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A MAINTENANCE MATERIAL AND MAINTENANCE SERVICE COMPANY



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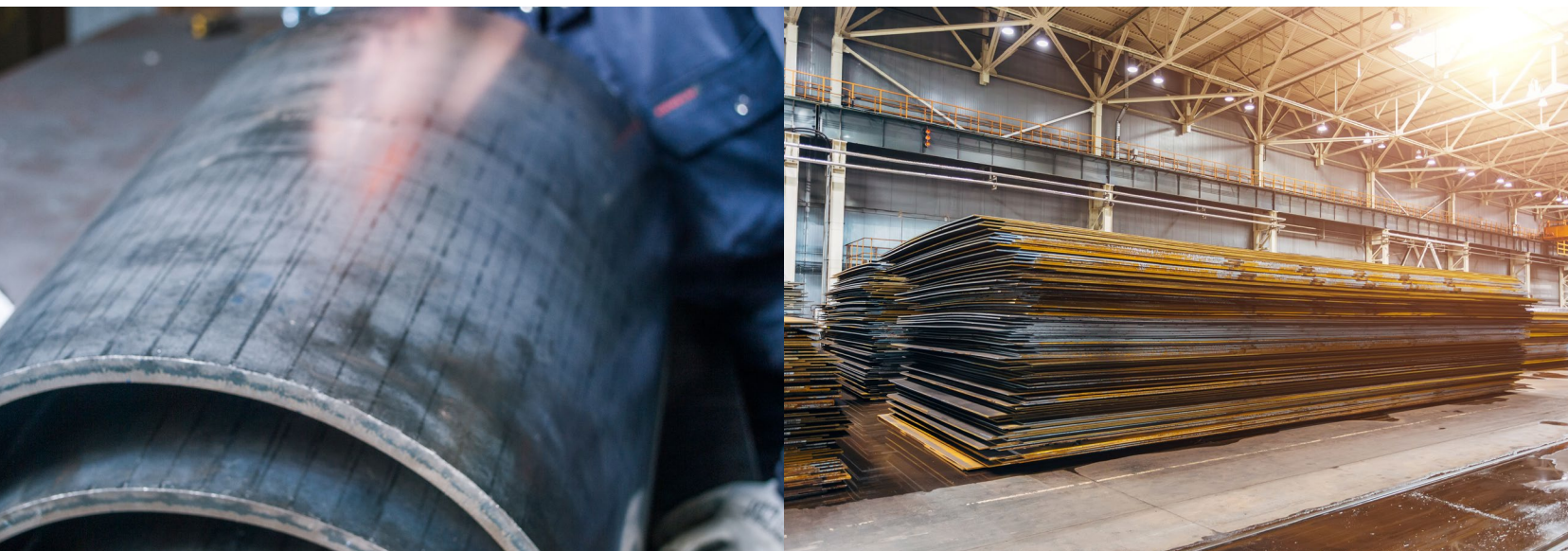
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TABLE OF CONTENTS

Tab 1	- Abrasion Resistant Plating
Tab 2	- Specialty Steels
Tab 3	- Stainless Steels
Tab 4	- Wire Cloth & Perforation Products
Tab 5	- Piping Systems
Tab 6	- Engineered Plastics
Tab 7	- Steel Coat
Tab 8	- Wear Resistant Tiles
Tab 9	- Fabrication Services
Tab 10	- Machining Services
Tab 11	- Casting & Forging Services
Tab 12	- Manufacturing of Industrial Knives



TAB 1

ABRASION RESISTANT PLATING

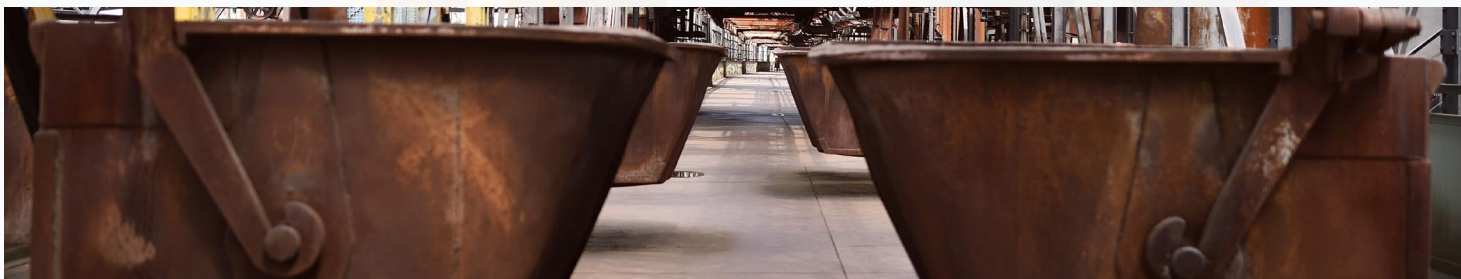
- Ni Braze Wear Plate
- Stallion Wear Plate
- WS - 350 Wear Plate
- Callay Wear Plate
- Manganese Steel Plate
- Perforated Plate

NI - BRAZE

ULTRA HIGH STRENGTH ALLOY WEAR PLATE

FOR SEVERE ABRASION AND IMPACT.

The principal factor in determining the true cost of an abrasion-resistant steel isn't the original purchase price. It is how much it costs per unit of products produced, whether the units be in pound, yards or tons. Therefore, in this regard, it is our belief that NI-BRAZE has proven to be the most economical of all abrasion and impact steels. NI-BRAZE is a new, unique ultra hi-strength nickel alloy, heat-treated to produce the following properties



ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	MOLYBDENUM	ALUMINUM	CHROMIUM
.20 / .27	1.35 / 1.75	.35 / .45	.035 / .041	1.35 / 1.90
SILICON	NICKEL	COPPER	PHOSPHORUS	SULFUR
.20 / .27	1.35 / 1.85	.65 / .78	.020 MAX.	.008 MAX.

PHYSICAL PROPERTIES

TENSILE STRENGTH..... 200,000 PSI
YIELD POINT..... 160,000 PSI
ELONGATION %..... 16%
REDUCTION OF AREA..... 56%
HARDNESS..... 400 BHN MIN.

ADVANTAGES

- Maximum Resistance to Abrasion and Impact.
- High-work-hardening coefficient - from delivered high hardness

WELDING

Use low hydrogen High-Tensile Electrodes: AWS Spec. E1 OOX, E11 OXX, or E120XX Electrodes

SHIPMENT - NI-BRAZE sizes available for immediate shipment. Thickness are from 1/4" in standard dimension plate and bars.

SUGGESTED USES

Agricultural Discs
Lawn mower Cutter Bars
Agitator Paddles
Anchors
Baffle Plates
Bucket Lips
Bulldozer Blades
Car Axles
Car Plates
Chute Liners
Concrete Mixer

Liners
Concrete Pipe Liners
Conveyor Buckets
Crusher Hammers
Dipper Sticks
Drag Buckets
Dredge Pipe
Dredge Pump Liners
Dump Truck Beds
Dust Collectors
Machines

Funnels
Furnace Liners
Grader Blades
Grain Chutes
Grain Mill Hammers
Gravel Chutes
Hoppers
Limestone Chutes
Launders Plates
Agricultural Shoes
Mixer Blades

Muller Bottoms
Ore Chutes
Ore Spouts
Ore Washers
Pangborn Parts
Picking Tables
Rock Chutes
Sand Chutes
Scraper Bases
Shaker Plates
Skip Liners

Slag Chutes
Slate Chutes
Sluice Ways
Spouts
Stabilizing Bars
Trailer Bodies
Truck Box liners
Vibrators
Wheelabrator Parts
Wrenches



STALLION WEAR PLATE

SHOCK & WEAR FABRICATION PLATE

If Resistance to Corrosion is Essential, Weight Limits are a Factor, Formability and Weld-ability are Necessary, Super Strength Combined with Abrasion Resistant Qualities are Required - STALLION is the plate

STALLION is a carbon-chrome-manganese plate with the addition of boron and moly in order to enhance its wear-ability in applications of severe abrasion. STALLION should be used when increased service life is desired. In most field applications it has proven to outperform the standard abrasion resistant materials. It can be cold formed, if proper precautions are taken, in thicknesses up to 1/2 inch. Edge preparation is of utmost importance in order to remove any hardened zones which result from shearing. Hot forming is suggested for severe forming operations and for forming material over 1/2 inch thick. Hot forming should be accomplished at 1600°F / 1750°F. followed by cooling in still air. Forming should not be conducted when the metal is less than room temperature (72°F)

ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	MOLYBDENUM	ALUMINUM	CHROMIUM
.20 / .27	1.35 / 1.75	.35 / .45	.035 / .041	1.35 / 1.90
SILICON	NICKEL	COPPER	PHOSPHORUS	SULFUR
.20 / .27	1.35 / 1.85	.65 / .78	.020 MAX.	.008 MAX.

PHYSICAL PROPERTIES

TENSILE STRENGTH.....	240,000 PSI
YIELD POINT.....	210,000 PSI
ELONGATION %.....	8%
HARDNESS.....	500 BHN MIN.

ADVANTAGES

- Low carbon content aids in weld-ability
- Can be drilled - bored - sheared and machined
- Can be cold formed
- 5 to 7 times corrosion resistance opposed to carbon steel
- Precise heat treatment
- Boron is used in the steel to intensify harden-ability
- Choice of alloying agents provide a tolerance for rapid cooling and yet maintains a high strength and abrasion resistance
- Ductile & Tough

WELDING

No preheating necessary 5/8" thickness and under; 3/4" and over preheat to 200° F. Stress relieving is not required after welding. Suggested welding rods should be of the low hydrogen, high tensile type. Suggested welding rods are: AWS E12015, E30816, E10015, E10016, E6015, E6016.

SUGGESTED USES

Agricultural Discs	Liners	Funnels	Muller Bottoms	Slag Chutes
Lawn mower Cutter Bars	Concrete Pipe Liners	Furnace Liners	Ore Chutes	Slate Chutes
Agitator Paddles	Conveyor Buckets	Grader Blades	Ore Spouts	Sluice Ways
Anchors	Crusher Hammers	Grain Chutes	Ore Washers	Spouts
Baffle Plates	Dipper Sticks	Grain Mill Hammers	Pangborn Parts	Stabilizing Bars
Bucket Lips	Drag Buckets	Gravel Chutes	Picking Tables	Trailer Bodies
Bulldozer Blades	Dredge Pipe	Hoppers	Rock Chutes	Truck Box liners
Car Axles	Dredge Pump Liners	Limestone Chutes	Sand Chutes	Vibrators
Car Plates	Dump Truck Beds	Launders Plates	Scraper Bases	Wheelabrator Parts
Chute Liners	Dust Collectors	Agricultural Shoes	Shaker Plates	Wrenches
Concrete Mixer	Machines	Mixer Blades	Skip Liners	



WS – 350

HIGH STRENGTH WEAR PLATE

FABRICATION PLATE

WS-350 is an abrasion resistant plate recommended for fabrication applications where abrasion resistant steels coupled with high strength and weight saving characteristics are a factor. WS-350 has good weldability characteristics.



PHYSICAL PROPERTIES

TENSILE STRENGTH.....	158,000 PSI
YIELD POINT.....	142,000 PSI
ELONGATION %.....	13%
REDUCTION OF AREA.....	53%
DRAW.....	700

ADVANTAGES

- Precise heat treatment
- Boron is used to intensify harden ability
- Based on testing, WS-350 has 5 to 7 times the corrosion resistance of plain carbon steel Can be drilled - bored - sheared and machined
- Can be cold formed
- Medium carbon content adds to the weld-ability
- Choice of alloying agents provide tolerance for rapid cooling and still maintain high strength and abrasion resistance.
- Not recommended for use when there is exposure to hydrogen sulfide.

