

CROSS REFERENCE GUIDE								
AFM	ALL STATE	CERTANIUM	EUTECTIC	MG (MESSER)	INWELD	UTP	WELCO	ROCKMONT
PATRIARC	275	707	680	MG 600	955	65	Super Missileweld	Brutus-A
AMSTEEL-LH	616	747	66	MG 540	918	613	86	Polaris A
AMSTEEL 1	Steel Arc Plus	700	Steeltectic	MG 506		611	Steelweld	Tartan B
AMSTEEL 2	Steel Arc	701, 702	Beauty Weld	MG 500	909	612	83-88	Tartan A
CHAMFER ARC	Chamfer Rod, Cutting Electrode	100	CamferTrode, Cutrod 1	MG 560, MG 570	414, 450	82, 82-AS	Camferarc, Cutrod	Electra
PREMIUM CAST-1	4-60, 4-60 Super	889/ 889SP	2-23, 2-25	MG 210, MG 289		84, 85, 86		Jupiter A
CAST WELD-1	4 IMP		2-24	MG 200	713	8, 88, 888	94	Jupiter B
CAST WELD-2	4-60	889	2250	MG 210	712	84, 85, 86	65	Jupiter A
CAST WELD-3	6 IMP	885	27	MG 220	717	81	28	Jupiter NM
IMPACT ARC	NiMatrix, Super Join M	282, 298, 706 / 792	4, 40	MG 745, MG 750	501, 503	63 / 630	240	Apollo A, B
BUILD UP	Roll Matrix		2-B	MG 740		620	9B	
ABRASARC		267	N6712	MG 760		6700	180	Olympia B000
CHROMCARB	HS-7	297	N6006	MG 770		711B / 7100		Omega N
BRONZE ARC	24 AC/DC, 24 DC	421/ 423, 429	2800	MG 310, MG 320	626	32, 320	23	Venus B
BRONZE G	11-13FC	70F / 87F	185XFC	MG 130	285	2 / 6	14, 17, 17FC	Olympia C
ALUM ARC	34	608	2101, 2109	MG 400	606	48	26	Neptune A
ALUM COR	SealCor	68C	21FC-E	MG 420	230	ALFC	Cor-Al	Neptune GCF

STEEL:

Patriarc-High strength for dissimilar steels
AM Steel-LH-For low and medium carbon steels
AM Steel-1-Deep penetration on mild steels
AM Steel-2-Low heat input on mild steels
Chamfer Arc-Gouging, cutting and chamfering all steels

CAST IRON:

Premium Cast-1-Copper clad core for all cast iron
Cast Weld-1-Fully machinable all cast iron
Cast Weld-2-Cast to cast and cast to steel
Cast Weld-3-Non-machinable for all cast iron

HARDFACING:

Impact Arc-Severe impact on Manganese and steel
Build Up-For buildup on steel
Abrasarc-Impact and abrasion on steel
Chromcarb-High abrasion and light impact on steel

BRONZE:

Bronze Arc-Buildup and joining on copper, Brass and Bronze
Bronze G-Oxy and Acet build up and joining

ALUMINUM:

Alum Arc-Electrode for weldable aluminum
Alum Cor-Flux cored aluminum for torch

POWDER:

AFM 1-Bond Coat
AFM 2-Stainless type final coat
AFM 4-Aluminum Bronze final cut
AFM 120SF-Spray and fuse Nickel Base 14RC
AFM 140SF-Spray and fuse Nickel Base 38RC
AFM 160SF-Spray and fuse Nickel Base 60RC

AFM PATRIARC

- **High deposition rate.**
- **Weld deposits are smooth, ductile, porosity-free and take on a shiny appearance.**
- **Weld deposits are impact, abrasion, heat and corrosion resistant.**
- **For uses such as:** *Dissimilar steels, high carbon, tool and die steels, and aircraft steels. Underlayment of hardfacing alloys in mining applications, rebuilding shafts and agitator blades in turbines, frames, cast steel parts and gears. Also perfect to use when the base metal is unknown.*

