

# Modeling the Kinetics of Phase Transformations Using Dilatometry Tests in Common Carbon Steel

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The decomposition of austenite in the carbon steel AISI 1025 was analyzed by dilatometry technique, through equipment DT 1000 ADAMEL LHOMARG, which determine the length variation in relation to its original length as a function of temperature in specimens of cylindrical shape (2x12) mm. A mathematical model was developed to determined the route of dilatogram, using the method of internal state variables (ISV). For the homogenization of the system we used two of the fourteen Bravais solid, tetragonal and cubic system. The coefficients of linear thermal dilation, correspondents to thermal cycles since 1000 ° C to sub-zero temperatures (-100 ° C), imposing cooling rates of 15°C/s, allowed the construction of dilatograms using the analytical method, with an average error of 6.6% of the experimental testing, which allowed the establishment of routes of heat treatment of interest.

Key-word: Carbon Steel; Dilatometer; Thermal Cycles; Microstructure.

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