WELDING

No preheating necessary 3/8" thickness and under; 3/4" and over preheat to 2000°F. Stress relieving is not required after welding. Suggested welding rods should be of the low hydrogen, high tensile type. Suggested welding rods are: AWS E12015, E30816, E1 0015, E1 0016, E6015, E6016.

AVAILABLE SIZES

3/8 x 48 x 144	3/8 x 96 x 144	1/2 x 48 x 144	1/2 x 96 x 144	3/4 x 48 x 144	3/4 x 96 x 144
3/8 x 48 x 288	3/8 x 96 x 288	1/2 x 48 x 288	1/2 x 96 x 288	3/4 x 48 x 288	3/4 x 96 x 288

OTHER WIDTHS AVAILABLE UPON REQUEST. CUSTOM SIZES PER PRINT.

SUGGESTED USES

Agricultural Discs	Liners	Funnels	Muller Bottoms	Slag Chutes
Lawn mower Cutter Bars	Concrete Pipe Liners	Furnace Liners	Ore Chutes	Slate Chutes
Agitator Paddles	Conveyor Buckets	Grader Blades	Ore Spouts	Sluice Ways
Anchors	Crusher Hammers	Grain Chutes	Ore Washers	Spouts
Baffle Plates	Dipper Sticks	Grain Mill Hammers	Pangborn Parts	Stabilizing Bars
Bucket Lips	Drag Buckets	Gravel Chutes	Picking Tables	Trailer Bodies
Bulldozer Blades	Dredge Pipe	Hoppers	Rock Chutes	Truck Box liners
Car Axles	Dredge Pump Liners	Limestone Chutes	Sand Chutes	Vibrators
Car Plates	Dump Truck Beds	Launders Plates	Scraper Bases	Wheelabrator Parts
Chute Liners	Dust Collectors	Agricultural Shoes	Shaker Plates	Wrenches
Concrete Mixer	Machines	Mixer Blades	Skip Liners	



CLAD OVERLAY WEAR PLATE / CHROME CARBIDE FUSION PLATE

CALLAY is an ultra-hard, impact-abrasion resistant chrome carbide composite alloy formed by metallurgical bonding a granular chromium carbide powder to a steel substrate or back-plate. The result is the ultimate wear resistant properties available for the heaviest abrasion/impact applications.

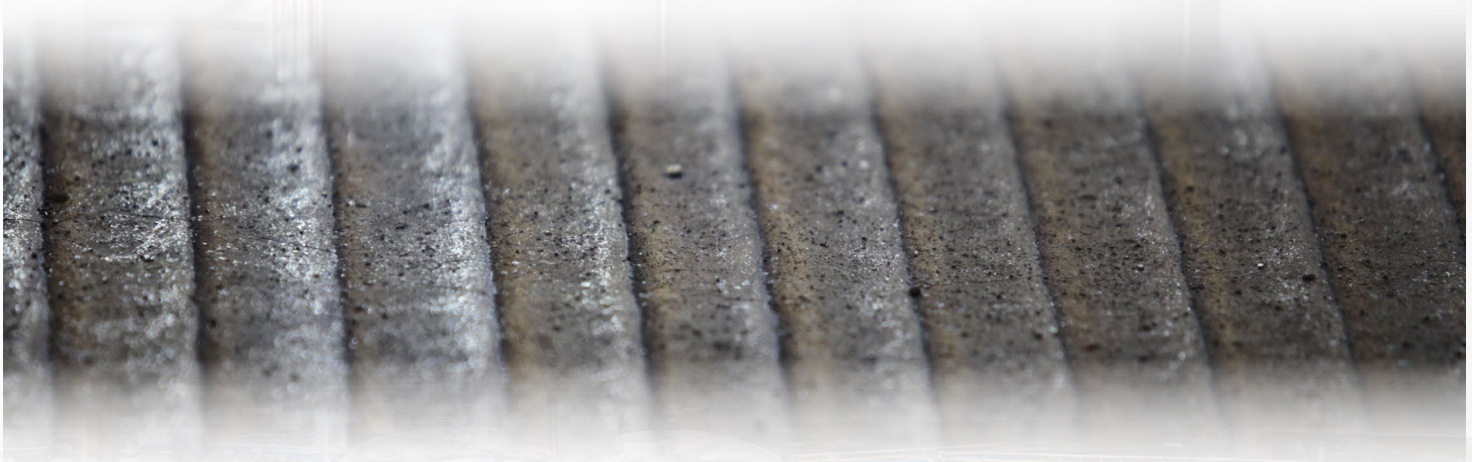
The uniform high concentration of carbides per square inch throughout the matrix yields wear resistant qualities far exceeding those of typical wear or hard plate.

CALLAY plate is economically feasible when the service life ration of 12 to 1 over alloy plate and 30 to 1 over mild steel is considered.

CALLAY plate is superior to ceramics in many applications due to its high impact resistance and ease of installation.

When extended economical service life is the need, CALLAY is the answer!

Compare our physical properties and Chemistry with your current source, if you can get it! The Chemistry and physical properties give CALLAY the competitive edge.



ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	MOLYBDENUM	CHROMIUM	SILICON
4.03	3.75	1.62	32.71	.048
NICKEL	PHOSPHORUS	SULFUR		
.5	.015	.015		

PHYSICAL PROPERTIES

CARBIDE HARDNESS..... 90 HRC SCALE
 MATRIX HARDNESS..... 62 HRC SCALE
 BEAD WIDTH..... 1 1/4"
 BASE PLATE..... 1/4" TO 1 1/2"
 SINGLE PASS..... 1/8", 3/16", 1/4"
 DOUBLE PASS..... 1/4", 3/8"

ADVANTAGES

- Superior Abrasion / Impact Resistant
- Cost Effective
- Extended Service Life
- Stress Relieved
- Unaffected by operating temperature to 1250°F
- Can supply pipe to a minimum of 4" Ld.

Cutting; Air Arc, Plasma Arc, Caldo Mini Torch
 Welding rod cap; 2134

MANGANESE STEEL

MANGANESE STEEL PLATE AND BARS

11% to 14% Manganese Steel that performs best in extreme impact applications. Under shock and impact it nearly triples its initial surface hardness, retains its interior toughness and acquires a high polish. These features, combined with manganese steel high tensile strength, make it an ideal material for heavy impact and abrasive services. Manganese Steel is also non-magnetic.

Our manganese steel applicator bars help prolong the life of Rock Crusher Hammers, Jaws, Mantles, and others subjected to severe impact. Metal-on-Metal applications, such as pins in drag lines and shovel buckets, provide excellent use of manganese bars.

FLAT BARS



SQUARE BARS

ROUND BARS



ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	PHOSPHORUS	SULFUR	SILICON
1.13	13.0	.017	.003	.38

PHYSICAL PROPERTIES

TENSILE STRENGTH..... 145,000 PSI
YIELD POINT..... 55,000 PSI
HARDNESS BEFORE WORK..... 200 BHN
HARDNESS AFTER WORK..... 550 BHN

ADVANTAGES

- Precise heat treatment
- Boron is used to intensify harden ability
- Based on testing, WS-350 has 5 to 7 times the corrosion resistance of plain carbon steel Can be drilled - bored - sheared and machined
- Can be cold formed
- Medium carbon content adds to the weld-ability
- Choice of alloying agents provide tolerance for rapid cooling and still maintain high strength and abrasion resistance.
- Not recommended for use when there is exposure to hydrogen sulfide.

SUGGESTED USES

Shot Blast Equipment
Liners
Crusher Liners

Truck Bed Liners
Crusher Hammers
RR Bolster Plates

Stock Tubes
Shovel Bucket Pins
Grizzly Bars

Jaw Crusher Build Ups
Dredge Chain Pins
Shredder Hammers

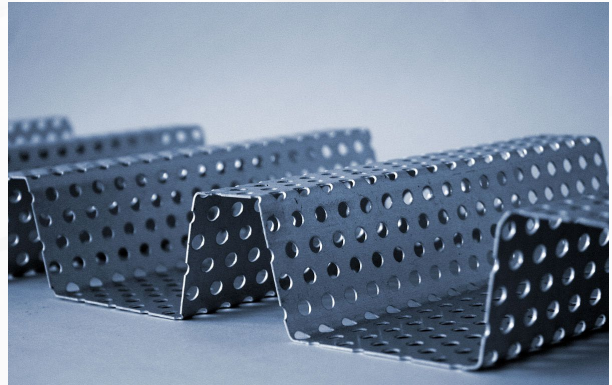
Security Bars
Bucket Hinge Pins
Abrasive, Non-Magnetic Applications



PERFORATED PLATE

NI – BRAZE & STALLION PERFORATED PLATE

Sheet or Plate re-sheared after perforating with margins as specified.



PHYSICAL PROPERTIES

TENSILE STRENGTH..... 145,000 PSI

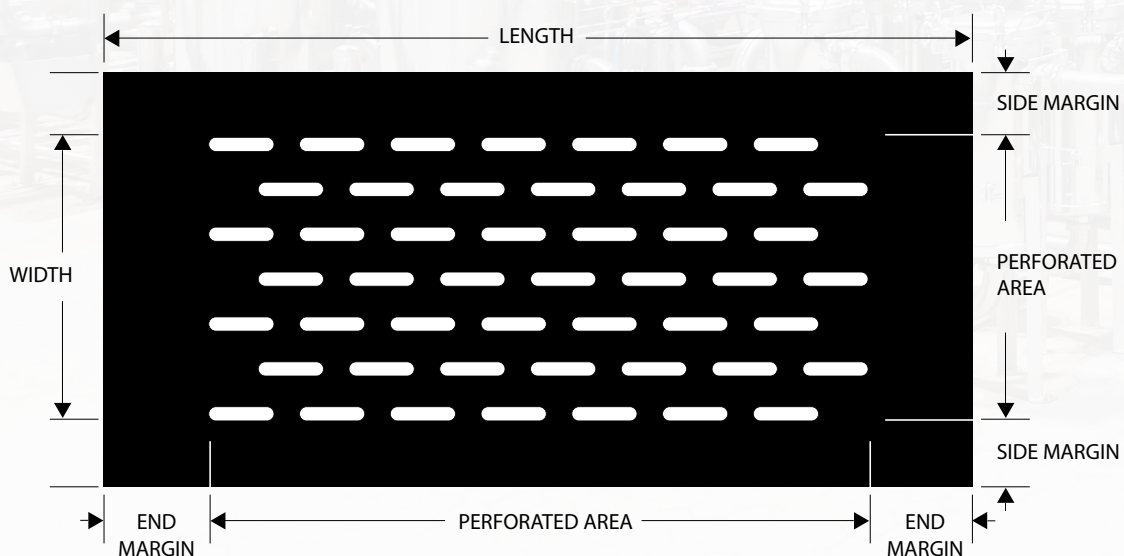
YIELD POINT..... 55,000 PSI

HARDNESS BEFORE WORK..... 200 BHN

HARDNESS AFTER WORK..... 550 BHN

ADVANTAGES

- Non-clogging and nonbinding flat plate construction
- NI-BRAZE WEAR SCREENS are heat-treated
- Ease of maintenance is obtained by easily welded NI-BRAZE WEAR SCREENS
- NI-BRAZE WEAR SCREENS will work harder under conditions of impact and abrasion
- The high tensile strength exhibited by the alloy plate used in the fabrication of NI-BRAZE WEAR SCREEN is 200,000 PSI.
- Ready to install as delivered



SUGGESTED USES

Coal Screens
Coke Screens

Dewatering Screens
Shaker Screens

Foundry Shakeout
Grading Screens

Quarry Screens
Sintering Plant Screens

Vibrating Screens





TAB 2

SPECIALTY STEELS

- Specialty Steels
- Versaloy Key Stock
- Threaded Rods

SPECIALTY STEELS

Walker Services Specialty Steels product line offers materials for today Industrial requirements in a wide service line. From cutting edge blades and chipper knives to cold drawn bar processors draw grips. Walker Services offers the raw materials or complete part made to your specifications. Machining, heat treatment and grinding. Walker Services also offers re-sharpening of your current or newly purchased cutting blades.

