DATE SHEET

RANGES OF TITRES FOR DIFFERENT FATS & OILS

Fat or oil	Titre/°C
Babassu oil	22 - 23
Beef tallow	40 - 47
Castor oil	2 - 4
Coconut oil	20 - 24
Corn oil	14 - 20
Cottonseed oil	30 - 37
Lard	32 - 43
Linseed oil	19 - 21
Olive oil	17 - 26
Palm oil	40 - 47
Palm kernel oil	20 - 28
Peanut oil	26 - 32
Rapeseed oil	11 - 15
Sardine oil	27 - 28
Sesame oil	20 - 25
Soyabean oil	21 - 23
Whale oil	22 - 24

FINAL MELTING POINTS OF AVERAGE SAMPLE OF FATS AND OILS

Fat or oil	Melting point °C
Babassu oil	26
Beef tallow	50
Butterfat	37
Cocoa butter	36
Coconut oil	26
Cottonseed oil	11
Lard, prime steam	45
Palm oil (retined)	40
Palm Kernel oil	29
Peanut oil	13
Hydrogenated oils	
Castor oil	87
Cottonseed	60
Sardine oil	57.5
Soyabean oil	66.5

Fatty acid from	Approx. No. of Kg needed per 100Kg NaOH	Fatty acid Na_2CO_3
Linseed oil	14.7	19.5
Hemp oil	14.4	19.1
Sunflower oil	14.7	19.5
Maize oil	14.7	19.5
Cotton oil	14.8	19.6
Groundnut oil	14.7	19.5
Sesame oil	14.7	19.5
Castor oil	13.7	18.1
Colza oil	13.7	18.1
Olive oil	14.6	19.4
Neatsfoot oil	14.7	19.6
Sardine oil	14.7	19.5
Whale oil	14.1	18.6
Cotton stearin	14.7	19.5
Palm oil	14.9	19.7
Vegetable tallow	15.0	19.8
Bone fat	14.5	19.2
Lard	14.7	19.5
Tallow	14.9	19.7
Palm kernel oil	18.9	24.9
Coconut oil	19.7	26.0
Olein	14.2	18.7
Soyabean oil	14.7	19.5

IODINE AND SAPONIFICATION VALUE OF SOME REPRESENTATIVE SAMPLES OF COMMON VEGETABLE AND ANIMAL FATS AND OILS

Fat or Oil	I.V.	S.V.
Coconut oil	7.5–10.5	250–264
Corn oil	103–128	187–193
Cottonseed oil	99–113	189–198
Lard, prime steam	53–77	190–202
Palm oil	44–58	195–205
Soyabean oil	120–141	189–195
Tallow (beef)	35–48	193–202
Tallow (goat)	33.5	199
Tallow (mutton)	41.2	197

Note: The two most important chemical characteristics of fat are the *Iodine Value* (the number of grams of iodine or equivalent halogen absorbed under standard conditions by 100 gms of fat), which indicates the average degree of unsaturation, and the *Saponification Value* (the number of milligrams of potassium hydroxide required to saponify one gram of fat) which is indicative of the average molecular weight.

"L" Value is the analytical method especially devised for a soap and cosmetics manufacturer in Japan.
This is similar to the R&B analysis except that the tallow is not refined before bleaching. It is an effective way of finding out the true bleachability of tallows.
Heat sample of tallow to 120 degrees C for five minutes, then add 2% bleaching clay and filter to read Lovibond in red and yellow.

Calculation:

$$\frac{L = 10 \times Red + Yellow}{20}$$

The maximum for "L" value is 1.3.

S.V. (Saponification Value)
This is a measure of the average chain length of the fatty acids in the triglycerides and is defined as the number of milligrams of KOH required to neutralize one gram of the fat. The higher the S.V., the lower the mean chain length of the triglycerides.

Bohmer Number (applied to lard)
This test is to find out if tallow is mixed in with lard. The number should be more than 73. If less than 73, it indicates contamination.

Fatty acid profile
This test is conducted on a gas chromatograph. After the sample is prepared, a very small amount is injected into the instrument and its results are recorded on a chart. The chemist measures the wave lengths, determines the type of fatty acid, and calculates the concentration.

Tallow		Coconut oil	
Fatty acid	**%**	**Fatty acid**	**%**
Myristic	2.9	Caproic	0.2
Myristic Oleic	0.3	Caprylic	7.9
Pentadecanoic	0.6	Capric	6.9
Palmitic	25.8	Lauric	48.3
Palmitic Oleic	2.0	Myriistic	17.5
Stearic	21.5	Palmitic	8.4
Oleic	42.6	Stearic	2.8
Linoleic	2.3	Oleic	5.8
Linolenic	0.2	Linoleic	2.2