

STULZ-SICKLES STEEL COMPANY

SINCE 1916

CREUSABRO®

The Most Advanced Wear Resistant Steels

We'll Wear Out



Your Rocks

STULZ-SICKLES STEEL COMPANY

1-800-351-1776 • Fax 609-387-4762

2 Campus Drive, Burlington, New Jersey

www.stulzsicklessteel.com

MANGANAL

HIGH MANGANESE HIGH CARBON STEEL

PHYSICAL PROPERTIES

Yield Strength 60,000/85,000 psi
Tensile Strength 120,000/130,000 psi
% Elongation in 2" 35%/50%
Hardness as Rolled 230 bhn
Work Hardens to 550 bhn
Hadfield Grade, Fully Austenitic
Fully Heat Treated, ASTM A128

CHARACTERISTICS

- Resists all types of impact
- Rapidly work-hardens to 550/600 bhn.
- Remains ductile, resisting breakage.
- Work-hardened surface becomes frictionless, allowing material to slide easily.
- Nonmagnetic
- Can be cut by oxy-acetylene torch, plasma, water jet or by laser.

Weld with Stulz Manganese XL stick or Stulz 1616 mig wire

MANGANAL IS USED FOR MAINTENANCE AND REPAIR IN MANY DIFFERENT INDUSTRIES WHERE HEAVY IMPACT OR METAL-TO-METAL WEAR IS A PROBLEM.

FREQUENTLY ASKED QUESTIONS

WHAT IS UNUSUAL ABOUT MANGANAL?

Manganal thrives on severe wear conditions. The more impact and hammering it receives, the harder the surface becomes. This characteristic, known as work-hardening, plus the fact that it remains ductile underneath, makes it a most effective steel in combating impact.

HOW HARD CAN THE SURFACE GET BY WORK-HARDENING?

Depending on deformation of the surface crystalline structure, it can work-harden up to more than 550 Brinell. When originally put into service it is about 230 Brinell.

HOW DOES MANGANAL BEHAVE UNDER IMPACT WITH NO ABRASION?

One example of surface work-hardening under almost pure impact is the liners of shot blast cabinets. Manganal work-hardens rapidly, takes a smooth polish due to its low friction property, yet retains its great toughness under the hardened surface. Generally, the heat treated alloy and tool steels, although of high hardness, tend to erode comparatively fast, and break down on the surface.

HOW IMPORTANT IS THE CARBON CONTENT IN MANGANAL?

The carbon content is very important because when a Manganal plate is impacted, the carbon binds with the manganese and allows the surface to work harden. The result is less wear on the thickness of the plate prior to complete work-hardening. For manganese steel to be considered Hadfield grade, the carbon content must be 1.0% or higher.

HOW ABOUT MACHINING MANGANAL?

Manganal is machined within limits, using special methods and tooling. When a drill or cutting tool is applied to Manganal, it quickly work-hardens the area to the extent that machining becomes very difficult. Therefore Manganal does not lend itself to machining by usual machine shop methods.

WHAT METHODS ARE EASILY USED TO WORK MANGANAL?

It can be flame cut by oxy-acetylene torch, cut by abrasive cut-off machine and electric welded. Shearing, bending, and rolling require heavy equipment which has at least twice the capacity that would be needed for the same thickness of mild steel; though much easier formed than AR400 steels.

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MANGANAL SALES COMPANY

Colton, California

1-800-572-5809 • Fax 909-824-2137

www.manganal.com

MANGANAL

WEAR RESISTANT HIGH MANGANESE STEEL APPLICATOR BARS AND PLATE
STULZ HADFIELD GRADE • 12-14% MANGANESE • 1.1/1.4 CARBON

FLAT						ROUND	SQUARE	PLATE
SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	SIZE	THICKNESS
3/16" x 2-1/2"	3/8"	1/2"	3/4"	1"	1-1/2"	3/8" 2-1/4"	3/8"	** 1/8" ** 1-1/8"
	1"	1"	1-1/2"	1-1/2"	2"	1/2" 2-1/2"	1/2"	3/16" † 1-1/4"
1/4"	1-1/2"	1-1/2"	2"	2"	6"	5/8" 3-1/8"	5/8"	1/4" 1-3/8"
1"	2"	2"	2-1/2"	3"		3/4" 3-1/2"	3/4"	5/16" 1-1/2"
1-1/2"	2-1/2"	2-1/2"	3"	4"	2"	7/8" 4-1/8"	1"	3/8" 1-5/8"
2"	3"	3"	3-1/2"	5"	3"	1" 4-1/2"	1-1/4"	1/2" 1-3/4"
2-1/2"	4"	3-1/2"	4"	6"	4"	1-1/8" 5-1/8"	1-1/2"	5/8" 2"
3"	4-1/2"	4"	5"	8"	6"	1-1/4" 5-1/2"	2"	3/4" 2-1/4"
4"	5"	5"	6"			1-1/2" 6-1/8"		7/8" 2-1/2"
5"	6"	6"				1-3/4" 6-3/4"		1" 3"
						2" 7-1/8"		



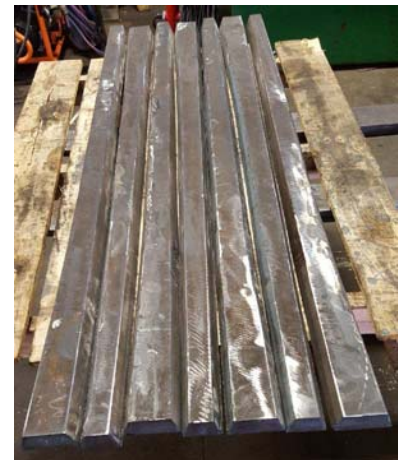
Manganese Round Bars, Inside Formed Liner, and Outside Cheeks after 24 months in Shot Rock



Manganese Cheek Plates for Metso 120 Crusher
Holes Custom-Machined to fit socket head for quick changing!