NO JOB TOO BIG OR SMALL!

PRODUCT GRADES

COLD WORK GRADES

A2	D2	S7	A6
D3	S5	A8	D5
L6	O1	D7	W2

HOT WORK - PLASTIC MOLD

- Viscount 44
- H13
- P20 (Pre hardened)
- 420 (Mold Quality Standard Melt)
- 4140 - Holder Block

HIGH SPEED STEELS

M2	M42
M3	T15
M4	

GRAPHITIC COLD WORK

Graph MO - 06	Graph Air - A10
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ALLOY GRADES

4140 Annealed & Pre hardened
4150 Annealed & Pre hardened
4340 Material
6150 Material
8620 Material

PRODUCT GRADES

TOOL STEELS: PLATE & BARS: Rounds, Square, Flats & Hollow Bar

COLD DRAWN BARS: 4140 Alloy and 1060

DRILL ROD: 01, W1, A2, D2, V44, S7, A8 & M2 in 3 foot lengths (6 and 12 foot lengths available upon request)

METRIC DIAMETERS: Available Upon Request



VERSALOY KEY STOCK

Versaloy Key Stock bars are sharp, square-cornered and cold drawn. They have close tolerance and high tensile strength.

ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	CHROMIUM	MOLYBDENUM	SILICON
45	.98	.25	.25	.35

PHYSICAL PROPERTIES

TENSILE STRENGTH.....	115,000 - 135,000 PSI
SHEAR STRENGTH.....	70,000 - 80,000 PSI
HARDNESS.....	23 - 26 HRC

ADVANTAGES

- Close Tolerance +.001 / -.000
- Square Corner
- High Shear Strength

SHIPMENT

Versaloy Key Stock Sizes available for immediate shipment will include:

3/8	11/16	1	1-3/8
7/16	3/4	1-1/16	1-1/2
1/2	13/16	1-1/8	1-5/8
9/16	7/8	1-3/16	1-3/4
5/8	15/16	1-1/4	2



SUGGESTED USES

Keys

Tool Shanks

Gauges

Wear Strips

THREADED RODS

TITAN ALLOY STEEL

Titan threaded bars are heat-treated, precision rolled, alloy steel bars that can be used for innumerable stud and bolt applications which require resistance to torsional strain and torque.

PHYSICAL PROPERTIES

TENSILE STRENGTH..... 152,000 PSI

YIELD POINT..... 136,000 PSI

ELONGATION IN 2 INCHES..... 17%

REDUCTION IN AREA..... 55%

HARDNESS..... 28 - 30 HRC

ADVANTAGES

- Immediate usage, just cut to length and put to work.
- Eliminates machining, heat treating and costly delays.
- Reduced Inventory by eliminating stocking of many different length studs in each diameter used.
- Meets standards of A.S.T.M. specifications 193-B7 and B-16, Class 2 Fit.
- Titan Threaded Bars are suited for applications where reasonably high operating temperatures are a determining factor in stud failure.
- Heat Treatment assures long useful life.
- Titan Threaded Bars, because proper heat treatment and well balanced alloy content, are a superior replacement for carbon and other alloy studs in high stress applications. Virtually eliminates stripping and wear.

COSMIC STAINLESS STEEL

PHYSICAL PROPERTIES

TENSILE STRENGTH..... 166,000 PSI

YIELD POINT..... 150,000 PSI

ELONGATION IN 2 INCHES..... 18%

REDUCTION IN AREA..... 55%

HARDNESS..... 28 - 30 HRC

STOCK SIZE

Diameter USS SAE Threads per Inch

1/4 - 20

1/4 - 28

5/16 - 18

5/16 - 24

3/8 - 16

3/8 - 24

7/16 - 14

7/16 - 20

1/2 - 13

1/2 - 20

5/8 - 11

5/8 - 18

3/4 - 10

3/4 - 16

7/8 - 9

7/8 - 14



SUGGESTED USES

Pressure Vessels

Steam Boilers

Evaporators

Stud Pullers

Machine Anchors





TAB 3

STAINLESS STEELS

- COSMIC SS
- COSMIC 33 SS
- COSMIC 22 SS

STAINLESS STEEL

Cosmic Stainless Steel offers you one grade of non-hardenable, high-tensile stainless shafting to replace the most commonly used grades, such as: 304, 302 and 321.

Cosmic Stainless Steel is available in the following finishes: Cold Drawn, Centerless Ground, Rough Turned and Ground and Polished, depending on size.

ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	MOLYBDENUM	SILICON	NICKEL	TUNGSTEN	CHROMIUM
.07 / .10	1.95 / 2.15	2.00 / 3.00	.98 / 1.03	11 / 13	35 MAX.	19 / 21

PHYSICAL PROPERTIES

	COSMIC	302 STAINLESS	304 STAINLESS
TENSILE STRENGTH	95,000 PSI	89,000 PSI	85,000 PSI
YIELD POINT	45,000 PSI	39,000 PSI	35,000 PSI
ELONGATION	50%	55%	55%
REDUCTION OF AREA	55%	70%	70%
HARDNESS	20 HRC	ANNEALED	ANNEALED

COSMIC STAINLESS SIZES AVAILABLE FOR IMMEDIATE SHIPMENT:

ROUND BARS					PLATE	
1/8	3/4	1-7/16	2-1/2	4-1/2	1/8 X 60 X 120	1/2 X 48 X 120
3/16	13/16	1-1/2	2-3/4	4-3/4	3/16 X 48 X 120	1/2 X 72 X 120
1/4	7/8	1-5/8	3	5	3/16 X 72 X 120	5/8 X 48 X 120
3/8	15/16	1-3/4	3-1/4	5-1/2	1/4 X 48 X 120	5/8 X 72 X 120
7/16	1	1-7/8	3-1/2	6	1/4 X 72 X 120	3/4 X 48 X 120
1/2	1-1/8	2	3-3/4	6-1/2	5/16 X 48 X 120	3/4 X 72 X 120
9/16	1-3/16	2-3/16	3-15/16	7	5/16 X 72 X 120	1 X 48 X 120
5/8	1-1/4	2-1/4	4	7-1/2	3/8 X 48 X 120	1 X 72 X 120
11/16	1-3/8	2-3/8	4-1/4	8	3/8 X 72 X 120	

LENGTHS AVAILABLE IN 12 - 14 FT..

SUGGESTED USES

Acetic Acid
Acetylene
Alcohol
Aluminum Acetate
Aluminum Sulphate
Ammonia
Aniline
Barium Carbonate
Barium Chloride
Barium Sulphate
Benzene
Boric Acid
Butyl Acetate
Calcium Chloride

Calcium Hydroxide
Carbolic Acid
Carbon Tetrachloride
Cellulose
Chlorine Gas
Chromic Acid
Copper Acetate
Copper Nitrate
Creosote
Ether Alcohol
Ethyl Chloride
Ferric Chloride
Ferric Nitrate
Ferrous Sulfate

Fluorine
Formaldehyde
Fuel Oil
Gasoline
Glycerin
Hops
Hydrogen Peroxide
Iodine
Lactic Acid
Magnesium Sulfate
Mercuric Chloride
Methanol
Naphtha
Nitric Acid

Picric Acid
Potassium Chlorate
Potassium Hydroxide Salt
Brine Soap
Steam
Sugar
Sulphur
Sulfuric Acid
Tannic Acid
Tar
Trichloroethylene
Uric Acid
Vinegar
Water

COSMIC 33

STAINLESS STEEL

COSMIC 33 is an austenitic heat and corrosion resistant alloy offering an exceptional combination of strength and resistance to carburization, oxidation, and thermal shock. Carburization and oxidation resistance to 2200° F are enhanced by a nominal 1.25% silicon addition. COSMIC 33 finds wide application in high temperature industrial environments where good resistance to the combined effects of carburization and thermal cycling is prime requisite. COSMIC 33 remains fully austenitic at all temperatures and is not subject to embrittlement from sigma formation.

ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	IRON	CHROMIUM	SILICON
.08 MAX	2.0 MAX	BALANCE	17.0 - 20.0	1.00 - 1.50
NICKEL	PHOSPHORUS	SULFUR	COPPER	
34.0 - 37.9	.030 MAX	.030 MAX	1.00 MAX	

FEATURES

- Oxidation resistance to 2200° F
- Resistant to carburization and nitriding
- Resistant to thermal shock
- Good strength at elevated temperatures
- Metallurgical stability
- Chloride ion stress corrosion cracking resistance

APPLICATIONS

Furnace Container
Muffles
Retorts
Quenching fixtures
Bar frame heat treating baskets
Heat exchangers
Radiant tubes
Salt Pots
Furnace Fans Shafts
Petrochemical Furnace components
Hot pressing platens

Cutting; Air Arc, Plasma Arc, Caldo Mini Torch
Welding rod cap; 2134



COSMIC, ALLOY 22

ABRASION RESISTANT STAINLESS STEEL

Cosmic, Alloy 22 has enhanced properties over standard stainless steel, such as: Good Corrosion Resistance, Increased Strength, and Excellent Abrasion Resistance. Alloy 22 is a Duplex grade (austenitic / ferritic) of stainless steel.

Standard grades of stainless steel offers almost no protection against abrasion and erosion. The design criteria used in selecting stainless steel has normally been based upon its inherent properties of corrosion resistance and good slide ability based upon a low coefficient of friction in the polished condition.

ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	MOLYBDENUM	NITROGEN	CHROMIUM
.03	2.00 MAX	2.5 - 3.5	.08 - .2	21.0 - 23.0
SILICON	NICKEL	IRON	PHOSPHORUS	SULFUR
1.0 MAX	4.5 - 6.5	BALANCE	.030 MAX.	.02 MAX.

