

Premium Metal-Cored, Gas Shielded Wire

# EnDotec® DO\*33



## WIRE

- Superior resistance to abrasion at high temperatures
- Excellent single pass hardness
- Smooth weld beads offer good resistance to erosion
- May be used on a variety of steels including austenitic manganese steels



## DESCRIPTION:

EnDOTec DO\*33 is a unique anti-wear alloy formulated to develop a dense, but very fine network of complex carbides in a reinforced matrix. This gives exceptional resistance to fine-particle abrasion and moderate-impact erosion at operating temperatures up to 1,200°F (649°C). DO\*33 offers wear rates above and beyond conventional chrome carbide, with a hardness of HRC 63-65 in just one pass. Do\*33 can be used on carbon steels, high and low alloy steels and austenitic manganese steels. High deposition rates and minimal slag saves labor costs; plus smooth weld beads improve resistance to erosion.

## TYPICAL APPLICATIONS & INDUSTRIES:

### APPLICATIONS

- Crusher hammers, Anvils
- Secondary Crushers
- Tunnel Cutter, Excavator Knives
- Furnace Retorts, Hot Screens
- Conveyor Chains
- Screws, Augers

### INDUSTRY

- Disposal, Cement Quarries
- Quarries, Mining
- Material Processing
- Paper, Power, Cement
- Cement, Power

## TECHNICAL DATA:

Hardness as-deposited: 63-65 HRC depending on dilution

Power Source Type: Constant voltage and Integrated Wire Drive

Current & Polarity: DCEP (electrode positive)

Shielding Gas: 1st.) Argon 75% +25% CO<sub>2</sub>  
2nd.) Argon 90% + 10% CO<sub>2</sub>

Shielding Gas Flow Rate: 35-40 SCFH 16-19 L/min.

## PROCEDURE FOR USE:

**Caution:** Although a 2-roll wire drive assembly will work the optimum for maintaining arc voltage stability and consistent & smooth wire feeding is a serrated 4-roll drive assembly. Smooth drive rolls are not recommended!

Step 1: Remove all "old" cracked or spalled weld metal down to a sound base.

Step 2: EnDOTec DO\*33 is 2 pass maximum. It is often field practice to deposit a base-coat depending on the type of wear, severity, and the total amount of build-up required.

**Note:** When re-building 12-14% Mn steels use EnDOTec DO\*05 as a cushion layer, and for other alloy steels, EnDOTec DO\*68S is recommended. A 2-pass minimum is advised when thinner deposits are required.

Step 3: Preheat the part to be hardfaced depending on its air hardenability potential and/or carbon level. For most constructional steels a nominal preheat of 150°F is suggested and for medium alloy steels, ~250°F.

**Note:** Do not heat high manganese steels such as Hadfield Castings!

Step 4: After checking that the welding conditions are optimal by testing on scrap metal, position the gun head at a 70-80° angle and use a "push" technique for downhand welding. For fully automated welding such as hardfacing cylindrical parts, the wire should exit at about a 10° lagging angle from top dead center. Using this technique will assure a smooth and regular weld deposit profile with the optimum level of fusion.

**Note:** If welding is interrupted and the part being welded cools to room temperature, make sure to reheat to the original preheat temperature. For hardenable steels slow cooling is advised using silicone blankets, vermiculite, or other environmentally suitable heat-retardant material.

Step 5: For most applications, other than a superficial grind, finishing is not required. If some level of profiling is needed, grinding can be used for more precise shaping.

## TYPICAL WELDING PARAMETERS

0.045" (1.2MM)	VOLTAGE	AMPERAGE	STICK-OUT	SHIELD GAS	GAS FLOW
Spray Arc	25-30	200-250 (Large parts)	3/4" ± 1/16" (Short nozzle)	75%Ar+25%CO <sub>2</sub>	30-40 SCFH
Short Arc	25-29	150-180 (Lighter parts)	1/2" ± 1/16" (Long nozzle)	75%Ar+25%CO <sub>2</sub>	30-40 SCFH
1/16" (1.6MM)	VOLTAGE	AMPERAGE	STICK-OUT	SHIELD GAS	GAS FLOW
Spray Arc	25-32	220-350 (Large parts)	3/4" ± 1/16" (Short nozzle)	75%Ar+25%CO <sub>2</sub>	30-40 SCFH
Short Arc	25-30	200-250 (Lighter parts)	1/2" ± 1/16" (Long nozzle)	75%Ar+25%CO <sub>2</sub>	30-40 SCFH

**Note:** Parameter adjustments will be needed depending on the size, weight, and shape of the part to be welded. For Optimum wear resistance keep to the low end of the amperage & voltage ranges.

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