Manganese Bars, Rolled Skis, Cheek Liners and Corner pucks for Severe Applications



Manganese Grizzly Bars Tapered to Spec & Beveled

Stock Plate Sizes

48" x 96" 96" x 96"
 48" x 120" 96" x 120"
 48" x 144" 96" x 144"
 60" x 120" 96" x 192"
 72" X 144" 96" x 240"
 84" X 120" 96" x 288"

** 1/8" x 40" x 120" **

† 3/16" x 96" x 144"

3/16" x 60" x 240"

STULZ-SICKLES STEEL

MANUFACTURES & SUPPLIES

MANGANESE PINS • BUSHINGS

PUNCH PLATES • MAGNET SHELLS

CUSTOM BEVEL EDGES

FOR SUPERIOR

WEAR RESISTANCE

Manganese Angles

Hadfield-grade Steel

1/4" x 2" x 2" x 192" (16")
 1/4" x 4" x 4" x 192"

3/8" x 2" x 2" x 192"
 3/8" x 3" x 3" x 192"

1/2" x 3" x 3" x 96" (8")
 1/2" x 4" x 4" x 144" (12")

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STULZ-SICKLES STEEL SPECIALIZES IN CUSTOM FABRICATIONS

Forming hard steel up to 2" x 14' and 1" x 20'

Drilling and Machining holes - countersunk, counterbored, threaded

Beveling, Welding and Cutting Custom Shapes

All Upon Sketch, Blueprint or Template.



Stulz 8000 3/4" x 72" formed x 144" wide



*Stulz 8000 Cat 988 Rebuild
5/8 x 106 x 153 Floor*



*Plus Cheeks, Cheek Liners and Side Cutters.
Formed Back Top Plate in 1/2" Stulz 4800*



Stulz 4800 D10 Push Plates

*Stulz 8000 Formed to Full C Floor, Cheek
Plates, Outside Cheek Liners,
and custom-cut Wear Bars*



*Stulz 8000 Cheek Liners, and Bars for
the most extreme Wear Resistance*



*Multi-formed
Stulz 4800 blades*



*Stulz 4800 Forms to
90° & 45° Bends, and
easily allows
Threaded,
Countersunk, or
Counter-bored Holes,
while still
outperforming any
water-quenched
steels!*

*Crusher Feeder Wear
Plates*





*3/4" x 84" x 144" Stulz 8000
Formed to Perfect Radius*



*Stulz 8000 1/2 x 82 x 150 Liner
Fits Perfectly*



*Stulz 4800 Floor and Stulz 8000 Machined
Mo'board and bolt-on Edges for old machine*



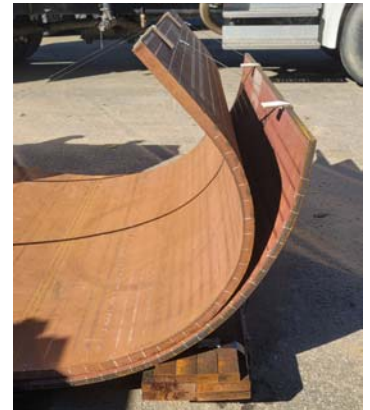
*5/8" Stulz 8000 Formed for Quarry
in Pennsylvania*



*Stulz 8000 Cone Lips welded to Stulz
4800 Cylinders for loading Sand in
Railcars*

*Any Radius in Any
Thickness*

*1" 8000
5/8" 8000*



*Stulz 8000 D8 Blade & Wings for Site-
Development in New York*



*Stulz 8000 Formed Floor & Skis
Custom bars & Cheek Liners*



Dragline Liner in Stulz 4800



Rock Skeleton Bucket in 1-1/4" Stulz 8000



Stulz 4800 & 8000 Unmatched Forming Capabilities



Testimonials of **STULZ-CREUSABRO** 4800 and 8000

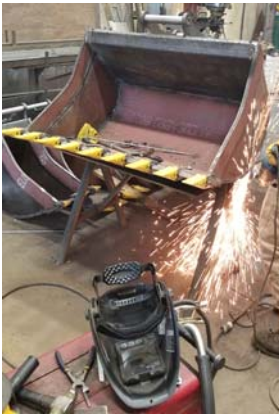


Vermont Dolomite-Limestone Quarry

Stulz 8000 Feeder Floor and 1" Side Rails, two back plates machined for countersunk cap screws

Massive grinding abrasion and explosive impact. **Installed in 2018, Replaced in 2020.** Wearing out AR500 3 times in 2 years

Stulz 8000 Floors and Single-bevel Edge 18 months vs 6 in Hardox



Stulz 8000 Ripper Tooth 40,000 feet, no wear, vs 4,500 feet in AR 400 and completely destroyed.



Stulz 8000 Floor along with Manganese skis bars, pucks, and cheek liner after 1yr in shot rock 6/days a week!



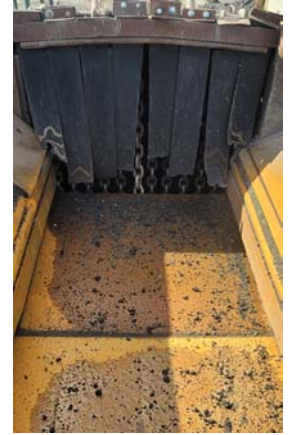
Stulz 8000 Grapple Front and Back Tips 2-1/2 years in Metal Recycling Plant



Sea Door Skis
1" 4800
1" Manganese
1" 8000



Feeder Floor (left) in 1/2" Stulz 4800 after 3 years, no wear, sharp edges still!