PHYSICAL PROPERTIES

	COSMIC, ALLOY 22	304 STAINLESS
TENSILE STRENGTH	116,000 PSI	82,000 PSI
YIELD POINT	87,000 PSI	35,000 PSI
HARDNESS	280 BHN	149 BHN



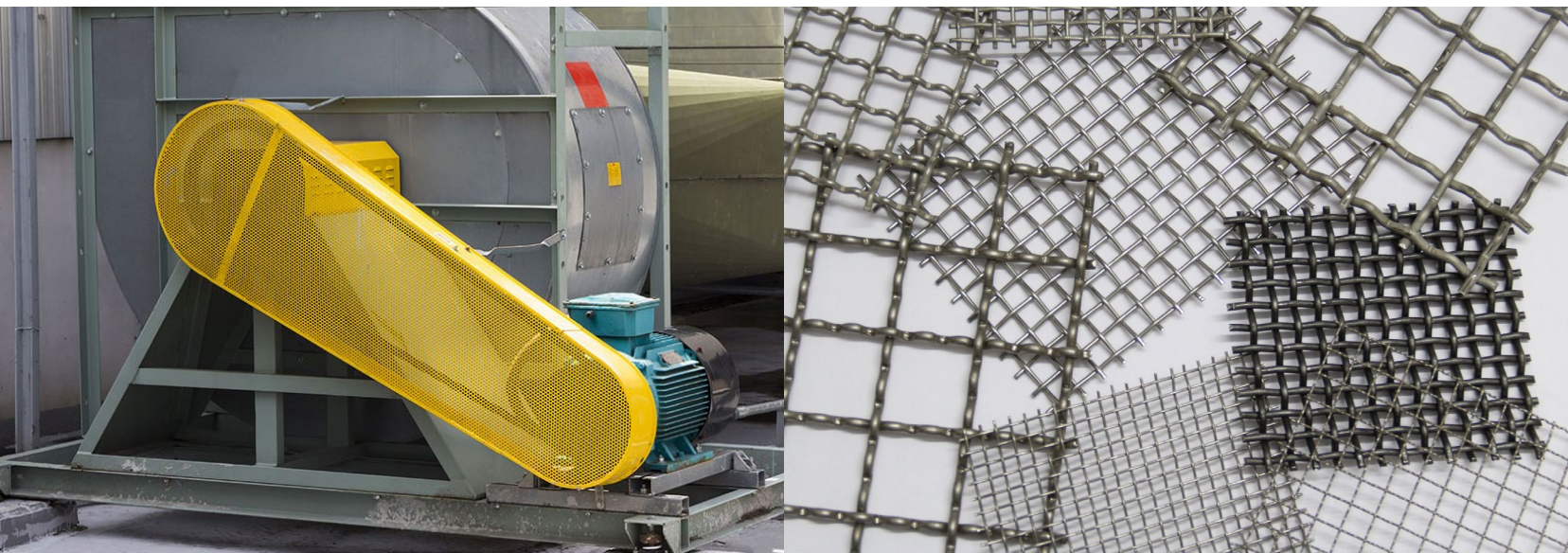
CONSIDER THE ADVANTAGES

- Better Corrosion Resistance.
- Better Abrasion Resistance (Over 100% Better)
- 200% Greater Yield Strength
- Higher Hardness and Tensile Strength
- Good Slide ability

In the right application Alloy 22, can be substituted for any of the following grades of stainless steel: 304, 304L, 321, 347, 316, 316L, 405 & 410S. Let Walker Services Inc. help reduce your maintenance cost with Alloy 22. Supplied in plate form, bar stock or fabricated and machined to your specification.

Alloy 22 can be welded by: GTAW, GMAW or SMAW. For best results Plasma Cutting is the most efficient.





TAB 4

WIRE CLOTH & PERFORATIONS

- SST ALLOY WIRE CLOTH
- PERFORATING SERVICES

SST ALLOY

SERIES WIRE CLOTH

SST ALLOY is a wide range of materials in a wire form woven in exact patterns over and under wires running at 90 degree angles to each other A wide variety of fine mesh weaves are available.

SPECIFICATIONS

- Mesh: 12" opening to 1 micron (0.0000394")
- Wire Diameter: 1" to 0.001"

MATERIALS

- Almost any metals or alloy with a temperate range of 1100°F to 2500°F SSTALLOY 100 to 600 Complete material certification are available upon request



APPLICATIONS

Boiler bottom ash slag screens
Stop valve screens
Boiler directional screens

Vibrator screens
Baskets, trays and liners
Safety guards for machinery

Safety guards for conveyors
Filters, strainers
Custom Weaving/Fabrications

SSTALLOY can be supplied in all meshes, square or rectangular open sizes and material to fit all makes and types of vibrating screens.

Popular hooked edges: Metal reinforced .063" to .250" wire, Welded mild steel angle .250 and up, Welded rod, hook bolt tension.

Rigid accuracy of opening, crimping methods fewer wire breaks, greater resistance to abrasion, corrosion and fatigue are a few advantages

PERFORATING SERVICES

A TOTAL SOURCE FOR PERFORATED PRODUCTS

From high speed perforating presses to low speed one at a time perforations. We can convert raw material from coil or sheet into perforated sheets or parts. We can process coils up to 60" wide, or plate up to 1" thick can be processed to manufacture finished products with perforations of varying shape, size and spacing depending upon custom requirements.

OUR SECONDARY OPERATIONS ADD VALUE TO ANY PART OR PRODUCT:

Welding
Forming
Bolt Holes

Bending
Hemming
Spot Welds

Rolling
Radius Corners
Cut Outs

Blanks
Notching

WE HAVE A WIDE RANGE OF MATERIAL OPTIONS AS WELL. TO LIST A FEW:

Stainless Steel
Carbon Steel

Nickel alloys
Aluminum

Brass
Bronze

Titanium
Plastics

Paper
Rubber

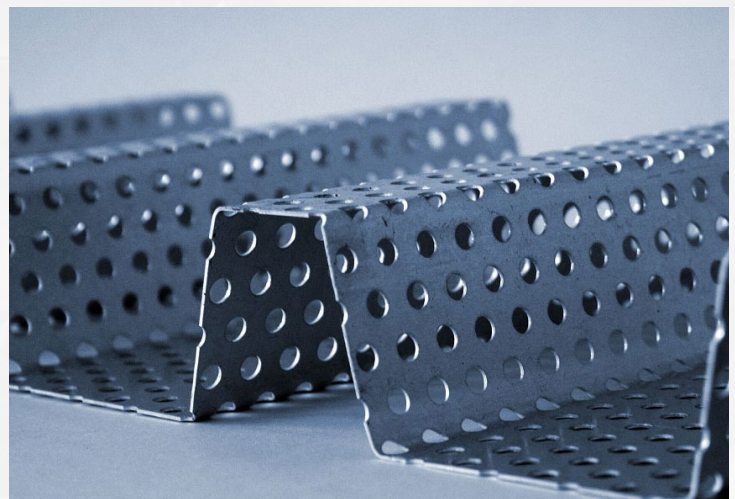
WALKER SERVICES INC. CAN MEET YOUR REQUIREMENTS FOR A TOTAL PROJECT

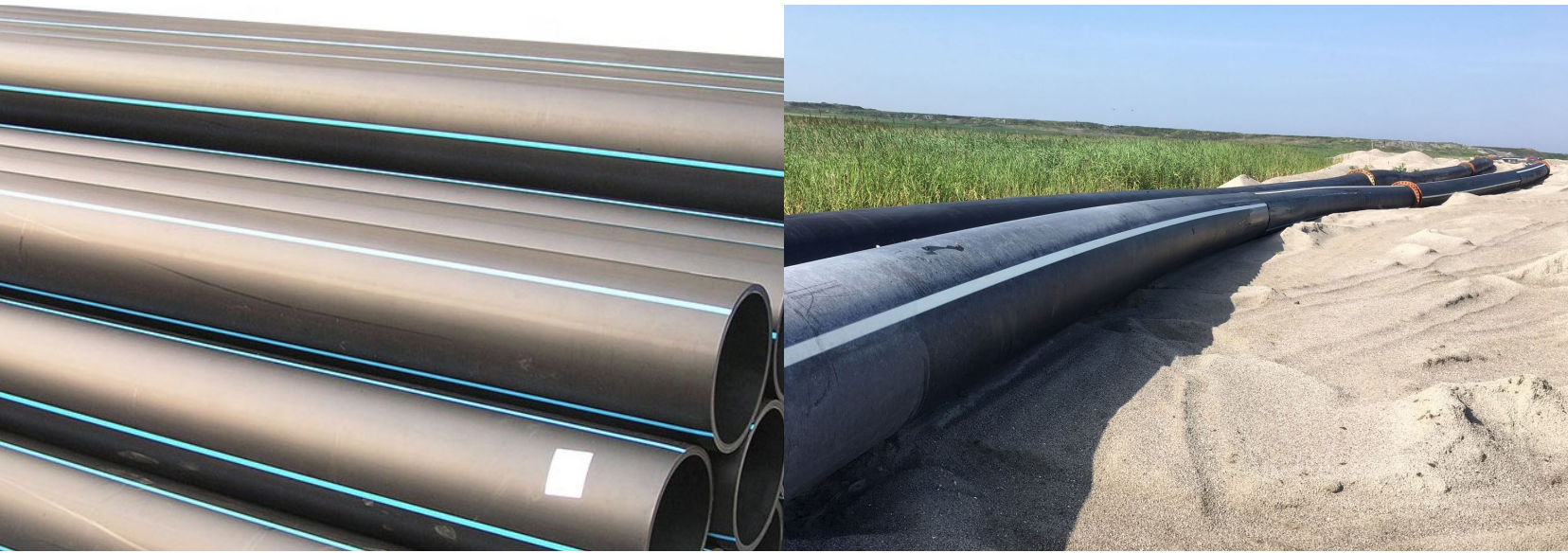
Guards
Flights
Screeners

Filters
Machine Guards
Food Processing

Oven Trays
Conveyors
Sizing Screens

Parts Trays
Shelving
Trommel Screens





TAB 5

PIPING SYSTEM

- POLY PIPE
- HARD CORE X
- CALLAY

POLY PIPE

A COMPLETE PIPING PACKAGE TO MEET INDUSTRIAL NEEDS

Poly Pipe can be provided as a complete piping package to meet industrial needs by providing the highest quality polyethylene pipe with matching precision fittings that meet all applicable ASTM specifications. A wide range of diameters and walls to meet varying conditions are also offered.

APPLICATIONS

Slurry lines	Cooling Water	Dredging lines	Fly ash lines
Mud lines	Sand transport lines	Sludge lines	Caustic lines
Irrigation lines	Corrosive waste	Acid lines	Dewatering lines

ADVANTAGES

The principal reason for the use of POLY PIPE is the combination of chemical and physical properties made available at a reasonable cost.

- **CORROSION RESISTANCE:** POLY PIPE has an outstanding resistance to nearly all acids, caustics, salt solutions, and other corrosive liquids and gases. POLY PIPE can be buried in acid or alkaline, wet or dry soil. The pipe does not scale or pit; it does not rot, rust or corrode. It also resists the growth of bacteria, algae and fungi that could impede flow or cause offensive odors. It is resistant to marine biological attack.
- **LIGHT WEIGHT:** POLY PIPE is 10% to 30% of the weight of most other pipes of the same size. Significant cost savings can be realized by reduced manpower and lighter equipment for handling and installation of the pipe.
- **FLEXIBILITY:** the inherent flexibility of POLY PIPE allows it to be used in difficult conditions of terrain. The combination of flexibility and lightweight allows the pipe to be assembled in flat or other ideal areas and be pulled over hills to the installation point. This same combination allows the use of narrower trenches since the pipe can be assembled above ground and rolled into the trench. usually the pipe can be bent to a minimum radius of 10-20 times the pipe diameter. This allows contouring the pipe around obstacles without the use of fittings.
- **ABRASION RESISTANCE:** POLY PIPE can handle a wide variety of slurries and other abrasive materials. Generally the pipe will outlast steel pipe by a factor of four. It also outlasts rubber lined pipe. Its lightweight characteristics permits easy rotation of long lengths.
- **FLOW CHARACTERISTICS:** POLY PIPE has an extremely smooth inner surface which offers very low resistance to flow.
- **RESILIENCY:** POLY PIPE can be deformed percussively without permanent damage under and increasing external load to more than half its original diameter. The pipe will flex with impact loads over a wide temperature range from - 180°F to 180°F without brittleness. The expansive force of water freezing in the pipe will not crack POLY PIPE.
- **COST SAVINGS:** Compared to conventional jointed pipe, the use of POLY PIPE can result in significant cost savings in installation, labor and equipment, reduced maintenance over the life of the pipeline and freedom in design.
- **MATERIAL DESIGNATION:** POLY PIPE is made of high density, high molecular weight polyethylene. The polyethylene base resin meets all requirements of ASTM D-1248 for Type 111, Grade P34, Category 5, and has a PPI rating of PE3408 by the Plastic Pipe Institute. The average physical property values for POLY PIPE and fittings at 73.4°F are shown on pages to follow.

