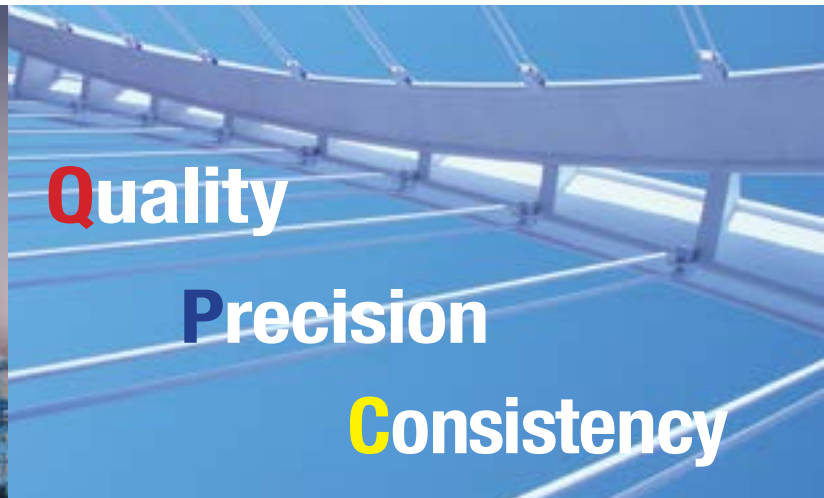




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Flux Cored Wire



Nickel

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E71T-GS

Nickel

STS FCW

STS Wires



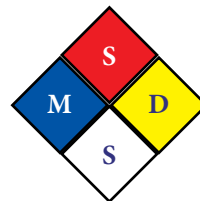
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**Material
Safety
Data
Sheet**



AMERICAN FILLER METALS

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Hardfacing Coated Electrodes

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Hardfacing Conversion Chart

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Please contact us
for MSDS

AFM 300

AC/DC+ (Electrode Positive)

RC 26-31

Description:

AFM 300 is a buildup and overlaying electrode for all ferrous metals subjected to moderate abrasion, severe impact and corrosion.

Weld deposits of AFM 300 are strong and tough, however with an average hardness of Rc 26-31, they do remain machinable.

Applications:

Typical applications include tractor rollers, sprockets, idlers, concrete mixer blades, bearing journals and other parts which require machinable weld deposits.

Procedure:

Clean the weld area. Use AC or DC+ polarity.

Preheating is not required, although heavier sections should be preheated to 200-300°F.

Maintain a medium arc length and use a weaving technique or stringer beads up to twice the diameter of the electrode.

Avoid the buildup of heat at any one location on the base metal.

Remove slag between passes and allow the base metal to air cool.

If severe abrasion is encountered, a final pass of AFM 800 should be considered.

Recommended Amperage (AC or DC+):

| | | | | |
|-------------|----------|-----------|-----------|-----------|
| Dia. (inch) | 1/8" | 5/32" | 3/16" | 1/4" |
| Dia. (mm) | 3.2 mm | 4.0 mm | 4.8 mm | 6.4 mm |
| AMPS | 60 ~ 130 | 120 ~ 180 | 170 ~ 240 | 240 ~ 300 |

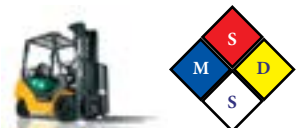
Typical Chemical Composition (%):

| | | | |
|------|------|------|------|
| C | Si | Mn | Cr |
| 0.20 | 0.60 | 1.48 | 0.70 |

Standard Packaging:

All sizes are packaged in 10 Lb containers.

6 containers per 60 Lb Master Carton.



AFM 700

AC/DC+ (Electrode Positive)

RC 58-62

Description:

AFM 700 is a severe abrasion and considerable impact hardfacing electrode. Weld deposits have a martensitic structure that resists wear even in metal-to-metal mild steel contact. When used in the flat and horizontal positions, this electrode will exhibit a stable arc and produce weld deposits that are very smooth and finely rippled.

