field service. Under continuous abrasive service, it will harden up to 17%.
- Exacting quality control
- Resists vibratory failure
- Resists gouging and impact
- Made in controlled electric furnaces to best utilize the advantages of clean steel technology. The molten metal is vacuum degassed to remove impurities. The steel then undergoes a process which reshapes any remaining impurities. This process, inclusion shape control, neutralizes the detrimental effect of remaining sulfides or other impurities. This same process is used to refine steels specified for critical use applications such as aircraft parts, etc.

"E–Z Braze is a custom–made product, not a re–branded trade–named commercial grade plate."

Stocking Sizes

thick	4x4	4x8	4x12	4x24	6x8	6x12	6x24	8x12	8x24
3/16									
1/4									
3/8									
1/2									
5/8									
3/4									
7/8									
1									
1-1/8									
1-1/4									
1-1/2									
2									
2-1/2				Sizes not available					
3									
3-1/2									
4									
4-1/2									
5									
5-1/2									
6									

Common Applications for E–Z Braze



Wear liner with machines grease grooves.

- Back Up Plates
- Scraper / Grader Blades
- Bucket Lips & Liners
- Shot Blaster Liners
- Bulldozer Blades
- Skip Car Liners
- Chutes
- Truck Box Liners
- Coal & Coke Bin Liners
- Wear Bars, Plates & Strips
- Concrete Mixer Liners
- Hammers
- Scrap Baler Liner
- Muller Bottoms
- Scraper Blades

Chemistry

C	MN	P	S	Si	Ni	Mo	V	B	AL
.24	2.0	.015	.015 MAX*	.30	1.50	.20	.010	.003 MAX	.020

*typical sulfur content is .006

Typical Mechanical Properties

Tensile	165,000 psi
Yield	135,000 psi
% of elongation	23%
Reduction in area	58%

Typical Charpy V Notch impact (ft/lbs)

	Longitudinal	Transverse
at 72°F	30-47	16-32
at -50°F	16-20	10-13

E–Z Braze Outlasts the Competition

What makes E–Z Braze last longer than AR plate?

The Need for Hardness AND Toughness

Utilizing a special chemistry that allows for high hardness while serving to increase the overall toughness of the steel, Baldwin International has developed E–Z Braze, a high–alloy answer for applications that require resistance to both abrasion and surface fatigue. While other AR (abrasion resistant) plates are effective at preventing abrasion wear, the wear of surface fatigue, which some researchers believe is "the main way that material is removed in wear processes,"[1] is often ignored. Because of the misguided belief that has become so common, high–hardness, low–toughness AR plates are prevalent.

After time, however, these plates will have to be prematurely replaced, victims of surface fatigue. The chemistry of these plates simply does not provide for such wear. The alternative is E–Z Braze, the leader in preventing both abrasion and surface fatigue wear.

This custom made plate, exclusive to Baldwin, is specially milled for toughness as well as hardness. The 1.80% level of Manganese (compared to 1% in generic AR plate) allows for the formation of carbides, highly compact binary compounds of carbon and heavy metals, that promote high degrees of wear resistance such as those used in metal–cutting carbide tool bits.

The 1.30% level of Nickel (compared to trace – 0.1% in generic AR plate) promotes deeper, more uniform hardening by essentially acting as structural supports within the steel.

What results is a steel that will not crack and will not wear out. E–Z Braze will be a long–lasting plate that will greatly reduce cost over the long term, will save valuable time, and will prevent the headaches that result from applied plate failure.

Useful Definitions[2]

- *Wear* is defined as damage to a solid surface resulting from motion between that surface and any contacting substance.
- *Abrasion* is a type of wear caused by hard particles or protrusions being forced against a surface.
- *Surface fatigue* occurs when there is extensive and repeated friction between the solid surface and a substance repeatedly sliding or rolling upon it.
- *Hardness* is the resistance to penetration. In the road construction analogy, when hardness is not sufficient and something drags across it, a snow plow for instance, the road surface will be gashed.
- *Toughness* is the resistance to internal fracture created by extensive use. High traffic roads, in time, will develop cracks and potholes because of a lack in toughness.

[1] Budinski, Kenneth G. *Surface Engineering for Wear Resistance*. p. 7.

[2] Ibid.

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We're on the Web!
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Specialty Steels for Industry

If you are looking for a specialty steel supplier that has the quality and the experience to fulfill your unique material needs, then look no further. Merging in 1986 from two of the leading alloy steel companies in the U.S., Baldwin International has become the recognized leader in finding answers for your maintenance problems. No other company can provide the unique materials, generations of experience and the on–site assistance that we provide daily to our customers.

For almost 50 years, Baldwin International has been developing unique materials that provide longer life and less down time in maintenance applications of shafting, wear liners, and steel fabrications. Unlike steel suppliers that provide a whole gamut of "generic" steels, we have "enhanced" materials, engineered for specific needs, and the wisdom to guide you in your selection.

Please check out some of our products and the related information. And please contact us for any further questions that you may have. We would be happy to have one of our experienced representatives at your service.

Machining Information

Machining	High Speed Tooling
Welding	Low Hydrogen
Flame Cutting	Standard Torch

Heat Treatment

Hardening	1575°F - 1600°F
Quench Media	water, oil
Tempering	850°F
Annealing	1425°F - 1575°F
Stress Relieving	800°F - 900°F
Normalizing	1500°F - 1600°F