HARD CORE X

GET THE MAXIMUM LIFE OUT OF YOUR STEEL PIPE

A tough one piece ductile abrasion resistant hardened steel pipe. Engineered for maximum life in highly abrasive applications. With HARD CORE X 600 Brinell Ld. and 300 BHN outer hardness HARD CORE X provides the toughness required to handle the worst conditions industry can dish out. HARD CORE X overcomes the brittleness of NI-HARD and the rigidity of Basalt lining piping systems. HARD CORE X can also be fabricated in Ts, Ys, sweep and elbows. Special induction bending practices maintain wall thickness and precision quality.

SPECIFICATIONS

LENGTHS: 20 and 40 foot standard; custom lengths available

COUPLING METHODS: Most common methods used for carbon steel piping apply

CUTTING: Fixed mount or hand held commercial abrasive disc saw or plasma arc.

WELDING: Standard low hydrogen 7018 rod; welding procedures available

SIZES

NOMINAL	THICKNESS	OD INCHES	OD mm	INCHES	mm	WEIGHT	
						lbs./ft.	kg/m
2-1/2	SCH 80	2.87	73	.267	.01	8	11
3	SCH 80	3.50	89	.300	7.62	10	15
4	SCH 80	4.50	114	.337	8.56	151	22
5	SCH 80	5.56	141	.375	9.53	21	31
6	SCH 40	6.63	168	.280	7.11	19	28
6	SCH 80	6.63	168	.432	10.97	29	43
8	SCH 40	8.63	219	.322	8.18	29	43
8	SCH 80	8.63	219	.500	12.7	43	65
10	SCH 40	10.75	273	.365	9.27	40	61
10	XH	10.75	273	.500	12.7	55	82
12	STD	12.75	324	.375	9.53	50	74
12	XH	12.75	324	.500	12.7	65	97
14	STD	14	356	.375	9.53	55	81
14	XH	14	356	.500	12.7	72	107
16	STD	16	406	.375	9.53	63	93
16	XH	16	406	.500	12.7	83	123
18	STD	18	457	.375	9.53	71	105
20	STD	20	508	.375	9.53	79	117
22	STD	22	559	.375	9.53	87	129
24		24	610	.438	11.13	110	164

APPLICATIONS

POWER GENERATION

Coal Slurry Transport
Fly Ash Systems
Pulverized Fuel Systems

MINING AND PROCESSING

Phosphate Transport
Prepping and Cleaning Plants

OTHER INDUSTRIES

Wood Chip Conveyance
Foundry
Sand Handling



HARD CORE X ... CONTINUED

MICROSTRUCTURE

- The phases of carbon steel are austenite, ferrite, pearlite, bainite and martensite. Austenite occurs at temperatures above 750°C where the carbon is fully soluble in the iron. Austenite cools to form pearlite, bainite, martensite or a combination, depending on the chemistry of a particular steel and its cooling rate.
- A soft pearlitic structure is formed when carbon steel is slow cooled. This structure, formed through diffusion is a mixture of ferrite and layers of carbides. As quenching of steel becomes more severe, the time for carbon diffusion becomes less. Upon cooling to an intermediate temperature (300°C to 500°C) and holding for a long period of time, bainite is formed. This phase is produced by a “shear” (distortion of the atomic structure) reaction followed by diffusion.
- Upon instantaneous cooling (as in the case of a vigorous water quench) a “shear” reaction occurs in the place of a diffusion reaction. The resulting product is martensite, an extremely hard phase which can reach hardness in excess of 600 Brinell.
- HARD CORE X's yield strength follows metallurgical phases through the pipe wall. The yield follows a predictable curve to a strength of 75,000 psi on the outer layer. The strength of the outer layer is more than twice that of conventional carbon steel. The implications for long-term operation are clear: pipe of a reduced wall thickness can be operated safely.
- HARD CORE X exhibits remarkable ductility - a 20 inch 00 ring can be compressed by 1.33 inches (33.8 mm). Upon release of compression, the ring will return to its original state, free from cracking.
- Conclusion: HARD CORE X demonstrates a high degree of both ductility and strength.

MANUFACTURING PROCESS

- Close process control of hardening and internal quenching is required to consistently achieve the correct micro structure and to produce the hard martensite on the inside and the soft pearlite on the outside.
- The pipe is heated by electrical induction. A current is oscillated at high frequencies through the pipe wall. The resistance of the material to the electron flow converts the electrical energy to heat energy which is closely regulated and monitored by optical pyrometers.
- The speed of the pipe and power is precisely controlled to achieve heat balance at the required temperature.
- The pipe is then subjected to internal quenching by a specially designed water quenching system. This achieves the different cooling rates required at the different points through the pipe wall to achieve the necessary material properties of inner and outer zones with a well graded transition.
- HARD CORE is also available with same above process but with a 425-575 BHN 1.0.

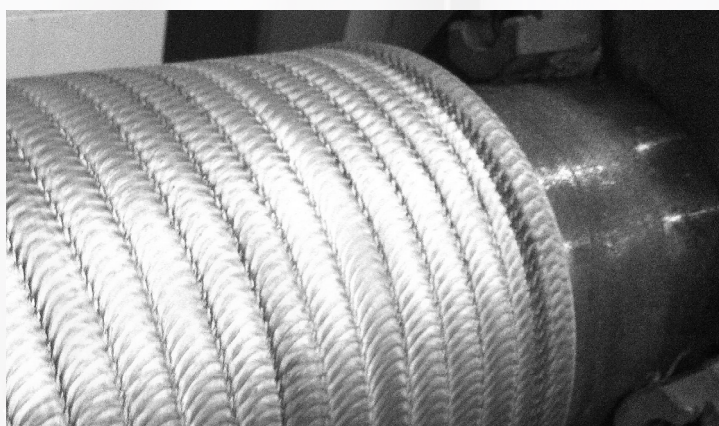
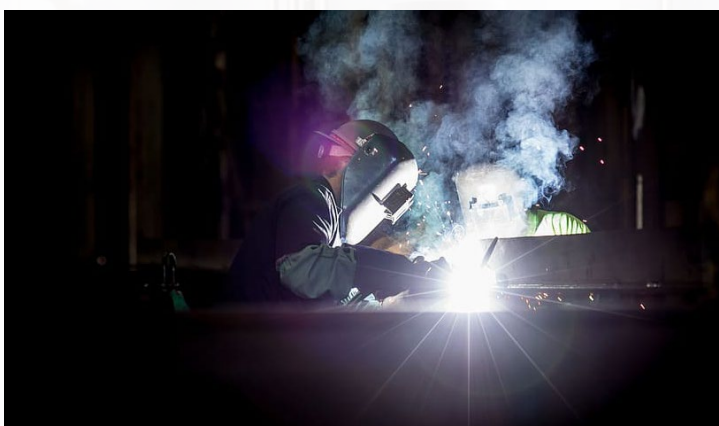


CHROME CARBIDE OVERLAY WEAR PIPE

Callay is an ultra hard, impact-abrasion resistant chrome carbide composite alloy formed by metallurgical bonding a granular chromium carbide powder to a steel substrate. The result is the ultimate wear resistant properties available for the heaviest abrasion/impact application. The uniform high concentration of carbide per square inch throughout the matrix yields wear resistant qualities far exceeding those of typical wear piping,

Callay piping is superior to ceramics in many applications due to its high impact resistance and ease of installation. Callay piping is available in 4" ID minim, to 40" ID maximum with length of 20'. When extended economical service life is the need, Callay is the answer.

Compare our physical properties and Chemistry with your current source, if you can get it! The chemistry and physical properties gives Callay the competitive edge.



ANALYSIS

Chemical Properties may vary according to mill mix.

CARBON	MANGANESE	MOLYBDENUM	CHROMIUM	SILICON
4.03	3.75	1.62	32.71	.048
NICKEL	PHOSPHORUS	SULFUR		
.5	.015	.015		

PHYSICAL PROPERTIES

CARBIDE HARDNESS..... 90 HRC SCALE
 MATRIX HARDNESS..... 62 HRC SCALE
 BEAD WIDTH..... 1 1/4"
 BASE PLATE..... 1/4" TO 1 1/2"
 SINGLE PASS..... 1/8", 3/16", 1/4"
 DOUBLE PASS..... 1/4", 3/8"

ADVANTAGES

- Superior Abrasion / Impact Resistant
- Cost Effective
- Extended Service Life
- Stress Relieved
- Unaffected by operating temperature to 1250°F
- Can supply pipe to a minimum of 4" Ld.

Cutting; Air Arc, Plasma Arc, Caldo Mini Torch
 Welding rod cap; 2134

STEEL COAT PIPING

Please Refer to TAB 7 of this catalog for details on Steel Coat Piping



TAB 6
ENGINEERED PLASTICS

- ENGINEERED PLASTICS

ENGINEERED PLASTICS

A WIDE RANGE OF ENGINEERED PLASTICS

Walker Services can supply a wide range of engineering plastics. From Semi-Finished raw material to completed part. Below, and information that follows will outline our products in greater detail.

ACRYLIC & POLYCARBONATE

Acrylic
CAB
Hyzod
Lucite Mirror Products
PETA

Plexiglas
Polycarbonate
Styrene
Tuffak
Vivak

CORROSION PRODUCTS

Cutting Boards
ECTFE
HDPE / LDPE
Polypropylene
Ertalyte

PVC / CPVC
PVDF
UHMW
Welding Rod

MECHANICAL PRODUCTS

ABS
Acetal
Delrin
Orkot
Nylon
PET

Phenolic
Polycarbonate
Teflon
Torion
X-Linked Polystyrene





TAB 7
STEEL COAT

STEEL COAT

ABRASION RESISTANT PORCELAIN ENAMEL

STEEL COAT consists of special porcelains and inorganic materials applied in a minimum of two (2) coats, separately fixed to internal surfaces which are thoroughly grit blasted clean. Following application of the first (base) coat, the items shall be brought to a sufficiently high maturing temperature (above 1400°F) to fuse the material to the base metal. Subsequent coatings will be processed in a similar manner, forming an integral molecular bond with the base coat and base metal. The finish lining shall be 8-12 mills thick and defects that expose the base metal shall be limited to 1 % of the total lined surface. Hardness shall be above 5 on the MOHS scale with a density from 2.5 to 3.0 grams per cubic centimeter. The lining shall be bonded sufficiently to the metal surface to withstand a .001 inch/inch (the yield point of carbon steel) without damage to the lining. The lining shall be capable of withstanding an instantaneous thermal shock of 350°F without crazing, blistering, or spalling. It shall be resistant to corrosion by solutions of between PH-3 and PH-10 at 1250°F (Special formulations are available for specific higher or lower pH conditions). For more specifics call your local sales representatives at our office for additional product information. Cutting of STEEL COAT lined pipe shall be limited to only one piece per run of pipe for closure purposes, unless otherwise specified by the engineer. When manufacturer's recommendations are followed carefully, spalling can be limited to a maximum of 1/8" back from the cut. Cuts should be made using a band saw with a lenox neo-type blade, 1/4" wide x .025 thick x 18 teeth per inch, or finer, set at a speed of 100 ft. per minute. Insure the material is not forced against the blade, but set so that the cut is progressive in a natural way, chipping or spalling of STEEL COAT is held to a minimum. Occasionally, a chip may go back .030 to .060", but that is usually on an upward angle, leaving the substrate protected with a cover of ground coat. Pipe can also be cut with an abrasive high speed wheel. All supplied pipe and fittings will conform to AWWA and ANSI specifications.