Applications:

Typical applications for AFM 700 include plowshares, cultivator shoes, bucket teeth and lips, well drilling bits, cement mixer blades, shovel tracks and screw conveyors.

Procedure:

Use AC or DC+. Preheating is generally not required. Using the weaving technique and keeping a short arc length, deposit up to 1/4" maximum. If more than two passes will be required, it is suggested that a "padding layer" of AFM 300 be used prior to depositing AFM 700.

Recommended Amperage (AC or DC+):

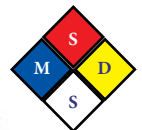
| | | | | |
|-------------|-----------|-----------|-----------|-----------|
| Dia. (inch) | 1/8" | 5/32" | 3/16" | 1/4" |
| Dia. (mm) | 3.2 mm | 4.0 mm | 4.8 mm | 6.4 mm |
| AMPS | 110 ~ 130 | 140 ~ 170 | 180 ~ 210 | 220 ~ 300 |

Typical Chemical Composition (%):

| | | | |
|------|------|------|------|
| C | Si | Mn | Cr |
| 0.48 | 0.80 | 1.45 | 4.40 |

Standard Packaging:

All sizes are packaged in 10 Lb containers.
6 containers per 60 Lb Master Carton.



AFM 800

AC/DC+ (Electrode Positive)

RC 62-65

Description:

AFM 800 is a hardsurfacing electrode used for severe abrasion, light impact, and corrosion resistance. This electrode produces an extremely hard martensite-structure weld deposit which is not machinable in the “as-welded” condition.

AFM 800 will lay down a smooth, corrosion resistant weld deposit which will remain extremely hard even at elevated temperatures.

Applications:

Typical applications for AFM 800 include mill hammers, bucket teeth, valve seats, mixers, crusher rolls, tamper rollers, and other mild steel, carbon or alloy steels as well as manganese steels.

Procedure:

Use AC or DC+. Preheating is not required except on alloy steels. Using a short gap and a weaving technique, deposit two layers.

If more than two passes are required, use AFM 300 to provide a padding layer prior to using AFM 800.

Recommended Amperage (AC or DC+):

| | | | | |
|-------------|----------|-----------|-----------|-----------|
| Dia. (inch) | 1/8” | 5/32” | 3/16” | 1/4” |
| Dia. (mm) | 3.2 mm | 4.0 mm | 4.8 mm | 6.4 mm |
| AMPS | 90 ~ 130 | 140 ~ 170 | 190 ~ 240 | 220 ~ 300 |

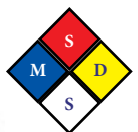
Typical Chemical Composition (%):

| | | | |
|------|------|------|------|
| C | Si | Mn | Cr |
| 1.40 | 0.50 | 1.23 | 6.80 |

Standard Packaging:

All sizes are packaged in 10 Lb containers.

6 containers per 60 Lb Master Carton.



AFM 900

AC/DC+ (Electrode Positive)

RC 50-55 (After Workhardening)

Description:

AFM 900 is a hardsurfacing overlay electrode used for the fabrication and build up of high manganese and alloy steels which are subjected to heavy impact and severe abrasion.

The weld deposits have an austenitic structure and work harden although remaining extremely ductile.

Weld deposits are machinable and forgeable.

Applications:

Typical applications of AFM 900 include repairing railroad switches, frogs and tracks, bucket teeth and lips, rock crushers, mill hammers and bulldozer parts.

Procedure:

When the base metal of 13% manganese steel is hardened, cut-off the hardened zone before welding.

Welding should be done at the lowest possible temperature. Maintain a short to medium arc length using a slight weaving technique to make the deposit smooth and even.

Water or air cool the weld metal during welding.

Do not preheat manganese steels. Do not overheat the base metal.

Peening is recommended to relieve stresses.

