Organogels are mixtures of an organic liquid solvent and a structuring agent, which presents a thermoreversible network, with gel-like characteristics. The crystalline structure present on saturated fats is responsible for their unique rheological behavior. Organogels change the behavior organic liquids so they are possible replacements for structural fats. The objective of this study was to evaluate the melting and crystallization behavior of organogels formed with sugar cane wax (SCWO) and its ethanol soluble (SSCWO) and insoluble (HSCWO) fractions, at concentrations of 1, 2, 3 and 4% (w/w), in soybean oil, and the textural properties at two different static crystallization temperatures (5 and 25°C). The thermal properties measure in DSC were similar for all organogels, within a range of 42 - 47°C and 50 - 60°C for starting of crystallization and melting respectively, in both cases the higher temperatures were SCWO and the lowest for SSCWO. HSCWO presented intermediate crystallization (45°C) and melting (58°C) temperatures. All materials presented enthalpy hysteresis and HSCWO presented lower enthalpy. Textural properties, measured as force (N) were directly related to the amount of structurant and the crystallization temperature, SCWO and SSCWO presented higher force when crystallized at 25°C using 4% (w/w), 1.210 and 1.461N, respectively, the force where significantly lower for the same material crystallized at 5°C, 0.789 and 0.736N respectively and HSCWO presented significantly lower force, with no difference among crystallization temperatures. The results indicate that SCWO and SSCWO produced stronger and harder organogels that needed more energy to melt and crystallize than HSCWO.