PERFORMANCE

- Superior flow ability
- Smooth non-stick surface
- Minimizes build-up on pipe walls
- Reduces pumping costs
- Reduces diameter requirements
- Provides for extended life
- Eliminates the need for back-up pipe systems

POTENTIAL USES

- Transportation of acidic or alkaline fluids
- Transportation of abrasive slurries
- Protection in corrosive atmospheres
- Resistant to high temp. environments (to 1000°F)
- Suitable for steam and water wash systems
- Thermal cycling systems

BONDING CHARACTERISTICS

A bonding interface layer is created between the base metal substrate and the base coat of the dual layer/dual fire STEEL COAT process during the initial firing at approximately 1400°F. At this temperature the absorption of the base coat materials into the porous base metal takes place creating a permanent chemical and mechanical bond as shown in Fig 1.

Organic lining materials, even those referred to as "heat applied" or "fusion bonded" are clearly and simply a coating on the surface, as shown in Fig 2. Temperatures necessary to create a true bonding layer are not possible with organic materials due to the temperature limitations associated with them.

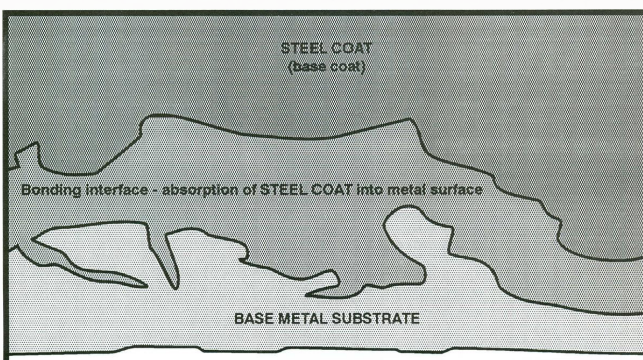


FIG 1

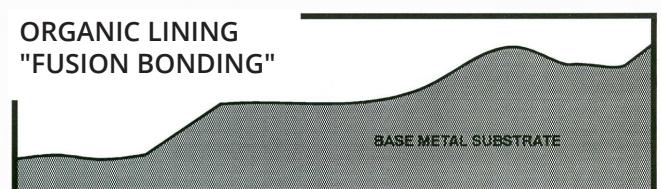


FIG 2



TAB 8

WEAR RESISTANT TILES

- CERAMIC TILE
- TUNGSTEN CARBIDE TILE

STEEL - RAMIC

VACUUM BONDED CERAMIC TILES

The vacuum bonding process results in a 5000 PSI minimum composite bond strength between the ceramic and the base metal. This bond is tested for every batch. For even wear and uniform weight distribution a fine grain aluminum ceramic with an average grain of 4 microns is utilized.

STEEL-RAMIC vacuum bonded tile is widely suited for wear protection of moving parts and areas subjected to impact. Standard tile sizes are 1" x 1" with thickness of 1/8", 3/16", and 1/4". Smaller tiles are used when necessary to minimize chords on small curved surfaces. Use of small thin aluminum ceramic tiles improves impact resistance and eliminates tile cracking / spalling due to substrate flexing and twisting.

For areas with usual impact or extreme wear, tungsten carbide tiles can be overlaid or ceramic can be applied directly to the metal base. This process takes much effort to conceive the increase in pricing vs. wear ability.

Suitable for applications with maximum continuous operating temperatures of 250°F (standard) and 350°F (high temperature).

The use of the vacuum bonding process along with small, thin, ceramic tiles permits lining of complex, internal / external geometry's, compound curved surfaces. Shop installation typically required for lining small component parts up to 6 cubic feet. Larger components can be lined using segmented bolt-in panels.

WELDABLE ENGINEERED TILE

TYPICAL PROPERTIES

In the service of high abrasion and less impact the solid weldable ceramic tile is the product of choice.

MOH HARDNESS CHART

DIAMOND	ARLITE AL. OXIDE	TOOL STEEL	SILICA	GLASS	CARBON STEEL	COPPER
10.0	9.0	6.5	6.0	5.5	5.5	3.0
		STEEL RAMIC A		STEEL RAMIC E		
Nominal Alumina		85%		98%		
Water Absorption		0%		0%		
Density		0.1227 lbs/in 3		225 lbs/ft 3		
Compressive Strength		180,000 PSI		419,950 PSI		
Flexural Strength		39,000 PSI		40,800 PSI		
MOH Hardness		9		9		

Walker Services Steel-Ramic products are resistant to wear from all materials except for diamonds. Installation can be accrued by adhesives, welding, bolting and studs. Special engineered tiles can be supplied as well as standard sizing. In addition, a complete fabrication or re-work project can be lined with Steel-Ramic products.

TUNGSTEN CARBIDE

WEAR PROOFING

Superior surface protection against wear. Brazed parts can withstand extreme heat up to 800 °F. Braze tensile strength can meet or exceed the strength of the parent metal. Cuts repair cost and down-time substantially, while adding a longer life to present equipment. Withstands impact and abrasion, maintenance cost is virtually eliminated. Corrosion resistant. Pays for itself in reduced labor / change-out time.

BRAZED TUNGSTEN CARBIDE FEATURES

In most cases, it is either too expensive or technically impossible to make a large part from solid tungsten carbide, so most parts are composites of carbide tiles attached to a steel base. Additionally, as an unweldable material that resists most conventional attachment methods, carbide is difficult to work with. The best way to attach carbide is by silver solder brazing. Using primarily induction brazing, we form a strong structural bond which supports the carbide and keeps it securely in place in the appropriate wear areas. After carbide is properly installed, it can be expected to outlast steel by as much as 50 to 1. There are no additional "build-up" treatments or procedures required. Special carbide grades can be applied where higher impact resistance, wear resistance or more corrosion resistance is required. Various Tungsten carbide grades are produced to protect against a spectrum of wear problems, ranging from "soft" Impact grade to "hard" wear resistant grades. Generally carbide harness trades off against impact resistance. The objective in a carbide application is to use the hardest grade that will not break. The softest impact grade carbide grade has approximately the same hardness as the hardest tool steels. Since "softness" is related to abrasion resistance. Impact grade carbide starts where steel's abrasion resistance stops. "Hardness" is a good indication of abrasion resistance, it can also be used for an application guideline. Tungsten carbide ranges in hardness from a "soft" 68 Rockwell C scale for impact grades to 93 Rockwell A scale for the hardest wear resistant grades.

TUFFCARB OPTION

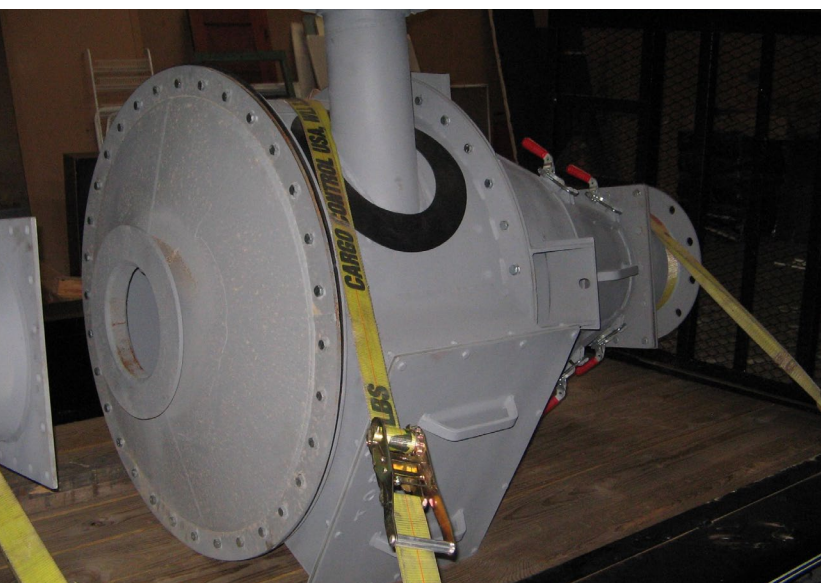
This process introduces solid tungsten carbide shapes into a hard-facing weld matrix. The resulting product has wear characteristics of solid tungsten carbide with increased shock resistance. TuffCarb works well in heavy impact situations, buckets, loaders, etc.

TIGERCARB OPTION

This proprietary process which injects carbide powders into a plasma stream. This product has many of the wear characteristics of solid tungsten carbide, plus the ability to conform to corners and curved shapes and corrosion resistance. TigerCarb also works well in heavy impact and with rough particulate abrasion.

**ALLOW WALKER SERVICES TO CAST OR FABRICATE
YOUR CONSUMABLE WEAR PART AND WEAR
PROOF WITH TUNGSTEN CARBIDE PRODUCTS.**

LIFE EXTENSIONS!!!



TAB 9
FABRICATION SERVICES

FABRICATION SERVICES

WHY CHOOSE WALKER SERVICES?

As a Manufacture Representative for several Fabrication Facilities, Walker Services can provide a wide product service with fabrication. One of the advantages in working with Walker Services is that you are assured of getting the most economical price within the market. This is possible because of our fabrication network. A total of 4 to 5 fabrication facilities maybe utilized in the quotation process. Each facility is evaluated based on workload, location to plant, expertise, delivery dates, certifications and pricing. In today's Industrial world, in some cases, the end users do not have the time or manpower to shop for the best job. Allow Walker Services to provide this service for you. Below list several fabrication services available thru Walker Services. For "ON TIME", "ON BUDGET", "QUALITY IN WORKMANSHIP", "ECONOMICAL PRICING", "FOLLOW UP AFTER THE JOB".

**ALLOW WALKER SERVICES TO BE THE SUPPLIER OF CHOICE.
NO JOB TOO BIG OR SMALL!**

COMPLETE FABRICATION SERVICES

A.S.M.E. STEEL AND ALLOY PLATE FABRICATION.

- Plate Rolling - up to 4.5" thick to 12' 8" wide.
- Press Brake Forming up to 6" thick through 28' long.
- Plate Cutting thru 8" Carbon Steel with multi head burning machine.
- Structural Steel fabrication.
- API Storage Tanks, carbon steel and alloy hoppers.
- Furnaces stress relieving, annealing and normalizing.
- Specialized A60 certified buildings units and modular space units.

PIPE FABRICATIONS

- Pipe Bending and Coils
- Thin and Heavy wall bends, plastic-lined bends
- Custom spring design and manufacturing
- Metal alloys from aluminum to zirconium
- Fully Coded Shop
- Custom boiler tube panels to your specifications

FABRICATION OF SKID MOUNTED PROCESS UNITS - PER CUSTOMER DESIGN

- Structure, Tanks, Piping, Instrumentation, Electrical, Hydraulic and Pneumatic Controls
- Pressure Vessels Fabrication to A.S.M.E. codes.
- ASME "U", "S" & "R" Code Stamps

INDUSTRIAL SHEET METAL

- Certified Welders – Mig, Tig & Stick
- Specialize in Stainless Steel & Aluminum Fabrication & Product Piping

FABRICATED AUGER FLIGHTING

- Material thickness from 16 GA to 2", 1/4" to 24' ID's, Pitches to 20'
- Slotted Sectional, Variable Pitch, Ribbon Flight, Helicoid, Square Helicoid, Ribbon
- Screws, Fabricated Extruder screws
- Pressure Vessels Fabrication to A.S.M.E. codes



TAB 10

MACHINING SERVICES

MACHINING SERVICES

WHY CHOOSE WALKER SERVICES?