1/2" Stulz 8000 over grizzly deck (right) in-service for five years, both and below in Rip-Rap Impact Crusher that sees 80-105k ton of Recycled Asphalt per year!

Drop Plate (below) above curtain blocks in Stulz 8000 lasting two years; touches up with Stulz Universal yearly. 450 wear steel lasted 1/2 saeson.



Reclaimer wall Stulz 8000 vs Hardox 450 3 years vs 1 year!





3/8" Stulz 8000 Chute wears differently. We designed interlocking pieces for maximum wear life. Customer welded studs on back for easy replacement.



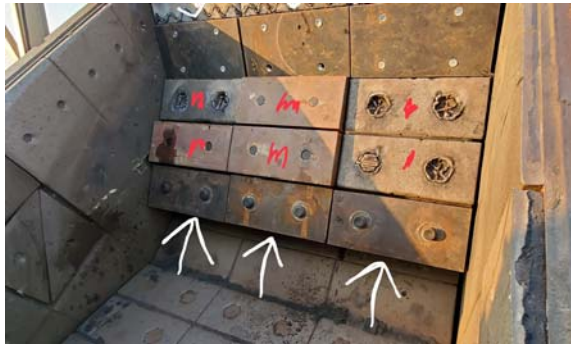
3/8" Stulz 8000 Hopper Wing Panels



140" formed leg (left), 170" formed leg (right). 45-degree leg to create a solid no-break wear shield. Tapered-end for easy matching and welding. 1" Manganese Rounds added to Grizzly Bars for added protection.



Manganese Impact Plates After 120,000 tons of recycled asphalt OEM only lasted 30,000



Bottom 3 plates 2" Manganese vs top six 3" Hardox Flipped Manganese after 2 years (250,000 tons) vs 6-8 months with Hardox. Switched to all Manganese!



Metal Recycling Air Inductor sees massive metal shavings rapid abrasion.

Stulz 4800 after 4 years!



Hadfield-Grade Manganese Anvil in Metal Recycling Plant Outlasted OEM 4 to 1



Crusher Jaw Repointed with 2-1/2" Manganese Round Bars after 1-year in service



Stulz-Sickles Specializes in manufacturing Hadfield-grade Manganese Magnet Shells to your specifications that far outlast standard OEM. We also fabricate high-wear collar flanges.



PC400 Bucket lined with Stulz 8000 Bars at a Coal Mine



*High Grinding Application
Stulz 8000 in Screw Conveyor*



*Fabricated Manganese
Flights for Conveyor*



*Stulz 4800 Scraper
Can Skins*



*Cat 773B Rock Body lined with
Stulz 4800 cut per diagram*



*We measure and diagram
any job!
Cat Articulated Rock Body
in Stulz 8000, Cut to Fit.*



*Rolled Hopper Panels with 45° bend for Side
Rail Protection, the entire length of hopper.*



*Excavator with
custom-formed
Stulz 8000 Floor
reinforced with cut
8000 Bars & Blocks*



*Extreme-Wear Chute -
Manganese on top half,
Complex-Carbide on bottom*

*Stulz-Creusabro Crusher Plates
 - We Machine to Your Specifications -
 Threaded holes • Countersunk • Counter-bored*



*Stulz-8000
 Crusher Apron*

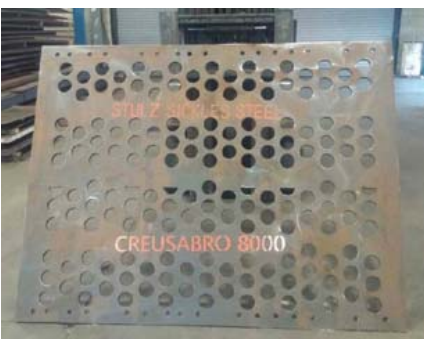


*Designed to replace 5 pieces
 10 Countersunk holes, 3 bends!*

*Custom-Designed Cheek Plates
 Stulz 8000 & Manganese,
 vastly outlasts the OEM
 and We Do It Your Way!*



Stulz 8000 Custom Perforated Punch Plates - we supply angles too!



STULZ-CREUSABRO 4800

A Modern Solution to Wear

SIGNIFICANTLY BETTER WEAR RESISTANCE THAN AR400 DUE TO TRIP EFFECT

TRIP Effect (TRansformation Induced by Plasticity)

WORK HARDENS

Fully Austenitic
Creates an Active Surface
Ensures a Sustained Work Life

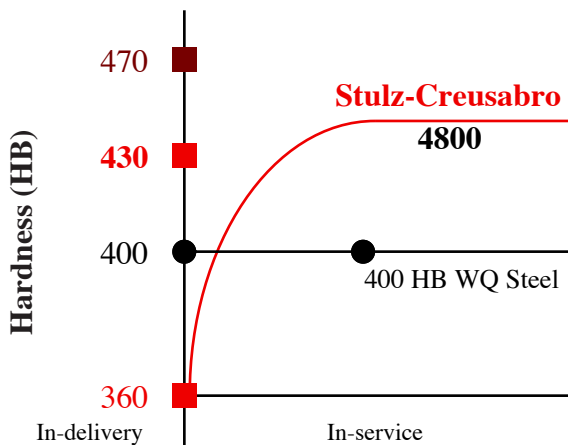
TITANIUM CARBIDE MICROSTRUCTURE

Reduces Chip-Off and Cracking
Resists both Impact and Abrasion

OIL QUENCHED

True Throughout Hardness
Better Flatness
Easy Machining and Processing

TYPICAL HARDNESS (HB) CHART



WQ = Water quenched

400 HB water quenched	Creusabro® 4800
Conventional process Passive material	Innovative process Active material
Just connected to supplied hardness	Combining: • in service hardening • TRIP effect • Microcarbides + Titanium effect
PASSIVE STEEL	REACTIVE STEEL
• Low alloyed steel (C, MN, B) • Water quenching	• Specific addition of alloying elements (Cr, MoB, Ti,...) • Controlled cooling rate