Recommended Amperage (AC or DC+):

| | | | | |
|-------------|----------|-----------|-----------|-----------|
| Dia. (inch) | 1/8" | 5/32" | 3/16" | 1/4" |
| Dia. (mm) | 3.2 mm | 4.0 mm | 4.8 mm | 6.4 mm |
| AMPS | 75 ~ 130 | 120 ~ 190 | 175 ~ 240 | 230 ~ 280 |

Typical Chemical Composition (%):

| | | |
|------|------|-------|
| C | Si | Mn |
| 0.70 | 0.30 | 12.50 |

Standard Packaging:

All sizes are packaged in 10 Lb containers.

6 containers per 60 Lb Master Carton.



AFM Chrom-Carb

AC/DC+ (Electrode Positive)

RC 58-62

Description:

AFM Chrom-Carb is a chromium-tungsten flux-coated hardsurfacing electrode designed to produce extremely hard weld metal deposits on parts exposed to severe mineral abrasion with low impact. The extreme hardness of AFM Chrom-Carb deposits is achieved through the formation of chromium and tungsten carbides within the matrix of the weld deposit.

Applications:

Typical applications include earth moving and rock crushing equipment, augers, asphalt feed screws, sand pumps, mixer blades and crushing or pulverizing mills. parts which require machinable weld deposits.

Procedure:

Maintain a short arc length and hold the electrode vertical to the work piece. AFM Chrom-Carb can be used on both AC or DC machines. Excellent for hardfacing large surface areas using wide weave beads. AFM Chrom-Carb has good operator appeal and yields a very smooth weld bead with superb adherence. Deposition is fast and the weld deposits will last a long time.

Recommended Amperage (AC or DC+):

| | | | | |
|-------------|---------|-----------|-----------|-----------|
| Dia. (inch) | 3/32" | 1/8" | 5/32" | 3/16" |
| Dia. (mm) | 2.4 mm | 3.2 mm | 4.0 mm | 4.8 mm |
| AMPS | 70 ~ 90 | 110 ~ 130 | 160 ~ 190 | 220 ~ 250 |

Typical Chemical Composition (%):

| | | |
|------|-------|------|
| C | Cr | W |
| 4.00 | 26.00 | 4.00 |

Standard Packaging:

All sizes are packaged in 10 Lb containers.
6 containers per 60 Lb Master Carton.



AFM Sugar Rod

AC/DC+ (Electrode Positive)

RC 57-61 (As Welded)

Description:

AFM SUGAR ROD is designed for use on carbon and low alloy steels, manganese steels, and cast iron. Deposits take a high polish, which contributes to high frictional and abrasion wear qualities, especially small particle abrasion.

Excellent on applications that need impact as well as abrasion resistance.

Provides optimum resistance to this combination.

Deposits well out of position.

Applications:

AFM SUGAR ROD is recommended for severe abrasion applications, along with moderate impact.

This alloy has a good hot hardness up to approximately 1000°F.

Especially designed for crusher applications.

Used heavily in construction, mining, brick and clay industries on parts such as crusher rolls, jaw crushers, bucket teeth, edges, hammers, mill hammers, conveyor screws, etc.

Recommended Amperage (AC or DC+):

| | | | |
|-------------|----------|-----------|-----------|
| Dia. (inch) | 1/8" | 5/32" | 3/16" |
| Dia. (mm) | 3.2 mm | 4.0 mm | 4.8 mm |
| AMPS | 80 ~ 125 | 100 ~ 160 | 125 ~ 190 |

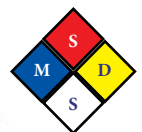
Typical All Weld Metal Chemistry (%):

| C | Mn | Si | S | P | Ni | Cr | Mo | Cu |
|------|------|------|-------|-------|------|-------|------|------|
| 3.10 | 0.01 | 0.95 | 0.029 | 0.021 | 0.09 | 31.08 | 0.02 | 0.09 |

Standard Packaging:

All sizes are packaged in 10 Lb containers.

6 containers per 60 Lb Master Carton.



AFM 250

Build-Up

RC 20 ~ 26

Description:

AFM 250 is for building-up mild and low alloy steel parts to within 3/16" - 3/8" of their original size.

Weld deposits will be part ferritic-part martensitic in structure.

