

For Weather Proof Steel

A guide for selecting welding consumables

Table 1 shows suitable welding consumables for shielded metal arc welding (SMAW), flux cored arc welding (FCAW), gas metal arc welding (GMAW), gas tungsten arc welding (GTAW) and submerged arc welding (SAW) of weather proof steels.

Table 1 Welding consumables for weather proof steel ⁽¹⁾

Steel grade	ASTM	JIS G3114	ASTM	JIS G3114
		A709 Gr.36	SMA400P SMA400W SMA490P SMA490W	A588 A709 Gr.50W A242
SMAW	LBW-52B		LBW-588 LBW-62G	LBW-62G
FCAW	DW-50W		DW-588	-
GMAW	MGW-50TB		MGW-588 (F, H, HF)	MGW-588 (F, H, HF)
GTAW	TGS-588		TGS-588	-
SAW	MF-38 / USW-52B MF-38A / USW-52B MF-53 / USW-52B (HF)		MF-38 / USW-588	MF-38 / USW-62B MF-63 / USW-62B (HF)

Note (1) F, H, and HF designate suitable welding position.

Tips for better welding results

In addition to the tips for mild steel and 490MPa high tensile strength steel, the following notes should be taken into consideration in welding weather proof steels.

- (1) Remove rust and dirt from welding grooves to prevent pits and blowholes in the weld metal.
- (2) Use an appropriate welding procedure taking into account the requirements for the mechanical properties of the weldment, because heat input, interpass temperature and plate thickness affect the cooling rate of welds and, where the cooling rate is excessively low, the tensile strength and notch toughness of the weld decrease.
- (3) Use appropriate preheating according to the type of base metal and the thickness of the work to prevent cold cracking in the weld. Table 2 shows the minimum preheat temperatures used in general applications.

Table 2 Minimum preheat temperatures (°C) for general uses for several steel grades and thicknesses

Steel grade (See Table 1)	Type of welding joint	Welding process	Plate thickness (mm)		
			25 max	Over 25 Up to 38	Over 38 Up to 50
A709 Gr.36 SMA400P SMA400W	Groove Fillet	SMAW	-	50	100
		FCAW, GMAW, GTAW, SAW	-	-	50
A588 A709 Gr.50W A242 SMA490P SMA490W	Groove Fillet	SMAW	50	100	100
		FCAW, GMAW, GTAW, SAW	-	-	50
SMA570P SMA570W	Groove Fillet	SMAW	50	100	100
		SAW, GMAW	50	50	50

- (4) For welding a high-phosphorous weather proof steel (e.g., A242), use lower welding currents and slower welding speeds to prevent hot cracking.