Custom-designed 4800 Perforated Plate



980M Liner Formed To Fit in 4800

Titanium Carbides: In addition to the fine and homogeneous distribution of chromium and molybdenum carbides (respectively 1500 HV and 1800 HV) common to Stulz-Creusabro steels, Creusabro® 4800 is a new generation steel in the field of wear resistance steels with a significant addition of Titanium resulting in the formation of a structure with very hard particles of titanium carbide, TiC reaching a hardness level of 3200 HV. These carbides give to the steel an increased wear resistance.

CHEMICAL ANALYSIS - % WEIGHT

C	S	P	Mn	Ni	Cr	Mo	Other elements
≤ .20	≤ .010	≤ .020	≤ 1.60	≈ .80	≤ 1.90	≤ .40	Ti ≤ .200

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STULZ-CREUSABRO 8000

A Modern Solution to Wear

SIGNIFICANTLY BETTER WEAR RESISTANCE THAN AR500 DUE TO TRIP EFFECT

TRIP Effect (TRansformation Induced by Plasticity)

**WORK HARDENS
TO ABOVE 540 BHN**

**Fully Austenitic
Ductile Interior**

**TITANIUM CARBIDE
MICROSTRUCTURE**

**Reinforced Cell Structure
Eliminates Cracking**

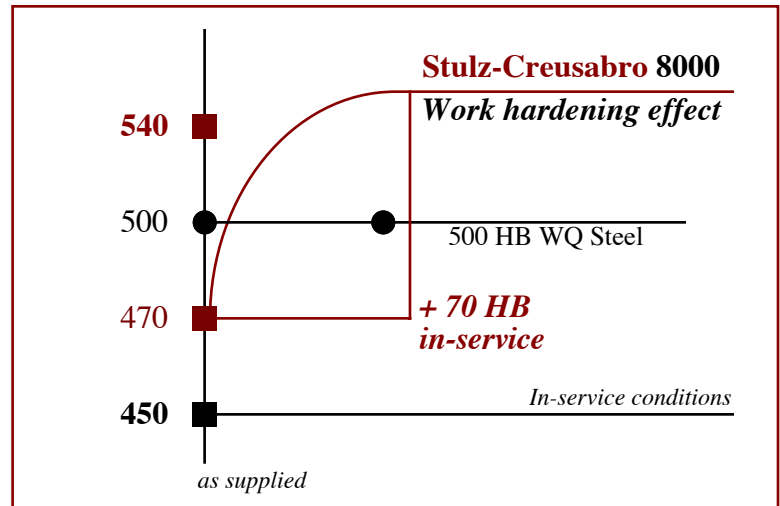
OIL QUENCHED

**Excels in Severe Abrasion,
Impact & High Heat Applications
Withstands High Strain**

500 HB water quenched steel Conventional process Passive material	Creusabro® 8000 Alternative process Active steel
<ul style="list-style-type: none"> » Restricted alloy elements (mainly C, Mn, B) » Drastic water quenching » Fully martensitic structure 	<ul style="list-style-type: none"> » Specific chemical composition » Controlled cooling (oil quenching) » Mix macrostructure: martensite + bainite + retained austenite » Perfect balance : high wear resistance + improvement workability » Wear resistance in service is a combination of: <ul style="list-style-type: none"> → work-hardening effect (TRIP phenomenon) → Presence of micro-carbides (chromium, molybdenum, titanium) → Delayed tearing of metal particles (super-ductility of the retained austenite).

Wear resistance in service is a result of the hardness in the as-delivered state. It is an answer for common applications.

Stulz-Creusabro 8000 is a superior answer for any and all AR500 applications.



Stulz-Creusabro 8000 Excavator Rebuilds

*Roof Plate, Floor, Cheek plates,
exterior Cheek Liners, Side
Cutters, Coupler Ears and
Bushings*



*Floor, Liner, Cheek plates,
Cheek Liners, Side Cutters,
and Grouser Bar Leading Edge*

CHEMICAL ANALYSIS - % WEIGHT

C	S	P	Mn	Ni	Cr	Mo
≤ .28	≤ .005	≤ .015	≤ 1.60	≤ 1.0	≤ 1.60	≤ .40

Service life of **STULZ-CREUSABRO 8000** versus 500 HB steels

Mines	External liner of excavator	+ 100%
Foundry	Extracting plates	+ 36%
Quarry	Cheek plates in crusher	+ 50%
Wood	Crushing hammers	+ 38%