AFM 250 weld deposits have good compressive strength and resistance to plastic deformation.

Weld deposits are easily machined in the "as welded" position.

An excellent underlayment prior to hardsurfacing.

Very good impact resistance; poor abrasion resistance.

Applications:

AFM 250 Underlaying for hardsurfacing, steel mill wobblers and pads, shafting, small rolls, pump parts.

Procedure:

Use DC Reverse Polarity (electrode positive).

The shielding gas should be 100% CO₂ welding grade, however a 75% Argon + 25% CO₂ mixture will increase the hardness slightly.

Superior properties are achieved if an interpass temperature of 300° ~ 480°F is maintained.

| Wire Diameter | Electrode Stick-out | AMPS | Volts* |
|-----------------|---------------------|-----------|---------|
| 0.045" (1.2 mm) | 1/2" ~ 3/4" | 150 ~ 250 | 21 ~ 26 |
| 1/16" (1.6 mm) | 3/4" ~ 1" | 250 ~ 350 | 23 ~ 28 |

• Ideal procedure is to set the wire feed speed and find the voltage setting that will yield the smoothest performance.

Typical Chemical Composition (%):

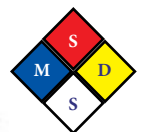
| C | Si | Mn | Cr | Fe |
|------|------|------|------|------|
| 0.07 | 0.50 | 1.59 | 1.30 | Bal. |

Standard Packaging:

0.045' (1.2 mm) X 25 Lb Spool

1/16" (1.6 mm) X 25 Lb Spool

Other sizes and packaging are available.



AFM 300

Build-Up

RC 28 ~ 32

Description:

AFM 300 is similar to AFM 250 in weld deposit structure and uses. AFM 300 offers a slightly harder weld deposit than AFM 250 and subsequently it is often used in applications where a hardsurfacing layer is not applied over the AFM 300 deposit. Very good impact resistance; poor abrasion resistance.

Applications:

Build-up of power shovels and tractor parts, repairing battered rail, hammers.

Procedure:

Use DC Reverse Polarity (electrode positive). The shielding gas should be 100% CO₂ welding grade, however a 75% Argon + 25% CO₂ mixture will increase the hardness slightly. Superior properties are achieved if an inter pass temperature of 300° ~ 480°F is maintained.

| Wire Diameter | Electrode Stick-out | AMPS | Volts* |
|-----------------|---------------------|-----------|---------|
| 0.045" (1.2 mm) | 1/2" ~ 3/4" | 150 ~ 250 | 21 ~ 26 |
| 1/16" (1.6 mm) | 3/4" ~ 1" | 250 ~ 350 | 23 ~ 28 |

• Ideal procedure is to set the wire feed speed and find the voltage setting that will yield the smoothest performance.

Typical Chemical Composition (%):

| C | Si | Mn | Cr | Fe |
|------|------|------|------|------|
| 0.09 | 0.68 | 1.54 | 1.10 | Bal. |

Standard Packaging:

0.045' (1.2 mm) X 25 Lb Spool

1/16" (1.6 mm) X 25 Lb Spool

Other sizes and packaging are available.



AFM 350

Build-up & Hardsurfacing

RC 34 ~ 39

Description:

AFM 350 has a low alloy deposit that is martensitic in structure.

It is machinable and forgeable.

A good balance of impact resistance and abrasion resistance as well as hardness make AFM 350 an excellent choice where only one wire is desired for build-up and hardsurfacing.

(Not to be used as an underlayment prior to subsequent hardfacing).

Very good impact resistance; fair abrasion resistance.

Applications:

Overlaying carbon steel shafts, gear teeth, sprockets, steel shovel pads.

Procedure:

Use DC Reverse Polarity (electrode positive).

The shielding gas should be 100% CO₂ welding grade, however a 75% Argon + 25% CO₂ mixture will increase the hardness slightly.

