IS 14591 : 1999

Indian Standard

TEMPERATURE CONTROL OF MASS CONCRETE FOR DAMS — GUIDELINES

1 SCOPE

This standard mainly covers precooking methods adopted for temperature control in respect of mass concrete in dams. It also alludes to postcooling as the same is also adopted for overall temperature control.

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Dams (Overflow and Non-overflow) and Diversion Works Sectional Committee had been approved by the River Valley Division Council.

Mass concrete structures undergo volumetric changes with time after the placement of concrete. A rapid rise in the temperature of mass concrete takes place during the phase when the concrete mass is in plastic stage and undergoes hardening. After hardening, the concrete gradually cools due to effect of atmospheric temperature, which tends to subject the concrete to high tensile stresses. Cracking occurs in the concrete when these tensile stresses exceed the tensile strength of the concrete. This cracking is undesirable because it affects the water tightness, durability and appearance of hydraulic structures. The cracking tendency maybe reduced to acceptable levels through appropriate design, construction and concrete placement procedures.

Temperature control is essential to (a) minimize volumetric changes and control the size and spacing of undesirable cracks and (b) facilitate completion of the structure during the specified construction period by increasing lift heights.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, should be rounded off in accordance with IS 2:1960 ‘Rules for rounding off numerical values (revised)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.