

taining 79% of the aceto-olein product, 18.5% of the highly hydrogenated cottonseed oil, 2.5% of finely ground salt, and traces of antioxidant, imitation butter flavor, and butter color. The ingredients were mixed at a temperature just above the melting point of the hard fat, and then chilled to 0°C. while being worked or mixed. The resultant product was allowed to warm to room temperature and again worked until a smooth consistency was attained.

The margarine-like product resembled ordinary margarine in appearance and taste. Because it contained no moisture or milk solids, it is to be expected that there would be little tendency for spoilage by hydrolysis or bacterial action. The iodine value of the fatty portion was 52.0, which is far below that for margarine oil, and it contained 11.6% of the acetyl group. When the margarine-like product was stored for 3 days at 48.9°C., the solid and liquid phases did not separate. The most remarkable property of this product was its almost constant consistency over the temperature range of -15° to 49°C. (5° to 120°F.). The consistency curve obtained with

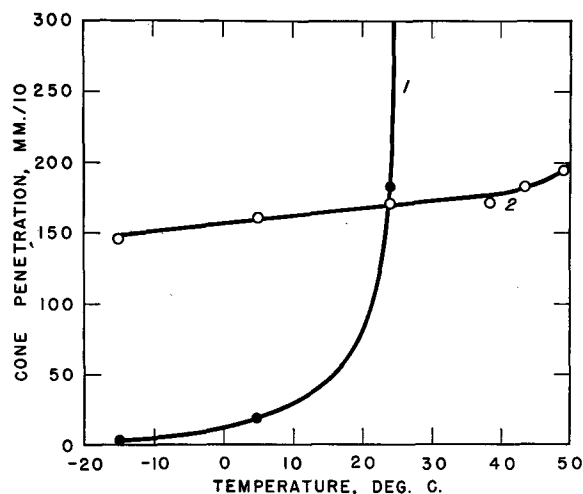


Fig. 4. Consistency vs. temperature curves: (1) margarine, and (2) margarine-like product containing essentially 79% aceto-olein product, 18.5% hydrogenated cottonseed oil, and 2.5% salt.

the cone penetrometer is recorded in Figure 4, which also contains a consistency curve for a commercial margarine.

Letter to the editor

IN the last copy of J.A.O.C.S. (Volume XXX, No. 6) on page 247 there is an error. Below table I the phrase: "Coconut oil contains approximately 94.3% fatty acids . . ." does not have the correct value.

Coconut (and palm kern) oils are among the oils highest in glycerol content and lowest in fatty acids content. All kinds of coconut oil (with low free acids content of about 1-2%) have fatty acids contents around 92% (the average of my analytical determinations) and give the highest yields of glycerol and the lowest yields of fatty acids by splitting. Below

Summary

Pure 1,2-diaceto-3-olein was prepared by acetylating mono-olein. A mixture of aceto-oleins was prepared by acetylating a mixture of mono-, di-, and trioleins derived from commercial oleic acid. Several natural oils were acetylated either by ester-ester interchange with triacetin or by glycerolysis followed by acetylation. The various products were examined for cloud and solid points, point of complete melting, and consistency.

The 1,2-diaceto-3-olein, which contains 19.5% of acetyl group on a weight basis, has a melting point of -18.3°C. while the mixture of aceto-oleins, which contained 14.3% of acetyl on a weight basis, melted at -24°C.

Acetylation of the natural oils raises in most instances their cloud and solid points and point of complete melting, but it also greatly increases their plasticity at lower temperatures.

Aceto-compounds were used to plasticize highly hydrogenated cottonseed oil. These mixtures were prepared so that they possessed the consistency of margarine oil at room temperature. These mixtures, when compared with partially hydrogenated oil, butterfat, or a mixture of cottonseed oil and hydrogenated cottonseed oil, were softer below room temperature and firmer above room temperature.

A margarine-like product containing 79% of aceto-olein and 18.5% of highly hydrogenated cottonseed oil had a practically constant consistency over the temperature range of -15° to 49°C. (5° to 120°F.).

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90% (86-87% in average including coconut oil from acidulated soapstocks). For this reason in times of high demand of glycerol (*i.e.*, before the World War in Europe) coconut oil was the main raw material for producing glycerol by the splitting of oils.

This correction, naturally, doesn't affect significantly this very interesting publication, the considerations of which (p. 248) are quite correct, in my opinion, because I obtained about the same results during my work in Europe (over 25 years).

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