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Nomograph for Determining Percentage Extraction Efficiency

ANGELO V. GRACI JR.,[1] Southern Regional Research Laboratory,[2] New Orleans, Louisiana

THIS alignment chart enables convenient and accurate determinations to be made of vegetable oil processing extraction efficiencies. Percentage extraction efficiency as used here is defined as

$$100 \times \frac{\text{oil removed by processing}}{\text{oil available in feed material}}.$$

The range of the variable "% lipids in the feed material" has been extended to cover the oil contents of all oleaginous materials, including low-oil content press cakes destined for subsequent solvent extraction. The range of the variable "% lipids in the extracted meal or cake" has been extended to cover solvent extraction, screw and hydraulic press operations. The percentages of lipids and solids, indicated on the chart, are both to be used on a "wet" or "as received" basis.

The use of the chart can be illustrated in the following example. A certain feed material before extraction contained 30% oil and 8% moisture (62% solids). The meal or cake after extraction contained 2% residual lipids and 6% moisture (92% solids). What extraction efficiency was obtained?

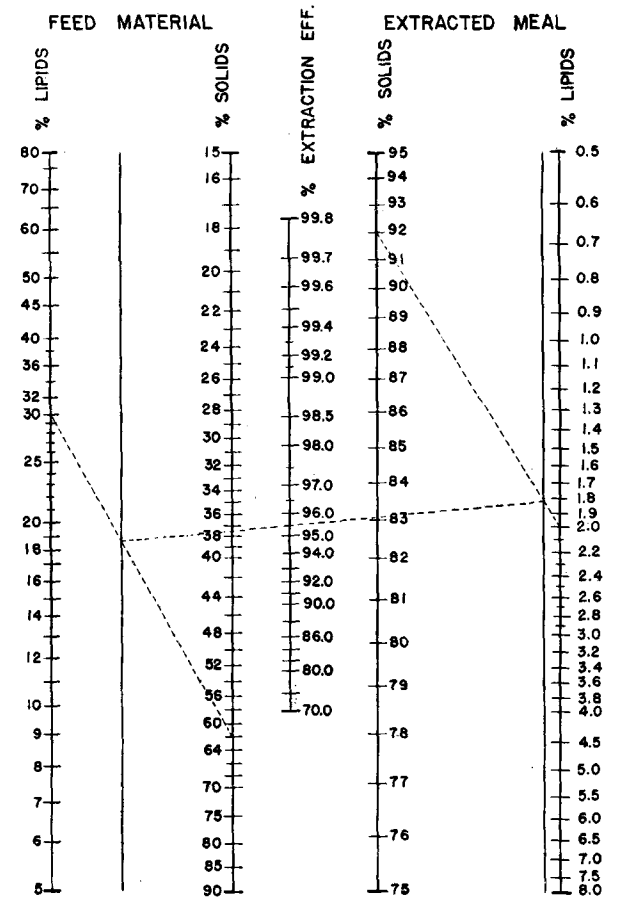
Using the above values, the percentage extraction efficiency is determined as follows: A line is drawn connecting % lipids and % solids in the feed material. A second line is drawn connecting % lipids and % solids in the extracted meal. Each of these two lines intersects a reference line. A third line joining the two intersection points crosses the % extraction efficiency line at a value of 95.5%.

The equation on which this alignment chart is based is

$$Z = 100\left(1 - \frac{BC}{AD}\right), \text{ where}$$

A = % lipids in feed material
B = % solids in feed material
C = % lipids in extracted meal or cake
D = % solids in extracted meal or cake
Z = % extraction efficiency.

EXTRACTION EFFICIENCY CHART



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[1] Present address: Wurster and Sanger Inc., 5201 South Kenwood Avenue, Chicago, Ill.

[2] One of the laboratories of the Southern Utilization Research Branch, Agricultural Research Service, United States Department of Agriculture.