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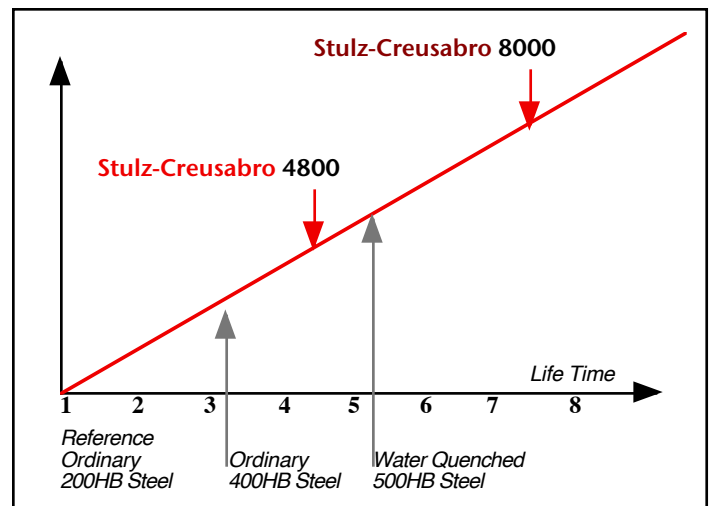
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Technical specificities of **STULZ-CREUSABRO 4800 and 8000**

Lifetime is increased

Against conventional water quenched steels, wear resistance of **STULZ-CREUSABRO** grades is increased and maintenance costs reduced.

Usually, choice of material is made on a price and hardness basis. However, users have to face difficulties of wear parts replacement. One must therefore add to the material price both the **costs of maintenance and production downtime**, in order to establish the **true cost-effectiveness** of a material.



STULZ-CREUSABRO 4800

Typical 360 HB → Work harden to ≥ 430 HB

Delivery condition : Guaranteed 340/400 HB

STULZ-CREUSABRO 4800 is ideal for applications in mines and quarries, cement and the steelmaking industries, public works and agricultural machinery. It is suitable for all types of abrasion, sliding or impact, dry or wet media including high temperature abrasion.

Extreme Workability, lends itself to user machining!

STULZ-CREUSABRO 8000

Typical 470 HB → Work harden to ≥ 540 HB

Delivery condition : Guaranteed 430/500 HB

STULZ-CREUSABRO 8000 is known as the best compromise for severe applications where exceptional abrasion, impact, heat and moderate corrosion are requested in service. It is currently used in Mining, Quarries, Cement and Concrete industries, Asphalt Plants, Steel Recycling, Earthmoving...

Extreme Wear Life in nearly every application!

“TRIP effect”

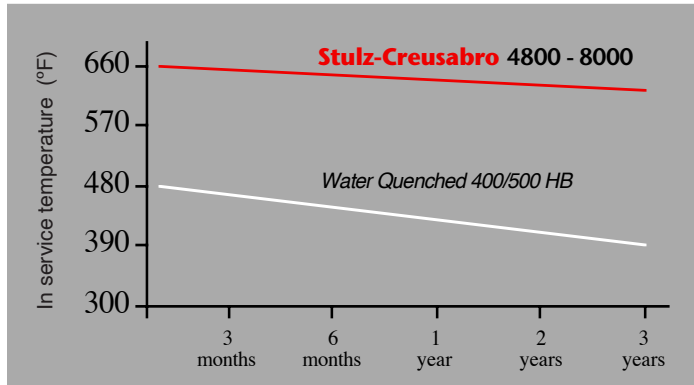
Transformation Induced by Plasticity

Due to its initial structure not fully martensite (a mix of martensite, bainite and retained austenite), **STULZ-CREUSABRO** has the ability to work-harden when submitted to local plastic deformation induces a surface hardening phenomenon by transformation of retained austenite into fresh and very hard martensite while the material remains ductile underneath, makes it a most effective to withstand both abrasion and heavy impact in service.

Resistance to high temperature is guaranteed...

STULZ-CREUSABRO retains its hardness in temperatures of $\leq 450^{\circ}\text{C}$ - 840°F

HIGH HEAT DESTROYS STEEL



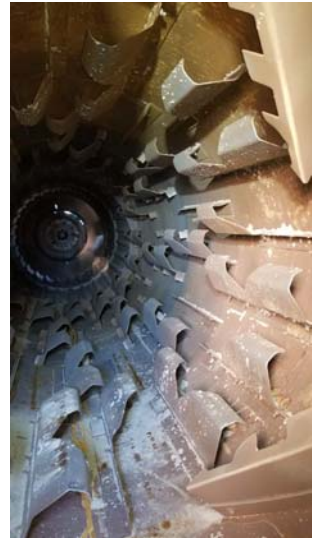
Exposure to prolonged high heat opens water-quenched steels' microstructure and allows rapid deterioration from abrasion and wear. Stulz-Creusabro steels contain heat resisting agents, and as shown above, will massively outperform typical hard steels.

Stulz-Creusabro has excelled in *Cement Works, Foundries, Steel Mills, and throughout Asphalt Plants*

- Rip-Rap Collars
- Burner areas
- Conveyor Paddles
- Reclaimer Hoods, Skis
- Dryer Walls & Flights
- Flop Gates
- Feed/Exit Chutes
- Cement Feed Chute



Stulz 8000 Rip-Rap Collar Installed 2016



Stulz 4800 Flights after 250k tons - No Rotating!



Stulz 8000 Burner Wall, Burner Hood and Burner Ring in Batch Plant No Warpage!



Any Style of Stulz 4800 Dryer Flights



Stulz 8000 Venting Flights

Stulz 8000 Drum Liner after an entire season, Edges Still Sharp!



Stulz 8000 used to protect paddle arms and interior on a Roadtec Conveyor



STULZ-CLAD PLATE

CHROMIUM-CARBIDE OVERLAY

HARD PLATE FOR SEVERE ABRASION

HARDNESS OF 58 TO 62 ROCKWELL C • SERVICE TEMPERATURE UP TO 1,000..(F)

650 Chromium-Carbide Overlay Plate is an unique abrasion resistant chromium-carbide overlay on a mild steel base. It is designed for areas with moderate impact and severe abrasion. The plate can be cut, formed, or rolled. The unique overlaying process produces a plate with a surface that is harder, tougher, and more wear resistant than plate made by other process.



