DEPARTMENT OF METALLURGICAL ENGINEERING
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21st October 2011

Test Certificate

1. Name and Address : M/s STEEL EXCHANGE INDIA LIMITED, Sri Ram Puram, L.Kota Mandalam, Kothavalasa, Vizianagaram,
2. Ref No and Date : Your letter No HSCRM-Seil-k dated 10-10-11
3. Material : Simhadri TMT Bars and Simhadri TMT HSCRM Steel bars of 16mm dia
4. Tests Conducted : Corrosion resistance testing with 1) Potentiodynamic polarization test 2) Alternate immersion test 3) Salt spray test
5. Place : Labs of Metallurgical Engg Department

TEST REPORT

1. Potentiodynamic polarization testing as per ASTM G 59 standard

A software based PAR electrochemical weld tester system was used to carry out potentiodynamic polarization tests to study corrosion behavior of steel samples . The basic electrochemical system with Electrochemical flat cell used in this work was given in Fig. 1. A saturated calomel electrode (SCE) and carbon electrode were used as reference and auxiliary electrodes respectively. All experiments were conducted in aerated 3.5% NaCl solutions with pH adjusted to 10 by adding potassium hydroxide. The potential scan was carried out at 0.166 mVs^{-1} with the initial potential 0f –0.25 V (OC) SCE to the final pitting potential. The exposure area for these experiments was 1 cm^2. Polarisation curve is a plot between potential (mV) and current density (mA/cm^2) which is having anodic and cathodic branches. Potential at which anodic and cathodic branches meet is taken as Corrosion potential (Ecorr). Typical polarization curve is shown in Fig. 2. Specimens exhibiting relatively more positive corrosion potential (or less negative potentials) were considered to have better corrosion resistance. Potentio-dynamic polarization curves of Simhadri TMT steel bar and Simhadri HSCRM TMT Steel bars are shown in Fig. 3.

Ecorr of Simhadri TMT Bar = -747 mV

Ecorr of Simhadri HSCRM TMT Bar = -576 mV

Above corrosion potential values confirm that the HSCRM TMT steel bars are having better corrosion resistance than TMT steel bars

21/10/11

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