

TOPIC

Strength of Materials – Section VIII – Question 2

QUESTION

Knowing that a continuous steel railroad track, with a coefficient of thermal expansion of $12 \times 10^{-6} \text{ m/m/}^\circ\text{C}$, and Young's modulus of 200 GPa, was placed on and secured to railroad ties in the winter when the temperature was -10°C . The stress in MPa in the rail when the temperature reaches 90°C in the hot sun during summer most nearly is

- (A) 192 (tensile)
- (B) 200 (compressive)
- (C) 240 (compressive)
- (D) 120,000 (tensile)

HINT

The change in temperature is a positive 100°C
The railroad track goes into compressive stress.

CONTRIBUTOR

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