650 Can be Formed or Rolled



D11 Dozer



**Chromium Carbide Overlay in a
Cat 775F Dump Body hauling
Silica Sand lasted SEVEN YEARS!**

AR500 LASTED 1 YEAR



1/4", 3/8", 1/2", 3/4" & 1"
Plate Size 60" x 120"

Custom Dimensions Available

Single, Double and Triple Passes

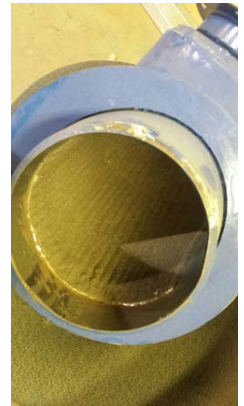
Weld with Stulz-Special Alloy electrode

or any E7018 • No Preheating Required

Must be cut by plasma or abrasive water jet

Chemistry - %			
C	5.27	MN	2.10
Cr	26.1/30.0	Si	0.50
P	0.022	S	0.016

Elbow Lined



Clad-Lined Pipe
16" ID x 10' long



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STULZ ALLOY-WEAR BUCKET LIPS

Weld-On Front-End Loader Bucket Lips - 430/500 BRINELL HARDNESS

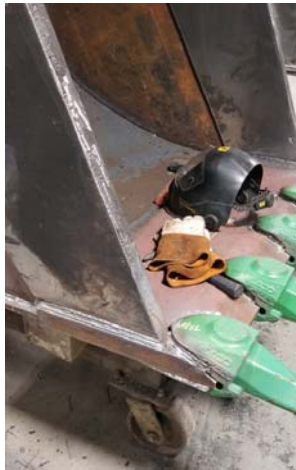
These Alloy/Wear bucket Lips have high quality heat treatment that makes them last for longer than the ordinary untreated lips. This means less downtime for replacement and more output. Alloy/Wear Bucket Lips stand much more abuse and wear with less weight.

*Single-bevel Edges available in
Stulz-Creusabro 4800 and 8000*

Any Design • Any Amount



*Stulz-Creusabro 4800
Spade Nose*



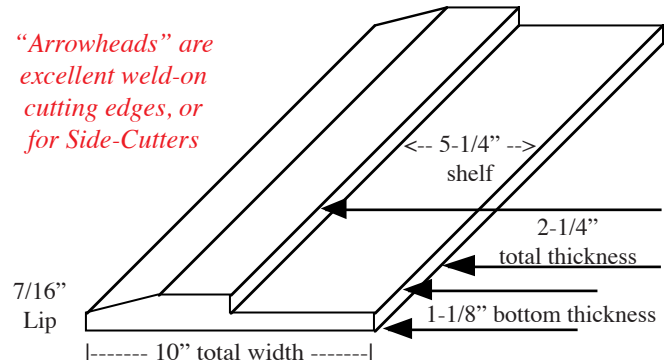
*Stulz-Creusabro 8000
Machined to specifications*

*Machined Bevel to
Customer's Specs*

PART NO.	STANDARD LENGTHS	WEIGHT LBS PER FT	DIMENSIONS	
			Width	Thickness
A3	10 OR 20 FT.	4.5	3"	1/2"
A4	10 OR 20 FT.	6	4"	1/2"
A6	10 OR 20 FT.	10	6"	1/2"
A8	8 OR 10 FT.	19	8"	3/4"
B8	8 OR 10 FT.	25	8"	1"
C8	8 OR 10 FT.	32	8"	1-1/4"
B10	8 OR 10 FT.	31	10"	1"
C10	8 OR 10 FT.	37	10"	1-1/4"
D10	10 OR 12 FT.	49	10"	1-1/2"
C12	10 OR 12 FT.	49	12"	1-1/4"
D12	10 OR 12 FT.	59	12"	1-1/2"
E12	10 OR 12 FT.	68	12"	1-3/4"
F12	10 OR 12 OR 14 FT.	77	12"	2"

