

Heat Resistant Alloy: Welding

Welding methods applicable to heat resistant alloys

G=Good U=Unsatisfactory

Alloy	Coated arc	TIG	MIG	Submerged	Electron beam	Oxy-acetylene	Brazing
MA-X	G	G	G	U	G	U	G
MA600	G	G	G	G	G	G	G
MA601	G	G	G	G	G	G	G
MA617	-	G	-	-	-	-	-
MA625	G	G	G	G	G	U	G
MA706	U	G	U	U	G	U	G
MA718	U	G	G	U	G	U	G
MA750	U	G	U	U	G	U	G
MA75N	G	G	G	U	G	U	G
MA80A	G	G	G	U	G	U	G
MA263	G	G	G	U	G	U	G
MA WASP	U	G	U	U	G	U	G
MA23	G	G	G	U	G	U	G
MA25	G	G	G	U	U	U	G
MA188	G	G	G	U	G	U	G
UMCo50	G	G	G	U	U	G	G
NO.6B	G	G	G	U	G	U	G
MA800	G	G	G	G	G	G	G
MA800H	G	G	G	G	G	G	G
MA155N	G	G	G	U	G	U	G
MA5560	G	G	G	U	G	U	G
SUS310S	G	G	G	G	G	G	G

Major bare weld lines used in TIG welding

Base	Alloy	Welding rod
Nickel alloy	MA-X	MA-X
	MA600	INF82
	MA601	INF601,625,82
	MA617	INF617
	MA625	INF625
	MA706	INF718
	MA718	INF718
	MA750	Inconel Filler Metal 69,INF718,750
	MA75N	NC80/20
	MA80A	Nimonic90
	MA263	Nimonic263
	MA WASP	Waspaloy
	MA23	MA23

Major bare weld lines used in TIG welding

Base	Alloy	Welding rod
Cobalt alloy	MA25	MA25
	MA188	MA188
	UMCo50	MA25 (UMCo50)
	No.6B	MA25
Ferro alloy	MA800	INF82
	MA800H	INF82, 625
	MA155N	MA155N
	MA5560	MA5560
	HK40	Y310

(INF is Inconel Filler Metal corresponding alloy, which is manufactured by MMC Superalloy Corp.)

*Inconel and Nimonic are registered trademarks of Special Metals Corporation.

*Waspaloy is a registered trademark of United Technologies, Inc.

TIG welding conditions

Alloy	Plate Thickness (mm)	Welding rod diameter (mm)	Electric current (A)	Argon flow (L/min)	Tungsten electrode (mm)
MA-X	1.6	0.9~2.4	50~80	10~14	1.6~2.4
	2.4	"	60~100	"	2.4
	3.2	0.9~3.2	80~130	"	2.4
	4.8	"	90~150	"	2.4~3.2
	6.4	"	90~150	"	"
	9.5	"	120~180	"	3.2
	12.7	0.9~6.4	120~180	"	3.2
MA25	1.6	1.6	50~80	14	1.6~2.4
	2.4	2.4	60~100	14	2.4
	3.2	3.2	80~130	17	2.4
	4.8	3.2	90~150	17	2.4~3.2
	6.4	3.2	100~160	17	"
	9.5	3.2	120~180	17	3.2
MA23	3.2 以上	3.2	120~150	14~17	3.2
MA5560	3.2 以上	3.2	120~150	14~17	3.2

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