Technical Data (Typical Values)

Hardness	Tensile Strength		up to 120,000 psi	
	Yield Strength		up to 90,000 psi	
	Elongation %		up to 30	
Diameter (mm)	2.4	3.2	4.0	5.0
	3/32	1/8	5/32	3/16
Amperage: AC or DC Reverse Polarity	45-80	70-120	70-140	130-150
Pkg. Size (Lb)	10			

Procedure:

Clean the work area. Thick sections should be beveled. A preheat of 400°F is recommended for carbon and cast steels. Maintain a short arc, slightly in the direction of movement and use stringer beads. Peening is recommended.

AFM AMSTEEL LH

- **High tensile strength ferritic electrode.**
- **High quality, all position, low amperage electrode features rapid deposition.**
- **Deposits have good ductility, are dense, crack-free, and of x-ray quality.**
- **Excellent for steels sensitive to cracking when welded with conventional mild steel electrodes.**
- **For uses such as:** for “tramp” and “problem” steels high in sulphur, phosphorous, or other elements added to improve the machinability of the steel. For fabrication of “H” and “I” beams, angle and channel iron, pipelines, and all other steel structures. For circular tubes to plate welds, and other type joints subject to stress and strain.

Technical Data (Typical Values)

Hardness	Tensile Strength up to 80,000 psi				
Diameter (mm)	2.4 3/32	3.2 1/8	4.0 5/32	5.0 3/16	6.0 1/4
Amperage: AC or DC Reverse Polarity (+)	60-100	110-150	140-200	220-280	300-375
Pkg. Size (Lb)	10				

Procedure:

Area to be welded should be cleaned thoroughly. Surface contamination must be removed and bevel or chamfer where required. Maintain close arc length. Vertical joints should be welded from bottom up, using rapid weave technique. Do not whip. Use drag technique to make horizontal fillet welds. Slag is easily removed.

AFM AMSTEEL 1

- **Low amperage capability makes it excellent for poor fit-up applications and use on low, open circuit voltage buzz boxes.**
- **Special coating allows it to weld over extremely dirty, greasy, oil soaked and/or rusty steels.**
- **Also can weld over its own slag without causing inclusions or slag interference.**
- **It is not necessary to chip slag between passes.**
- **For uses such as:** *ideal for production, as well as maintenance applications where poor fit-up is encountered. The ability to maintain a stable arc at low amperages also makes it excellent for applications involving light gauge steel. Amsteel 1 easily welds on steel beams and girders that have many coats of paint without developing porosity or defective welds. Welds are also easily made on equipment or machines that are covered with grease and sand and can't be cleaned before welding. Designed for pipeline welding, tank fabrication, machine and automotive repair, as well as general construction and fabrication.*

Technical Data (Typical Values)

Hardness	Tensile Strength	up to 85,000 psi		
	Yield Strength	up to 69,000 psi		
	Elongation %	approx. 25		
Diameter (mm)	2.5	3.2	4.0	
	3/32	1/8	5/32	
Amperage: AC or DC Either Polarity	20-100	30-140	50-175	
Pkg. Size (Lb)	10			

Procedure:

If possible, clean the weld areas as much as is practical. Set the amperage to the specific requirements. If an edge build-up is required or it is thin steel, use the lower end of the amperage range. If heavy penetration is required or the weld area is extremely dirty, use the higher end of the amperage range. A close to medium arc gap should be maintained. Slag chipping is recommended, but not necessary on multi-pass applications.