12-FOOT LONG HEAVY DUTY STEP-FIT LIP

*"Arrowheads" are
excellent weld-on
cutting edges, or
for Side-Cutters*



*Stulz-Creusabro 8000
3" CNC-machined*



*Stulz-Creusabro 8000
custom edges*



*Stulz-Creusabro 4800
Skidsteer edges*



Custom-designed Bevel Lip to fit Shank

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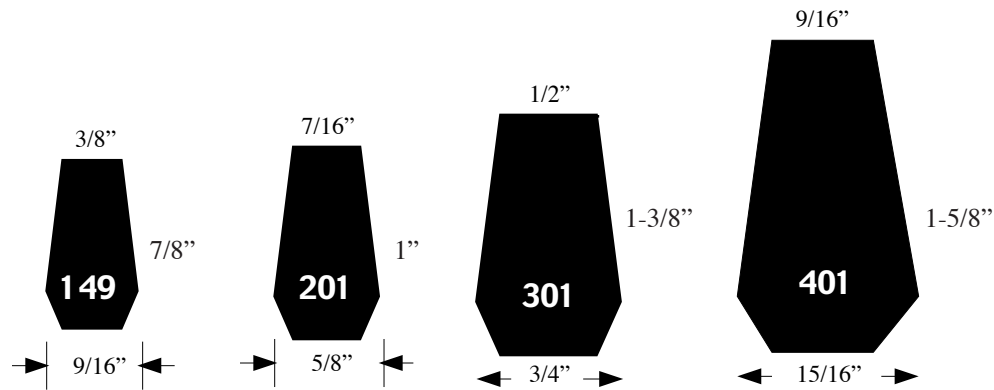
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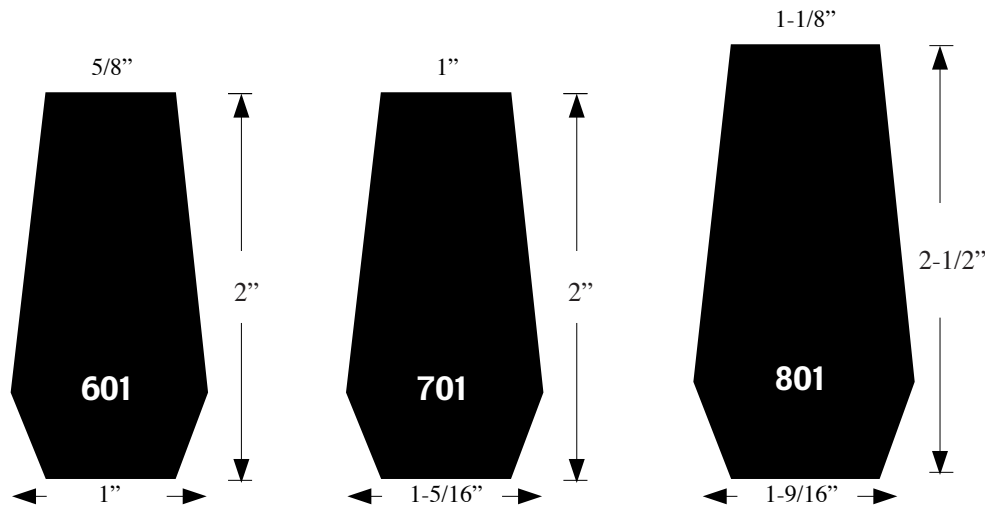
SSHI-C GROUSER BARS

SPECIAL ANALYSIS HIGH CARBON STEEL

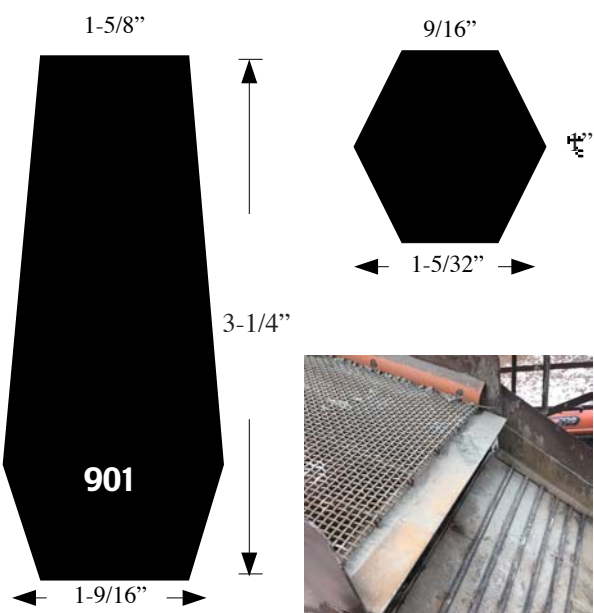
FOR EARTH-MOVING EQUIPMENT AND WEAR-RESISTANT APPLICATIONS



SIZE	STOCK BAR LENGTH	APPROX. WGT/FT (lbs)
149	10'	1.33
201	10'	1.75
301	10'	2.82
401	10'	3.81
601	10'	5.29
701	10'	6.80
801	18'	10.63
901	14'	14.46
Hex 1"	10'	3.00



Stulz-Grouser Bars used to trap material in Feed Hopper



Stulz Grousers on Leading Edge siphons material away from Side Cutters, enhancing wear life

1" Hex Grouser over Stulz 4800 Trips media & creates material on material

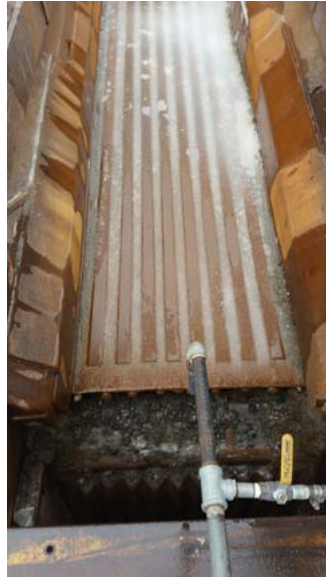


Rebuilt Screener with 901 Grouser bars

STULZ ALLOY WEAR BARS 390/400 BHN QT



3/4" Wear Bars after 1yr digging through 7,000 yards of rock and 7 foundations!



Wear Bars over Stulz-Creusabro 4800 No wear after a year.