As a Manufacture Representative for a number of Machining Facilities Walker Services can provide a wide product service in Machining Services. Another advantage in working with Walker Services is that you are assured of getting the most economical price within the market. This is possible because of our Machining Services Network. A total of 3 to 4 machining facilities maybe utilized in the quotation process. Each facility is evaluated based on work load, location to plant, expertise, delivery dates, certification and pricing. In today's Industrial world, in some cases, the end users do not have the time or manpower to shop for the best job. Allow Walker Services to provide this service for you. Below list a number of Machining Services available through Walker Services Inc. Allow Walker Services to be the supplier of choice for your Machining requirements.

WHAT DOES WALKER SERVICES OFFER?

LASER MACHINING

- High Wattage Carbon-Dioxide laser systems with over-sized tables.
- Able to cut tubular or flats.

CNC LATHES, MILLS AND 4-AXIS MACHINING CENTERS

- Manual Machining equipment.
- Short Runs and Prototypes
- Production Runs
- High Volume
- Close-Tolerance
- Custom Parts and Assemblies

STAMPING

- Stamping and forming capabilities allowing turnkey projects
- Wire EDM Services

LARGE OR CRITICAL MACHINING SPECIALTIES

- 14' Dia. x 40' Long Lathe Capacity
- CNC Machine for consistent quality and increased production
- Gear Train Housings
- Tapered Dryer Journals
- Worn Gears Rebuild

PORTABLE MACHINE WORKS, ON-SIGHT FIELD SERVICES

Portable Machine Works responds to your on-site needs 24 hours a day. Portable Machine Works has many years of experience coupled with our superior equipment enables us to reduce expensive down time and lower your maintenance costs.

- Back Facing Heat Exchangers Machining
- RTJ Grooves in Flanges
- Machining shaft keyways in place
- Re machining Flanges on large Vessels
- Cutting and beveling pipe
- On-site cutting and milling

CUSTOM TUNGSTEN CARBIDE INSERTS AND FORMING TOOLS

- Offset Tool Holders
- Precision ground inserts to your exact design specifications.
- Tungsten Carbide form tools provide accuracy and repeatability for blueprint applications.
- Form tools can increase productivity by combining grooving and profiling in one operation.



TAB 11

CASTING & FORGING SERVICES

- CASTING SERVICES
- FORGING SERVICES

CASTINGS

WHY CHOOSE WALKER SERVICES?

As a Manufacture Representative for a number of Foundries Walker Services can provide a wide product service in Castings and turn-key services. Walker Services can provide a "as casted" part, or supply a finished part per requirement. Complete heat treating, machining and assemblies as required. Using our Foundry network there is no job too big or small. Capable of supplying one casting, prototype or large production runs. Stocking programs are also available. We can reproduce obsolete parts from your drawings and specifications, or from your samples. Our versatility allows us to make production runs on cast items as well as furnishing emergency replacement parts for machinery and equipment. Walker Services also has a knowledge base to draw from on "life extension" of your high abrasion and impact replacement parts. We have provided "life extension" up to 5 to 6 times longer.

Swing Hammers and Impact Hammers are our "Bread and Butter".
Below lists Foundry services available thru Walker Services.
No Job too Big or Small!

WHAT DOES WALKER SERVICES OFFER?

CAPACITY

1 lbs. to 4,000 lbs.

ALLOYS

- Carbon Steel
- High Strength / High Hardness Low Alloy Steel
- Manganese Steel
- Corrosion / Heat Resistant Stainless Steel
- High Chrome White Irons
- Cobalt Alloys
- Aluminum
- Nickel and Nickel Alloys
- Alloy Irons
- Ductile Irons
- ADI
- Copper Alloys
- Brass
- Bronze

METALLURGICAL CONTROL

- Spectrographic control of all heats.
- Physical and chemical certifications as required.
- In-house metallographic analysis.

PATTERNS

Custom designed patterns using a variety of materials

HEAT TREAT

- Extensive in-house heat treating capabilities with air and water quenching.
- Provides normalizing, hardening, tempering, annealing and stress relieving.

NDT CAPABILITIES

- Non-Destructive Testing includes Gaging, Brinell Hardness, Magaflux and others as required.

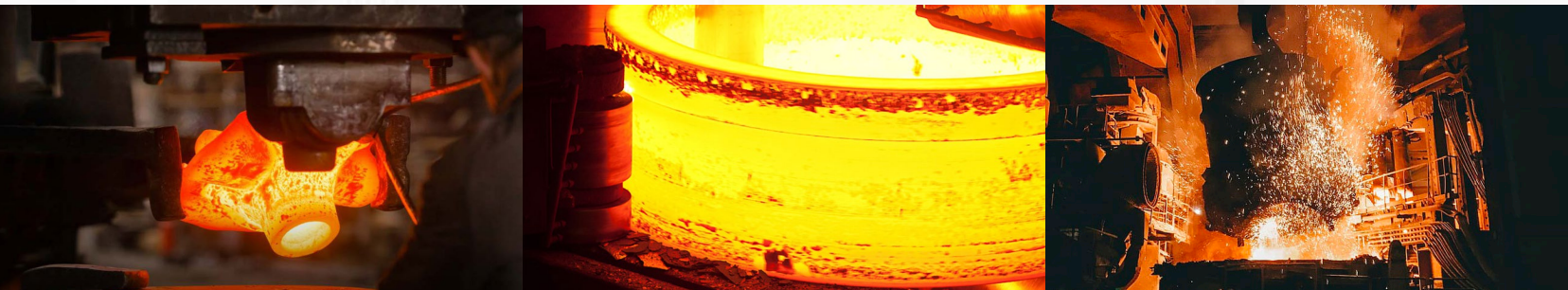
FORGING

WHY CHOOSE WALKER SERVICES?

As a Manufacture Representative for a number of Forging Facilities Walker Services can provide a wide product service in forged products. We offer added value and save cost for our customers by offering a variety of secondary services in-house. Our material are available in air melt, vacuum degassed, vacuum carbon deoxidized, vacuum arc remelt, vacuum induction melted, electro-slag remelt and argon-oxygen decarbonized. Below lists Forging services available thru Walker Services Inc.

WHY FORGING?

Forging excels over casting, welding , torch cutting or machining bar stock or plate. It provides unsurpassed strength due to continuous directional grain flow. Compared to castings, it offers fewer defects and better response to heat treatment. More shapes and sizes and closer tolerances can be achieved with forgings than with steel bar stock or plate.



COMPREHENSIVE ABILITIES

Open Die Forgings from 1 lbs. to 80,000 lbs.

Rolled Rings up to 60,000 lbs.

OPEN DIE FORGINGS

- Rounds
- Flats
- Square and Hex Bars
- Blanks
- Rings, as large as 240"
- Spindles
- Hubs, Single or Double

SECONDARY SERVICES

- 100% Chemical Spectoanalysis
- Rough Turning and Milling
- Deep-hole drilling and boring
- Torch cutting
- Saw cutting
- Heat treating
- Destructive testing and Level III non-destructive testing

WIDE MATERIAL RANGE

- Carbon and High Manganese Steel
- 1015 to 1090
- Stainless Steels
- Aluminum Series
- Alloy Series
- Tools Steels
- Non-Ferrous
- Aircraft Quality

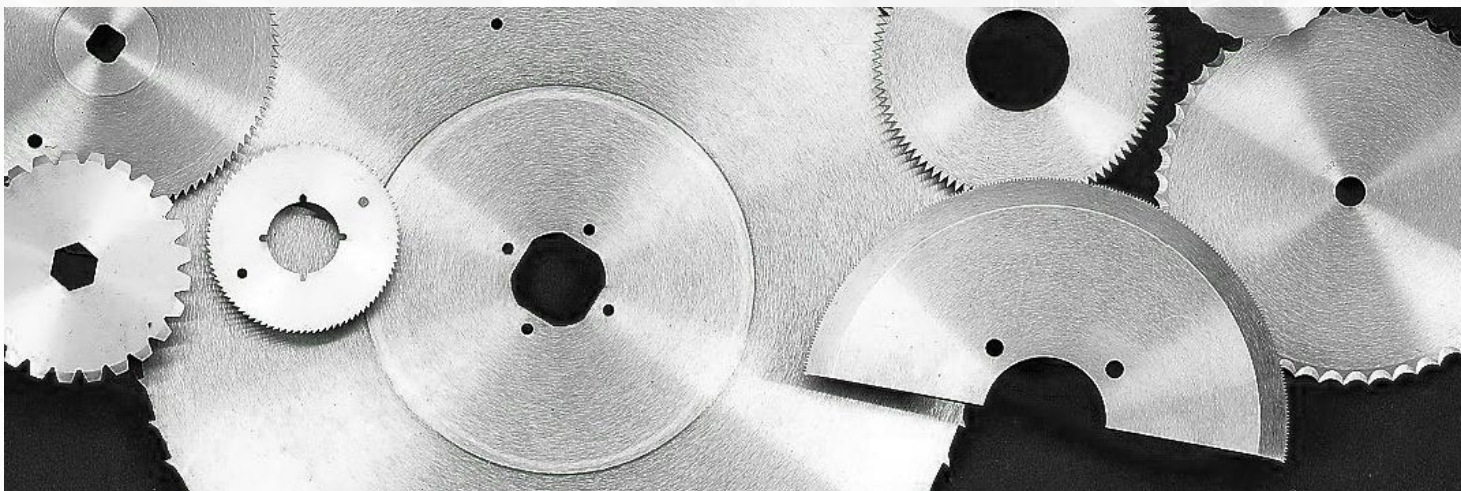


TAB 12

MANUFACTURING OF INDUSTRIAL KNIVES

- MACHINE KNIVES
- CIRCULAR, CUT-OFF & PERF KNIVES
- TOOTHED KNIVES
- MACHINE RAZOR BLADES
- PELLETIZING KNIVES
- KNIVES FOR FOOD AND METAL
WORKING INDUSTRY

MACHINE KNIVES



PRODUCTS

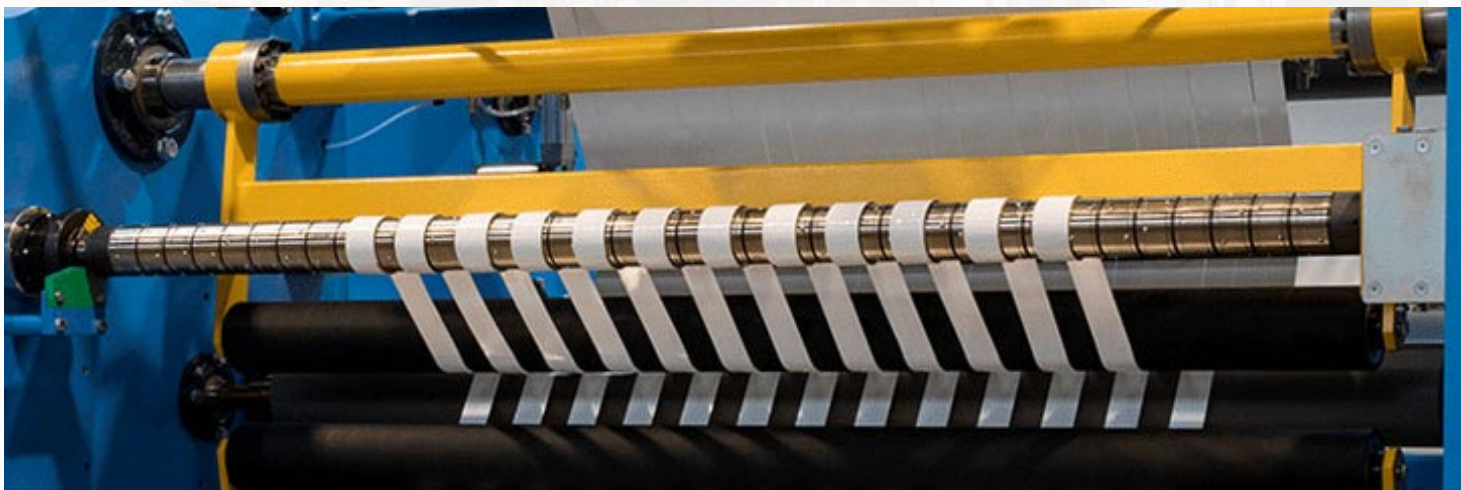
- Circular Knives
- Toothed Knives
- Cut - Off & Perf Knives
- Machine Razor Blades