AFM AMSTEEL 2

- **Designed to operate on almost any AC or DC welding machine even when the open circuit voltage is very low.**
- **Special coating protects the weld deposit from adverse conditions normally encountered in maintenance repair welding.**
- **Low amperage requirement controls distortion when welding thin sheet metal; spatter is kept to a minimum.**
- **Ideal for field work and out-of-position welding.**
- **For uses such as:** *fabrication thin, medium, heavy and dissimilar gauge mild steel. Sheets, plates, angle iron, beams, pipes, and machine parts can be welded in all positions. Also used for filling holes and build-up of over-machined and worn surfaces. Commonly used on applications requiring short, intermittent and spot welds because of the outstanding restarting characteristics.*

Technical Data (Typical Values)

Hardness	Tensile Strength	up to 80,000 psi				
	Yield Strength	up to 68,000 psi				
	Elongation %	approx. 24				
Diameter (mm)	1.6	2.4	3.2	4.0	5.0	
Amperage: AC or DC Either Polarity	20-50	35-80	65-125	90-160	120-210	
Pkg. Size (Lb)	10					

Procedure:

Remove as much foreign material as practical from the weld area. DC reverse polarity (electrode +) produces deep penetration; DC straight polarity (electrode -) will have limited penetration and a flatter bead. AC prevents arc blow. A medium arc length should be maintained with either stringer or weave beads. Slag is easily removed with a light chipping hammer.

AFM CHAMFER ARC

- **High speed cutting electrode for use with all standard arc equipment.**
- **No special skills, oxygen tanks, or air compressors are required.**
- **Special coating protects the electrode from overheating.**
- **For uses such as: cutting, beveling, and piercing of cast iron, stainless steel, manganese steel, carbon steel, malleable iron, aluminum, copper, bronze, nickel and nickel alloys. Ideal for cleaning out defects and removing rivets.**

Technical Data (Typical Values)

Metal Thickness:		
1/8 to 1" (3.25 to 25mm)	1/8 (3.2mm)	
1/4 to 1 1/2" (6.0 to 38mm)	5/32 (4.0mm)	
Diameter (mm)	3.2	4.0
Amperage: AC or DC	140-350	175-
Straight (-)	400	
Pkg. Size (Lb)	10	

Procedure:

The fastest and cleanest cuts use DC straight polarity (electrode -). When piercing, hold electrode vertical to work, strike arc, and push in and out until hole has been formed. When cutting sheets or plates, start at the edge, strike arc, and use electrode like a saw; push and pull with the electrode at a 45° angle to the work piece. In all cases the arc must be kept as short as possible.

AFM PREMIUM CAST-1

- High strength alloy for dirty cast iron.
- Machinable deposits.
- Specially designed for contaminated, oil-soaked cast iron.
- Alloyed core wire with unique flux coating produces strong, crack-resistant welds.
- For uses such as: *joining cast iron to steel, transmission gear housings, gray, ductile & nodular cast iron, sewer pipes*

Technical Data *(Typical Values)*

Tensile Strength	up to 60,000 psi (415 N/mm ²)		
Hardness	HB 210		
Chemistry	<u>C</u>	<u>Ni</u>	<u>Fe & Others</u>
	1	55	Balance
Diameter (mm)	2.5	3.2	4.0
Amperage	40-70	70-110	90-130
Pkg. Size (Lb)	3.5	5	5

Classifications *Similar to:*

AWS/SFA A5.15	E NiFeCI
DIN 8573	E NiFe-2-BG 11

AFM CASTWELD-1

- Premium high nickel alloy for cast iron.
- Maximum machinability of deposit and HAZ.
- Pulsating arc for low temperature welding of cast iron in all positions.
- Pulsating arc removes impurities resulting in a porosity-free weld deposit.
- For uses such as: *engine blocks, joining cast iron to steel, gear housings, joining cast iron to stainless steels*

Technical Data *(Typical Values)*

Tensile Strength	up to 50,000 psi (345N/mm ²)		
Hardness	HB 160		
Color Match	similar to cast iron		
Chemistry	<u>C</u>	<u>Ni</u>	<u>Fe & Others</u>
	.7	96	Balance
Diameter (mm)	2.5	3.2	4.0
Amperage	30-70	55-110	75-135
Pkg. Size (Lb)	2.5	5	5