1/2" Wear Bars hardfaced with Stulz XL after 2 seasons



1" Wear Bars being welded to a 68" wide Stulz-Creusabro 8000 floor



Wear Bars reinforcing an excavator bucket

SIZE	WEIGHT	WEIGHT
	PER FOOT (lbs)	PER BAR (20' - lbs)
1/4" x 1-1/2"	1.28	25.6
2"	1.70	34
2-1/2"	2.12	42.5
3"	2.55	51
4"	3.40	68
5"	4.25	85
6"	5.10	102
3/8" x 1"	1.28	25.6
2"	2.55	51
2-1/2"	3.19	63.8
3"	3.83	76.6
4"	5.10	102
5"	6.40	128
6"	7.65	153
8"	10.20	204
1/2" x 1-1/2"	2.55	51
2"	3.40	68
2-1/2"	4.25	85
3"	5.10	102
3-1/2"	5.95	119
4"	6.80	136
5"	8.50	170
6"	10.20	204
8"	13.60	272
3/4" x 2"	5.10	102
2-1/2"	6.38	127.6
3"	7.65	153
4"	10.20	204
5"	12.75	255
6"	15.30	306
8"	20.40	408
1" x 2"	6.80	136
2-1/2"	8.50	170
3"	10.20	204
4"	13.60	272
5"	17.00	340
6"	20.40	408
8"	27.20	544

STULZ-SICKLES STEEL COMPANY

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2 Campus Drive, Burlington, New Jersey

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STULZ MANGANESE SHOT BLASTING PARTS

Hadfield-grade Manganese and Stulz-Creusabro 8000 Wear Parts for all types of Blasters!



Manganese Bar Grating
in Table Blaster Machine



Cast Manganese Roller Liner



Manganese Table Ring
formed to specifications



Manganese
12" x 12"
Shiplap Liners

Centered Hole
for installation

1/4" Offset Edges

Manganese
Wall Plates



Manganese Table, Table Ring, Side
Liners and Blast Wheel Housing

Entire Cabinet Fabricated with
Stulz Hi-Wear Steels

STULZ-SICKLES AAR-APPROVED RAIL PARTS

Highest quality Manganese parts & high-tolerance plates

We offer the following parts:

HORIZONTAL WEAR LINERS

VERTICAL WEAR LINERS

JOURNAL BOX WEAR LINERS

PEDESTAL WEAR LINERS

PEDESTAL ROOF LINERS

LUG LINERS

CARRIER COUPLER WEAR LINERS

BRAKE BEAM POCKET LINERS

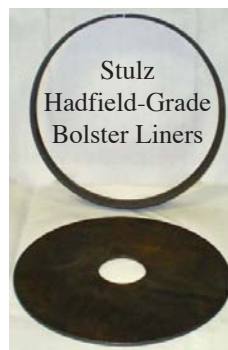
SIDE FRAME COLUMN WEAR LINERS

BOLSTER POCKET SIDE WALL LINERS

BOLSTER POCKET WEAR PLATE

MOTOR NOSE SUPPORT LINERS

COLUMN WEAR LINERS



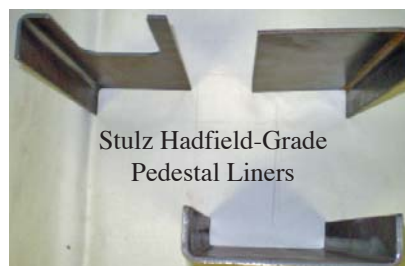
Stulz
Hadfield-Grade
Bolster Liners



Stulz
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Carrier Coupler Plates



Stulz Hadfield-Grade
Pedestal Liners



WELDING ELECTRODES FOR THE HIGH WEAR INDUSTRY

STULZ MANGANESE-XL • For Extreme Impact

A high manganese-nickel chrome electrode for joining manganese to manganese, or any carbon steel. Ideal for building-up manganese, carbon and alloy steels that are subject to extreme shock, impact and metal abrasion. No peening is required. May be applied multiple pass. Tensile strength 125,000 PSI. Six 10 lb. waterproof containers per carton. Standard length 14". AC-DC

STULZ ULTRA HARD - 60 • For Extreme Abrasion

A Chrome/Silicone carbide for severe abrasion. Weld hardness 60 RC in a single pass. Has good resistance to impact and pressure. Limited to two passes. Six 10 lb. waterproof containers per carton. Standard length 14". AC-DC

STULZ UNIVERSAL HARDFACE • General Hardfacing

An all-purpose hardsurfacing rod where both abrasion and impact is occurring. Forgeable. Reasonably resistant to corrosion. Hardness to 45RC; 1-4 Passes. Six 10 lb. waterproof containers per carton. Standard length 14". AC-DC



Electrode Diameter: 1/8", 5/32", 3/16", 1/4"



Manganese bars welded on shanks with Stulz XL

Built-Up Impactor with Stulz XL Wire



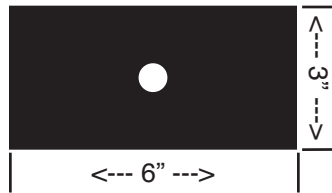
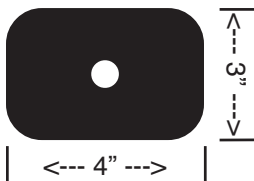
Applying Stulz XL to Frog Switch Point

STULZ WEAR PATCHES – INSTANT HARDFACING

3/16" Thick • Hardness 60 RC

100 per package (3" x 4")

50 per package (3" x 6")

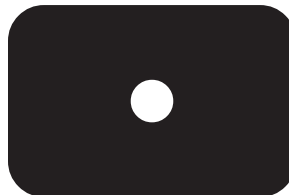


Custom Wear Patches Available

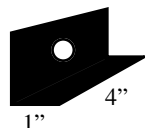
STULZ JUMBO WEAR PATCHES – INSTANT HARDFACING

Hardness 60 RC

Size	Package
1/4" x 3" x 4"	75 pcs/box
1/4" x 4" x 5"	50 pcs/box
1/4" x 5" x 7"	25 pcs/box
3/8" x 4" x 5"	25 pcs/box
3/8" x 5" x 7"	12 pcs/box



STULZ CORNER WEAR PATCHES 2"
3/16" Thick • 100 pcs/box





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