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INFLUENCE OF THE PHASE TRANSFORMATION RATE OF NICKEL-SULFIDE INCLUSIONS ON THE STRESS CONCENTRATION IN TEMPERED GLASS³

Assoc. Prof. Veselin Iliev, PhD

Department of Applied Mechanics,

University of Chemical Technology and Metallurgy

Phone: 02-8361 467

E-mail: veso@ustm.edu

***Abstract:** The presence of nickel sulfide inclusions in tempered glass usually results in a sudden rupture caused by the sharp volume increase of the inclusion during its phase transformation. Preventions of such defects at the flat glass production process is impossible for now. They often cause micro cracks and breakage of the glass.*

This work presents a study of the stress-strain state around the inclusion with phase transformation inhomogeneity, the conditions for the cracks formation and the stress concentration around them. The study is implemented by numerical simulations using the analogy between temperature and phase expansion. The crack propagation is evaluated by the stress intensity. The volume change during allotropic transformation is modeled using different coefficients of temperature expansion for alpha and beta phases.

***Keywords:** Nickel-Sulfide inclusion, temperature expansion, stress-strain analysis, numerical analysis.*

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