Classifications *Similar to:*

AWS/SFA A5.15	E Ni CI
DIN 8573	E Ni-BG11

AFM CASTWELD-2

- Maximum strength alloy for cast iron.
- Special bi-metal core wire prevents overheating of electrode.
- Soft arc allows for easy machinability of highly crack-resistant weld deposit.
- Pulsating arc on DC- and AC removes impurities from base material, even on dirty, oily surfaces.
- Suitable for welding cast iron to steel.
- For uses such as: *cylinder heads, machine bases, ship engine manifolds, filling holes, cast gear teeth, pump housings*

Technical Data (Typical Values)

Tensile Strength	up to 75,000 psi (520 N/mm ²)		
Hardness	HB 200		
Chemistry	<u>C</u>	<u>Ni</u>	<u>Fe & Others</u>
	.7	54	Balance
Diameter (mm)	2.5	3.2	4.0
Amperage	35-80	65-120	75-140
Amperage	4	5	5

Classifications Similar to:

AWS/SFA A5.15	E Ni Fe CI
DIN 8573	E NiFe-1-BG11

AFM CASTWELD-3

- Nickel-free electrode with non-machinable deposit.
- Formulated for dirty and difficult-to-weld cast iron.
- Suitable for joining problem cast iron to steel.
- Successfully used when nickel alloys fail to adhere.
- For uses such as: *burned furnace grates, cracked machine bases, build up of abrasion, pump housings worn areas, low quality cast iron*

Technical Data *(Typical Values)*

Tensile Strength	up to 140,000 psi (965 N/mm ²)		
Yield Strength	up to 120,000 psi (827 N/mm ²)		
Hardness	HB 350		
Color Match	Good		
Chemistry	<u>C</u>	<u>Mn</u>	<u>Fe & Others</u>
(core wire)	.4	1	Balance
Diameter (mm)	2.5	3.2	4.0
Amperage	35-80	75-110	100-150
Pkg. Size (Lb)	5	5	5

Classifications *Similar to:*

AWS/SFA A5.15	E St
DIN 8573	E Fe-2-BG 11

AFM IMPACT ARC

- **High chromium, high manganese alloy for joining and rebuilding manganese and carbon steel plates.**
- **High alloy deposits are very tough and will take extreme impact and abrasion conditions.**
- **Has excellent weldability with very low spatter.**
- **Operates easily in all positions.**
- **For uses such as:** *rebuilding and joining austenitic manganese steels and manganese steels to other steel combinations. Especially designed for high impact applications such as rail frogs and switch points, roller crushers, hammers, shovel tracks. Also excellent for use as a base for harder overlays.*

Technical Data (Typical Values)

Hardness	16-19 RC-as deposited work hardens to: Rc 48			
Diameter (mm)	3.2	4.0	5.0	6.0
Amperage: AC or DC Reverse Polarity (+)	110-135 325	125-190	150-250	225- 325
Pkg. Size (Lb)	10			

Procedure:

Remove any hardened or fatigued material from the surface with AFM Chamfer Arc. Deposits may be placed with either the stringer bead or weaving technique. This electrode deposits easily in all positions with excellent build-up quality. Avoid overheating on manganese steel base metals. Deposits work harden rapidly.

AFM ABRASARC

- **General purpose surfacing alloy for surfaces subjected to abrasive wear and impact.**
- **Crack resistant deposits, but can be forged.**
- **Heavy build-ups are possible without the need for softer cushion layers.**
- **For uses such as:** *build-up and surfacing of new or worn machine parts of steel, cast steel, and manganese steel, dredger teeth, crusher jaws, hammer mill parts, conveyors, pressure rollers, shovel teeth, stampers, caterpillar drives, and earth borers.*

Technical Data (Typical Values)

Hardness	55-60 RC		
Diameter (mm)	3.2	4.0	5.0
Amperage (AC or DC)	80-120	110-160	140-180
Pkg. Size (Lb)	10		

Procedure:

Remove all foreign material from weld area. Preheat is not necessary. Maintain a medium arc length making either stringer beads or weave beads. Allow part to cool slowly.

