Phase Behavior of Neopentyl Glycol in Supercritical Carbon Dioxide

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Neopentyl glycol (2,2-dimethyl 1,3-propanediol) has two hydroxyl groups that are located at the opposite ends of its structure. Neopentyl glycol also has two methyl groups connected to the center carbon, which make a star-like structure. The unique molecular structure of Neopentyl glycol influences its ability of intra- and intermolecular hydrogen bonding. Therefore, it is expected that the Neopentyl glycol has different physico-chemical properties and phase behavior from other C5-diols, such as 1,2-Pentanediol and 1,4-Pentanediol. This presentation demonstrates the phase behavior of Neopentyl glycol in supercritical CO_2. By comparing the phase boundary with those of other C5-diols, it will be clarified how the homogenous phase region is influenced by the location of hydroxyl groups of C5-diols, which is related to the degree of hydrogen bonding.