

Welding Notes

Similar precautions should be taken when welding Chromium-Molybdenum Steel as with high strength steel. However, the following measures require special attentions: Inter-pass temperature, preheat and PWHT-post weld heat treatment.

1. Inter-pass temperature, preheat and PWHT (Post Weld Heat Treatment)
For the preheat and post heat temperatures when welding low alloy Chromium-Molybdenum steel, please consult the following table. The widths of the affected area during preheat and post heat is recommended at 5 times of base metal thickness. After welding, post heat annealing treatment is needed in order to eliminate residual stress.

Preheat, Inter-pass and PWHT temperature requirement

Steel Category	Preheat and inter-pass Temperature (°C)	PWHT Temperature × time (°C × 1hr)
0.5%Mo Steel	95~110	620±15
0.5%Cr-0.5%Mo steel 1.25%Cr-0.5%Mo steel 2.25%Cr-1.0%Mo steel	160~190	690±15
5.0%Cr-0.5%Mo steel	180~230	740±15
9.0%Cr-1.0%Mo steel	200~250	740±15

Note : max. inter-pass temperature $\leq 350^{\circ}\text{C}$.

2. Short Arc Technique
Chromium-Molybdenum Steel SMAW Electrodes are mostly classified as low hydrogen type; thus, short arc technique should be observed during welding in order to prevent permeation of N₂ and O₂ into the arc creating blow hole and alloy elements burning loss. If weaving is necessary, the weaving width should not exceed 3 times of the core wire diameter. During welding, the arc starting point should be 1~2 cm behind the welding start point. Once the arc starts, pull it back to the welding start point to begin welding to avoid the occurrence of blow hole. This is known as the forehand & backhand arc starting technique.
3. For more information, please consult page A6 regarding Welding notes of SMAW Electrode for Mild and High Tensile Strength Steel use.