Cooling rate :-

It is defined as the difference in the austenitizing temperature and quench temp. divided by the time of cool within same value of calculation of cooling rate on the centre line of the weld.

Calculation the relative plat thickness is

$$R = \delta \sqrt{\frac{\rho C (T_c - T_0)}{H_{net}}}$$

$$H_{net} = \frac{EI}{V} \times \eta$$

δ = Plate thickness, m
ρ = Density of material g/m³
C = Specific heat of solid metal
ρC = Volumetric specific
T_c = 550 °C for most steels

Heated rate :-

The welding heat input has a great influences on the weldments properties.
Mechanical properties and toughness of weldment depend on microstructure of weld metal.