The objective of this work was to analyze temperature dependency of the viscoelastic properties of a low-fat soft cheese after frozen storage. Commercial cheese bars were frozen and stored at -25 °C during 33 days. After that, cheeses were thawed and stored at 6 °C during 48 days for further ripening (frozen cheeses). Cheeses stored at 6 °C during 48 days were used as control samples (control cheeses). Frequency sweeps (0.01-10 Hz) in the linear viscoelastic region at several temperatures (10, 20, 30, 40, and 50 °C) were carried out in triplicate. Elastic modulus ($G'$), viscous modulus ($G''$), complex modulus ($|G^*|$), and complex viscosity ($|\eta^*|$) were determined. Time-temperature superposition model (TTS) was applied in order to analyze $G'$ and $G''$ values. Weak gel model for foods ($|G^*|=AF*f^z$) was used to study values of $|G^*|$. Temperature dependency of $|\eta^*|$ at 1 Hz was analyzed with an Arrhenius type equation. Statistical analysis was done using ANOVA. TTS was satisfactorily applied to overlap $G'$ and $G''$ values at low temperatures (10 to 30 °C). Activation energy of $|\eta^*|$ for frozen cheeses was lower than for control cheeses, suggesting lower resistant to break up of cheese microstructure. Weak gel model parameters, $z$ (number of interactions) and $AF$ (strength of interactions), decreased as temperature increased from 30 to 50 °C in both frozen and control cheeses. Also, $z$ values were lower in frozen cheeses than in control cheeses, suggesting that frozen cheeses presented lower number of interactions than control cheeses.