AFM BRONZE ARC

- AC/DC+ tin/bronze electrode for joining and surfacing.
- All position electrode with minimum spatter and easy slag removal.
- Excellent color match to bronze.
- Offers good resistance to sea water and other chemicals.
- For uses such as: *arc brazing galvanized sheets, impellers, defects in new bronze castings, gear wheels*

Technical Data *(Typical Values)*

Tensile Strength	up to 50,000 psi (345 N/mm ²)		
Elongation	30%		
Hardness	HB 80		
Chemistry	<u>Cu</u>	<u>Sn</u>	<u>Fe & Others</u>
	94	4.5	Balance
Diameter (mm)	2.5	3.2	4.0
Amperage	80-120	100-150	125-190
Pkg. Size (Lb)	5	5	5

Classifications *Similar to:*

AWS/SFA A5.6	E CuSn-C
DIN 1733	EL-CuMn7

AFM BRONZE G

- Super strength, general use brazing rod.
- Excellent for overlaying & build-up at low temperatures (760°-870°C).
- Excellent for close fitting joints, thin-flowing at high temperatures (900°-955°C).
- Designed to build-up or join carbon steels, alloy steels, cast iron, and many non-ferrous materials.
- Super active flux promotes ultra-thin flowing of alloy.
- For uses such as: *gear teeth build-up, attaching carbide cutting tips, build-up of bearing shafts, joining bicycle assemblies, brazing of rusty surface, heavy equipment repair*

Technical Data *(Typical Values)*

Tensile Strength	up to up to 70,000 psi (483 N/mm ²)		
Working Temperature	760°-955°C (1400°-1750°F)		
Remelt Temperature	980°C (1800°F)		
Hardness	HB 135		
Chemistry	<u>Cu</u>	<u>Ni</u>	<u>Zn</u>
	48	10	42
Diameter (mm)	1.6	2.5	3.2
Pkg. Size (Lb)	2.0	2.5	2.5

Classifications *Similar to:*

AWS/SFA 5.8	RB CuZn-D
DIN 8513	L-CuNi10Zn 42

- For best results, use a neutral flame.

AFM ALUM ARC

- **Universal flux-coated aluminum stick electrode for arc welding or gas welding.**
- **Ideal for outdoor use when MIG/TIG welding is not suitable.**
- **Exceptional arc stability at low amperages with minimum spatter.**
- **Deposits have excellent corrosion resistance and color match.**
- **For uses such as:**
 - build-up of castings
 - aluminum castings
 - repair of machining errors
 - tanks & pipes

Technical Data (Typical Values)

Tensile Strength	up to 25,000 psi (173 N/mm ²)		
Hardness	HB 40-55		
Color Match	Good (<i>will darken if anodized</i>)		
Chemistry	<u>Si</u>	<u>Al & Others</u>	
(core wire)	5	Balance	
Diameter (mm)	2.5	3.2	4.0
Amperage	50-80	80-130	100-160
Pkg. Size (kg)	2.5	2.5	2.5

Classifications

Similar to:

AWS/SFA A5.3	E 4043
DIN 1732	EL-ALSi5

- For best results with a torch, use a slightly carburizing flame.

AFM ALUM COR

- **Unique flux-cored aluminum brazing rod.**
- **Excellent for build-up and repair of all weldable grades of aluminum including cast alloys.**
- **Designed especially for dirty applications.**
- **Can be applied in all positions using an oxy-fuel torch.**
- **Ideal for joining dissimilar sizes and for poor fit-up applications.**
- **For uses such as:**
 - cast engine blocks
 - oily casting repairs
 - aluminum pump housings
 - automotive parts

Technical Data (Typical Values)

Tensile Strength	up to 30,000 psi (207 N/mm ²)		
Working Temperature	600°C (1100°F)		
Elongation	20%		
Hardness	HB 40-55		
Color Match	Good (<i>will darken if anodized</i>)		
Chemistry	<u>Al</u>	<u>Si</u>	<u>Fe & Others</u>
	95	4	Balance
Diameter (mm)	3.2		
Pkg. Size (kg)	1		

For best results, use a slightly carburizing flame