Shielding Gas Recommendations for Arc Welding

Material	*TIG*	*Flux Core with Gas*	*Transfer Mode*	*MIG*	*Metal Core* [1]
Carbon Steel	100% Ar	100% CO_2 or 75%Ar/20%CO_2	Short Circuit	100% CO_2 or 75%Ar/25%CO_2	100% CO_2 or 75%Ar/25%CO_2
			Spray / Pulse	90%Ar/10%CO_2 [3]	90%Ar/10%CO_2 [3]
Low Alloy Steel	100% Ar	100% CO_2 or 75%Ar/20%CO_2	Short Circuit	75%Ar/25%CO_2 [4]	75%Ar/25%CO_2 [4]
			Spray / Pulse	98%Ar/2%CO_2 [5]	98%Ar/2%CO_2 [5]
Stainless Steel	100% Ar	100% CO_2 or 75%Ar/20%CO_2	Short Circuit	90%He/7.5%Ar/2.5%CO_2	N/A
			Spray / Pulse	98%Ar/2%CO_2 [6]	98%Ar/2%CO_2 [6]
Aluminum	100% Ar [2]	N/A	Spray / Pulse	100% Ar [2]	N/A
Nickel Alloys	100% Ar	N/A	Short Circuit	100% Ar	N/A
			Spray / Pulse	100%Ar or 75%Ar/25%He	
Copper Alloys	100% Ar	N/A	Spray / Pulse	100%Ar or 75%Ar/25%He	N/A

Notes

1 *It is possible to operate Metal Core in short circuit transfer. However, performance is poor. They operate best with spray or pulse spray arc mode.*

2 *On thicker plate, 100% He or Ar/He mix may be used for more radiated heat into the plate.*

3 *Other Ar/O_2 blends can be use with a minimum of 82% Ar. 80%Ar/20CO_2 is sometimes used.*

4 *100% CO_2 may be used.*

5 *95%Ar/5%CO_2 and 90%Ar/10%CO_2 and other gases mixes can be used.*

6 *90%Ar/2%CO_2 may be used.*

11/15/2015