OPEN DIE FORGINGS

- Recycling
- Pelletizing for Plastic Resin & Compounding
- Food
- Packaging
- Paper, Film & Foil Converting
- Textiles, Fabric & Carpet
- Metal Working
- Wood
- Custom OEM Specialities

MATERIALS

- Vacuum Bonding & Brazing
- Coatings
- Raw Materials
- Deep Cryogenic Treatment



KNIFE PRODUCTS

CIRCULAR, CUT-OFF & PERF KNIVES

MANUFACTURED FROM THE FOLLOWING MATERIALS

- Tool Steels
- Stainless Steels
- Powdered Metals
- Tungsten Carbides
- Ceramics
- Wear & Corrosion Resistant Coatings

Whether you are processing film or steel, Walker Services offers a comprehensive range of precision ground circular knives and slitter knives made from the highest quality raw materials. Our maximum size range is up to 36 inches in diameter, as well as 204 inches in length. All knives and blades are made to meet or exceed the industry standards, enabling our customers to obtain the best possible results for their cutting requirements. Walker Services is one of the foremost manufactures of knives for cutting tissue, diapers, paper towels, toilet paper, and many non-woven. In this high production sector, we specialize in increasing our customers profits by offering designs and material suggestions that increase productivity.

CONVERTING OEMS

- Appleton
- Arpeco
- Arrow
- Beloit
- Cameron
- Coretech
- Curt Joa
- Diddle Graphic
- Dusenbery
- Eastman
- Goeble
- Harris
- Jagenburg
- Judelson
- Kiddler Stacy
- Koegel
- Lever
- PCMC
- Perini
- Tidland
- Titan
- Tiromat

KNIFE PRODUCTS

TOOTHED KNIVES

Whether you are cutting plastic, non-woven, or paper, we have the experience to provide you with toothed knives to do the job. We offer a huge inventory of toothed knives and can often supply your needs from stock. If not, custom knives can easily be produced in a short time. All of our toothed blades have ground teeth, never filled like some others. We can provide:

- V-Tooth Knives
- Scalloped Tooth Knives
- Serrated Tooth Knives
- Zig Zag Knives

We know the very tip of the teeth is very critical to the performance of the knife so we use special guards to protect the teeth from any damage.

Toothed knives are most often made of Carbon or Stainless Steel to reduce the chance of teeth breaking. To increase the wear resistance we often coat our knives with Titanium Nitrate or Tungsten Carbide. We also know the correct teeth and angles for different applications and are happy to help improve your performance.

CONVERTING OEMS

- | | | | |
|------------------|-----------------|-----------|-----------------|
| • Arpeco | • Eastman | • Koegel | • Tiromat |
| • Cameron | • Goeble | • Lever | • Multivac |
| • Coretech | • Harris | • PCMC | • Wolf |
| • Curt Joa | • Jagenburg | • Perini | • and many more |
| • Diddle Graphic | • Judelson | • Tidland | |
| • Dusenbery | • Kiddler Stacy | • Titan | |

KNIFE PRODUCTS

MACHINE RAZOR BLADES



We specialize in surgically sharp blades from .0025" to .062" thick. We produce blades from many innovative materials to offer our customers the highest quality cuts and the most economical products. We can supply blades produced from Tungsten Carbide, Ceramics and High Speed Steel, as well as the normal Stainless and Carbon Steel. We carry a million dollar inventory in order to quickly ship most orders, but custom jobs are our specialty. We can assist you in design and material selection and get your custom made blades to you with low lead times.



KNIFE PRODUCTS

INDUSTRIES

PELLETIZING KNIVES FOR PLASTIC RESIN & COMPOUNDING

Walker Services continues to be a leading supplier of Pelletizing Knives for over 40 years. Whether you are operating a strand pelletizer, an underwater pelletizer, a die face pelletizer, or a hot cut system, Walker Services can and will help you.

PELLETIZING OEMS

- AST
- Automatik
- Berenger
- Berstorff
- Conair
- Cumberland
- Werner Pfleiderer
- Erema
- Kobe
- JSW
- Black Clawson
- Buss Condux
- Farrell
- Egan
- PTI

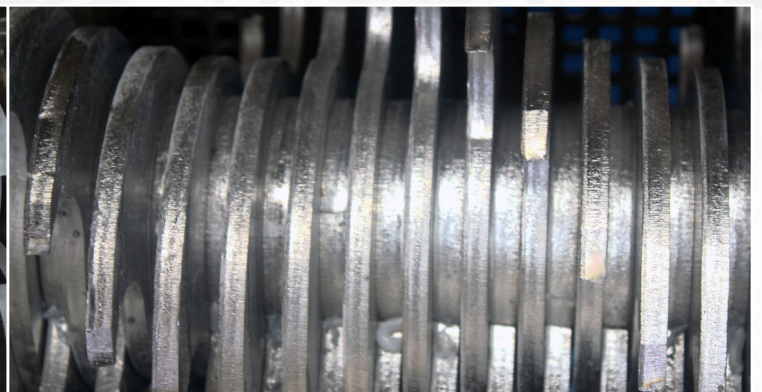
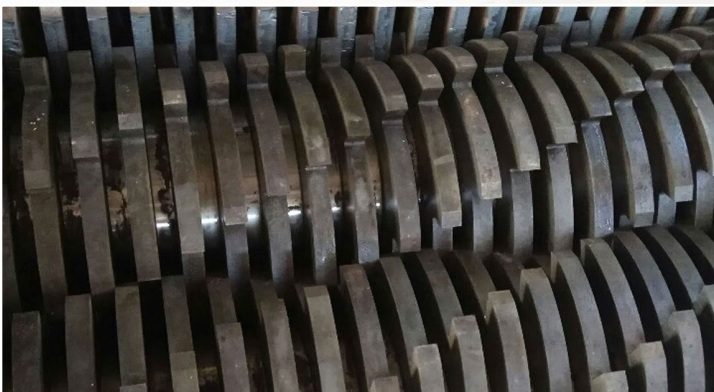


RECYCLING

Walker Services has been a leader in the production of recycling knives for over 35 years. We produce knives for the recycling of Wire, Tires, Plastics, Wood and Metal.

RECYCLING OEMS

- Eldan
- Cumberland
- Triple S
- MTB
- Granutec
- Retech
- Grizzly
- Pierret
- Harris
- Taylor Styles
- Nelmore
- Wendt



KNIFE PRODUCTS

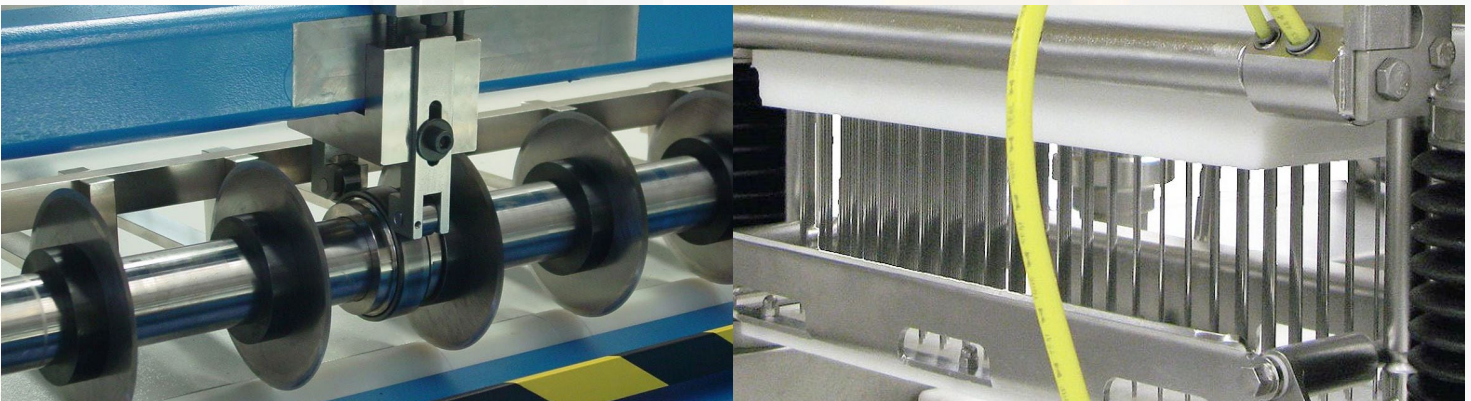
INDUSTRIES

FOOD

Knives for the food industry has been one of the newest but fastest growing markets for Walker Services. Although we have always supplied special knives for food cutting for many good customers, in the last couple of years we have made our goal to be one of the largest and best value Food Knives Suppliers in the world! We are now stocking over \$1.2 million worth of food cutting knives for cutting all types of meats, vegetables, fruit and grains.

POPULAR MARKETS

- Meat Grinder Inserts
- Skinner Blades
- Bowl Choppers
- Slicer Blades
- Poultry Cutting Blades
- Injector Needles



METAL WORKING

Walker Services has been a leader in the production of metal working knives for over 38 years. We produce the following knives for the production and processing of steel plates, sheets and tubes.

- Square Edge Shear Blades
- Scrap Chopper Knives
- Bow Tie Shear Blades
- Alligator Shears
- Circular Slitting Blades
- Tube Punch Knives
- Rotary Tube Knives



The information in this catalog is effective January 2009 and is subject to change without notice. Contact your Walker Services Office for the latest information on our products.

All goods shipped shall be subject to tolerance and variations consistent with usual trade practices regarding dimension, straightness, section composition and mechanical properties, service and internal conditions. Mechanical properties shown are typical values, not specification requirements, and are not guaranteed. Any defective goods will either be replaced without charge or a full credit issued (at seller's option) as a limit of seller's liability and shall under no circumstances include any other incidental or consequential damages.

TERMS AND CONDITIONS OF SALES

QUOTATIONS:

All quotations are subject to change without notice, and are subject to prior of sale. All sales are made subject to strikes, accidents or other causes of any kind beyond our reasonable control. We reserve the privilege to cancel orders upon which full specifications have not been given within the time agreed. All material quoted "from stock" is stock subject to prior sale. A buyer may not cancel material on special mill order without our written consent.

TECHNICAL ADVICE:

None of our agents, employees or representatives have any authority to bind us to any affirmation, representation or warranty other than those stated herein or on our invoice form. Unless an affirmation, representation or warranty is specifacally included or referred to herein or on our invoice form, it shall not be enforceable againts us. In particular, any technical advise we furnish with respect to the use of material is given without charge, and we assume no obligation or liability for the advice given to the results obtained, all such advice being given and accepted at buyer's risk.