

# **EFFECT OF ELEVATED TEMPERATURES ON PERFORMANCE OF RCC BEAMS**

**ASHOK R. MUNDHADA<sup>1</sup> & ARUN D. POPHALE<sup>2</sup>**

<sup>1</sup>Professor, Department of Civil Engineering, Prof. Ram Meghe Institute of Technology & Research, Badnera, Amravati, Maharashtra, India

<sup>2</sup>Professor, Department of Civil Engineering, Visvesvaraya National Institute of Technology, Nagpur, Maharashtra, India

## **ABSTRACT**

The present work was aimed at assessing the response of reinforced concrete beams to elevated temperatures. Effect of fire on RCC is a relatively less explored area because of the lesser use of RCC structures in Europe/USA as compared to steel structures & because of the inherent fire resistance of RCC structures. Forty five RCC beam samples were cast with identical cross-sectional areas, length and grade of concrete and clear cover to reinforcement. Six Specimens were tested for the Flexural strength using UTM before heating at room temperature and the results were tabulated. Twelve specimens (6 specimens of 25mm clear cover & 6 specimens of 30mm clear cover) each were heated in an electrical furnace at 550°C for 1 hour and 2 hour respectively without any disturbance. Same procedure was repeated for 750°C and 950°C. After heating, these specimens were allowed to cool at room temperature & then tested for flexural strength on an UTM. Change in appearance & weight loss was also studied. Results revealed fairly robust performance up to 550°C. The drop in flexural strength & other parameters was noticeable but not alarming up to 750°C. Around 950°C, the rcc members lost their fidelity on all counts.

**KEYWORDS:** RCC, Fire, Beam Flexure Strength, Thermogravimetric Analysis