Superior properties are achieved if an inter pass temperature of 300° ~ 480°F is maintained.

| Wire Diameter | Electrode Stick-out | AMPS | Volts* |
|-----------------|---------------------|-----------|---------|
| 0.045" (1.2 mm) | 1/2" ~ 3/4" | 150 ~ 250 | 21 ~ 26 |
| 1/16" (1.6 mm) | 3/4" ~ 1" | 250 ~ 350 | 23 ~ 28 |

• Ideal procedure is to set the wire feed speed and find the voltage setting that will yield the smoothest performance.

Typical Chemical Composition (%):

| C | Si | Mn | Cr | Mo | Fe |
|------|------|------|------|------|------|
| 0.12 | 0.45 | 1.37 | 1.30 | 0.20 | Bal. |

Standard Packaging:

0.045' (1.2 mm) X 25 Lb Spool

1/16" (1.6 mm) X 25 Lb Spool

Other sizes and packaging are available.



AFM 450

Hardsurfacing

RC 34 ~ 39

Description:

AFM 450 is designed for metal to metal abrasion involving impact such as rolling or sliding parts in earth moving equipment where lubrication is not possible.

The weld deposits of AFM 450 are martensitic in structure.

Very good impact resistance; good abrasion resistance.

Applications:

Mine car wheels, brake drums, tractor rollers, undercarriage parts, shovel idlers, rollers, and hook rolls.

Procedure:

Use DC Reverse Polarity (electrode positive).

The shielding gas should be 100% CO₂ welding grade, however a 75% Argon + 25% CO₂ mixture will increase the hardness slightly.

Superior properties are achieved if an inter pass temperature of 300° ~ 480°F is maintained.

| Wire Diameter | Electrode Stick-out | AMPS | Volts* |
|-----------------|---------------------|-----------|---------|
| 0.045" (1.2 mm) | 1/2" ~ 3/4" | 150 ~ 250 | 21 ~ 26 |
| 1/16" (1.6 mm) | 3/4" ~ 1" | 250 ~ 350 | 23 ~ 28 |

• Ideal procedure is to set the wire feed speed and find the voltage setting that will yield the smoothest performance.

Typical Chemical Composition (%):

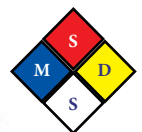
| C | Si | Mn | Cr | Mo | Fe |
|------|------|------|------|------|------|
| 0.24 | 0.51 | 1.20 | 2.00 | 0.60 | Bal. |

Standard Packaging:

0.045" (1.2 mm) X 25 Lb Spool

1/16" (1.6 mm) X 25 Lb Spool

Other sizes and packaging are available.



AFM 600

Hardsurfacing

RC 53 ~ 56

Description:

AFM 600 offers high abrasion and heavy impact resistance on carbon, low alloy and manganese steel.

Weld deposits are martensitic and corrosion resistant.

AFM 600 is designed for metal to metal and metal to earth abrasion.

Weld deposits will work harden when put to service.

Excellent impact resistance; excellent abrasion resistance.

Applications:

Extruder screws, bucket lips, tamper feet, tillage tools, dredge parts, ore drag lines, muller tires, and wherever high abrasion and heavy pounding is encountered.

Procedure:

Use DC Reverse Polarity (electrode positive).

The shielding gas should be 100% CO₂ welding grade, however a 75% Argon + 25% CO₂ mixture will increase the hardness slightly.

Superior properties are achieved if an inter pass temperature of 300° ~ 480°F is maintained.

| Wire Diameter | Electrode Stick-out | AMPS | Volts* |
|-----------------|---------------------|-----------|---------|
| 0.045" (1.2 mm) | 1/2" ~ 3/4" | 150 ~ 250 | 21 ~ 26 |
| 1/16" (1.6 mm) | 3/4" ~ 1" | 250 ~ 350 | 23 ~ 28 |

• Ideal procedure is to set the wire feed speed and find the voltage setting that will yield the smoothest performance.

