

RELATION OF THE TEMPERATURE
OF VITRIFICATION AND THERMAL
EXPANSION TO THE POISSON COEFFICIENT
IN THE SYSTEM Ge-As-S-I

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S u m m a r y

The parameters of the fluctuation-induced free volume theory (p_{im}, f_g), elastic constants (E, B, μ), and Gruneisen parameter are calculated on a base of the data on transverse (V_s) and longitudinal (V_l) ultrasound velocities, density ρ , glass temperature T_g , and microhardness H . It is shown that, in chalcogenide and chalcogenide glasses of the Ge-As-S-I system, the quantities $\alpha_g T_g$ and $\Delta \alpha T_g$ are related to the Gruneisen parameter and to a volume change on a compression of B/p_{im} . In chalcogenide glasses, whose lattices are formed by covalent bonds in the main, the relative volume change f_g and γ are changing in opposite directions, which may be explained by a structure peculiarity of the glass lattice, which is caused by the absence of the ion component of bonds. By their properties and the dependence on the composition chalcogenide glasses of this system, are close to oxide-containing inorganic glasses. A comparison of the fluctuation free volume model and model of soft atomic configurations is performed.