

### Thermal properties of crude by-product polyolefin wax, fractionated paraffin wax and their blend

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Using differential scanning calorimetry(DSC), normal and high-temperature gel permeation chromatography(GPC), and wide-angle X-ray diffraction(WAXD), the molecular weight and thermal properties of unfractionated by-product polyolefin wax(wax K) from a naphtha cracking unit, fractionated commercial paraffin wax(wax J) and their blend(wax M) were evaluated and were compared each other. Such properties as molecular weight distribution, melting temperature and degree of crystallization were altered by blending wax K with wax J. By blending with two parts of wax K and one part of wax J to prepare wax M, Mw of wax K was shifted, by half, to that of wax J in order to approach that of wax M, whereas the Mn of wax K remains almost unaltered to become that of wax M. In particular the effect of blending of wax K and wax J turned out co-crystallization for the sharper lower-melting-temperature endothermic peak of the blend, indicating narrower molecular distribution, than that of wax K at the melting temperature shifted even below that of wax J. The total degree of crystallinity for the blend, wax M, turns out less than that before blending wax K with wax J.