Typical Chemical Composition (%):

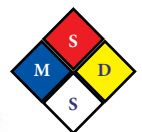
| C | Si | Mn | Cr | Mo | Fe |
|------|------|------|------|------|------|
| 0.25 | 2.18 | 0.36 | 6.50 | 0.03 | Bal. |

Standard Packaging:

0.045" (1.2 mm) X 25 Lb Spool

1/16" (1.6 mm) X 25 Lb Spool

Other sizes and packaging are available.



AFM 700

Hardsurfacing

RC 58 ~ 61

Description:

AFM 700 offers a harder weld deposit than AFM 600, but lacks the corrosion resistance. Primarily used for high metal to metal abrasion. Weld deposits are martensitic in structure and will work harden when put into service. Excellent impact resistance; excellent abrasion resistance.

Applications:

Rollers, conveyor screws, crusher rolls, and mill hammers.

Procedure:

Use DC Reverse Polarity (electrode positive). The shielding gas should be 100% CO₂ welding grade, however a 75% Argon + 25% CO₂ mixture will increase the hardness slightly. Superior properties are achieved if an inter pass temperature of 300° ~ 480°F is maintained.

| Wire Diameter | Electrode Stick-out | AMPS | Volts* |
|-----------------|---------------------|-----------|---------|
| 0.045" (1.2 mm) | 1/2" ~ 3/4" | 150 ~ 250 | 21 ~ 26 |
| 1/16" (1.6 mm) | 3/4" ~ 1" | 250 ~ 350 | 23 ~ 28 |

• Ideal procedure is to set the wire feed speed and find the voltage setting that will yield the smoothest performance.

Typical Chemical Composition (%):

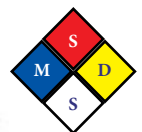
| C | Si | Mn | Cr | W | Fe |
|------|------|------|------|------|------|
| 0.30 | 2.40 | 0.50 | 7.00 | 0.70 | Bal. |

Standard Packaging:

0.045" (1.2 mm) X 25 Lb Spool

1/16" (1.6 mm) X 25 Lb Spool

Other sizes and packaging are available.





Hardfacing Conversion Chart

Build-Up & Hardfacing Gas Shielded Wires

| AFM | STOODY | POSTLE | HOBART | McKAY | LINCOLN | WELDING ALLOYS |
|--------------------|---------------|----------|--------|-------|------------|----------------|
| AFM 250 | BUILD-UP | 2891 SPL | BU-O | BU-O | BU | B-O / B-S |
| AFM 300 AFM 350 | SUPER BU, 107 | 2892 SPL | 40-0 | 242-0 | 35-S, 40-S | T-O / T-S |
| AFM 450 | 105 | - | 50-S | 252 | - | R-O / R-S |
| AFM 600 AFM 700 | 965 | 2898 SPL | 960 | 960 | 55 | L-G |

Build-Up & Hardfacing Stick Electrodes

| AFM | MESSER(MG) | McKAY | CERTANIUM | EUTECTIC | HOBART | STOODY |
|------------------|------------|-----------------------------|-----------|----------------------------------|-----------------------|-------------|
| AFM 300 | 740 | HARDALLOY 32, 42 | 297 | 2B | TUFANHARD 250, 320 | BUILD-UP LH |
| CHROM CARB | 790 | 55 TIC | - | 6710, 6712, 6715, N112 | - | SUPER 20 |
| AFM 700 | 770 | 55 | 6006 | 5005/6006 N102, SUGARTEC A | TUFANHARD 580 | 35/HXC |
| AFM 800 | 760 | HARDALLOY 58 | 267 | N2 | TUFANHARD 550, 600 | 21 / 1105 |
| AFM 900 | 745 | CHROM/MAG, HARDALLOY 119 | 282, 298 | OA 690, 40 | 150 | NICROMANG |
| AFM SUGAR ROD | 765 | HARDALLOY 140 | 284 | 7000, N102 | - | 21 / 2134 |

The information contained above represents a comparable alternative for the products of American Filler Metals and is not necessarily equal in chemistry or operating characteristics to the other products shown.

Depending upon the application, the final decision on which product to use should be made by the customer.