

Northwoods Software

Carbon Equivalent

Last Revised: February 12, 2008

Authorities

USAC

Project Information

Date: September 30, 2009

Project Number:

Project Name: Temp

Description: Standard Rail

Elements Present

Carbon (C) =	0.74 %
Manganese (Mn) =	0.80 %
Phosphorus (P) =	0.04 %
Sulphur (S) =	0.04 %
Silicon (Si) =	0.01 %
Nickel (Ni) =	0.25 %
Chromium (Cr) =	0.25 %
Molybdnynum (Mo) =	0.10 %
Vanadium (V) =	0.03 %
Aluminum (Al) =	0.00 %
Arsenic (As) =	0.00 %
Cobolt (Co) =	0.00 %
Copper (Cu) =	0.00 %
Tin (Sn) =	0.00 %
Tantalum (Ta) =	0.00 %
Titanium (Ti) =	0.00 %
Zinc (Z) =	0.00 %
Boron (B) =	0.00 %
Niobium (Nb) =	0.00 %

Carbon Equivalent for Weldability

AWS and IIW

$$CE = C + Si/6 + Mn/6 + Cr/5 + Mo/5 + V/5 + Ni/15 + Cu/15$$
$$CE = 0.97 \quad \text{NG}$$

Standard CE Formula

$$CE = C + Mn/6 + Cr/10 - Mo/50 - V/10 + Ni/20 + Cu/40$$
$$CE = 0.91 \quad \text{NG}$$

Deardon and O'Neill (see AWS - Silicon Component Missing)

$$CE = C + Mn/6 + Cr/5 + Mo/5 + V/5 + Ni/15 + Cu/15$$
$$CE = 0.97 \quad \text{NG}$$

Ilo and Bessyo and P_{CM}

$$CE = C + Mn/20 + Cr/20 + Mo/15 + V/10 + Ni/60 + Cu/20 + Si/30 + 5*B$$
$$CE = 0.81 \quad \text{NG}$$

Witherton

$$CE = C + Mn/6 + Cr/10 - Mo/50 - V/10 + Ni/20 + Cu/40$$
$$CE = 0.91 \quad \text{NG}$$

Cottrell

$$CE = C + Mn/6 + Cr/5 + Mo/5 + V/3 + Nb/(4*C) + 0.0001/S$$
$$CE = 0.96 \quad \text{NG}$$

Mannesmann

$$CE = C + Mn/20 + Cr/10 + Mo/15 + V/10 + Ni/40 + Cu/20 + Si/25$$
$$CE = 0.82 \quad \text{NG}$$

Graville

$$CE = C + Mn/16 + Cr/23 + Mo/7 + V/9 - Ni/50 + Nb/8$$
$$CE = 0.81 \quad \text{NG}$$