

Triglycerides - Important Cosmetic Raw Materials

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Triglycerides, sometimes called oils, are natural products that are becoming more and more important to the cosmetic chemist. They are tri-ester of glycerin with three equivalents of organic acid.

Chemists are always interested in the composition of natural oils and the source. The following is offered as a general overview of the topic. Triglycerides can be classified into three groups as shown.

CLASS 1 Animal-derived products rich in carbon chain lengths below C-18

Number	Name	Source	CAS Number	Predominant species
1.	Milk Fat	cows milk	8029-34-3	C16 triglyceride

CLASS 2 Animal-derived products rich in C-18 unsaturated carbon chain lengths

Number	Name	Source	CAS Number	Predominant species
2.	Tallow	animal fat	61789-13-7	C18:1 triglyceride
3.	Japan Wax	<i>Rhus succedanes</i>	8001-13-6	C16 wax

CLASS 3 Animal-derived products rich in carbon chain lengths greater than C-18

Number	Name	Source	CAS Number	Predominant species
4.	Beeswax	<i>Cera alba</i>	8006-40-4	C26 wax
5.	Shellac Wax	<i>Shellac cera</i>	97766-50-2	C30 wax

CLASS 4 Plant-derived products rich in carbon chain lengths below C-18

Number	Name	Source	CAS Number	Predominant species
6.	Coconut Oil	<i>Cocous nucifera</i>	8001-31-8	C12 triglyceride
7.	Babassu Oil	<i>Orbignya olefera</i>	91078-92-1	C12 triglyceride
8.	Palm Kernel Oil	<i>Elaeis guineenis</i>	8023-79-8	C12 triglyceride

CLASS V *Plant-derived products rich in C-18 unsaturated chain lengths*

Number	Name	Source	CAS Number	Predominant species
9.	Soybean Oil	<i>Glycerin soja</i>	8001-22-7	C18:2 triglyceride
10.	Peanut Oil	<i>Arachis hypogaea</i>	8002-03-07	C18:1 triglyceride
11.	Corn Oil	<i>Zea mays</i>	8001-30-7	C18:1 triglyceride
12.	Sunflower Seed Oil	<i>Helanthus annus</i>	8001-21-6	C18:2 triglyceride
13.	Grape Seed Oil	<i>Vitis vinifera</i>	8024-22-4	C18:3 triglyceride
14.	Safflower Oil	<i>Carthamus tinctorius</i>	8001-23-9	C18:2 triglyceride
15.	Poppy Seed Oil	<i>Populus nigra</i>	8002-11-7	C18:2 triglyceride
16.	Sweet Almond Oil	<i>Prunus amygdalus dulcis</i>	8007-69-0	C18:1 triglyceride
17.	Hazelnut Oil	<i>Corylus americana</i>		C18:1 triglyceride
18.	Walnut Oil	<i>Juglans regia</i>	8024-00-2	C18:2 triglyceride
19.	Olive Oil	<i>Olea europasa</i>	8001-25-0	C18:1 triglyceride
20.	Avocado Oil	<i>Persea gratissima</i>	8024-32-6	C18:1 triglyceride
21.	Sesame Oil	<i>Sesamum indicum</i>	8008-74-0	C18:1 triglyceride
22.	Tall Oil	<i>Tallol</i>	8002-26-4	C18:1 fatty acid
23.	Cottonseed Oil	<i>Gopssypium</i>	8001-29-4	C18:2 triglyceride
24.	Palm Oil	<i>Elaeisis guineensis</i>	8002-75-3	C18:1 triglyceride
25.	Rice Bran Oil	<i>Oryza sativa</i>	68553-81-1	C18:1 triglyceride
26.	Canola Oil	<i>Canola</i>	8002-13-9	C18:1 triglyceride
27.	Apricot Kernel Oil	<i>Prunus armeniaca</i>	72869-69-3	C16 triglyceride
28.	Cocoa Butter	<i>Theobroma cao</i>	8002-31-1	C18 C18:1 triglyceride
29.	Shea Butter	<i>Butyrospermum parkii</i>	977026-99-5	C18 triglyceride
30.	Wheat Germ Oil	<i>Triticum vulgare</i>	8006-95-9	C18:2 triglyceride
31.	Illipe Butter	<i>Bassia latifola</i>	68424-60-2	C18 triglyceride

CLASS 6 *Products rich in carbon chain lengths greater than C-18*

Number	Name	Source	CAS Number	Predominant species
32.	Meadowfoam Seed Oil	<i>Limnanthes alba</i>	153065-40-8	C20:1 triglyceride
33.	Rapeseed Oil	<i>Brassica capmestris</i>	8002-13-9	C22:1 triglyceride

CLASS VII *Products having unusual carbon chain lengths or composition*

Number	Name	Source	CAS Number	Predominant species
35.	Borage Seed Oil	<i>Borago officinalis</i>	8401201608	C18:3 (n=6) triglyceride
36.	Linseed Oil	<i>Linum usitatissimum</i>	8001-26-1	C18:3 (cong) triglyceride
37.	Castor Oil	<i>Ricinus communis</i>	8001-79-4	C18:1 OH triglyceride
38.	Veronia Oil	<i>Veronia galamensis</i>	169360-96-7	C18 epoxy triglyceride
39.	Tung Oil	<i>Aleurites fordii</i>	8001-20-5	C13:3 (cong) triglyceride
40.	Joboba Oil	<i>Buxus chinensis</i>	61789-91-1	C20 ester
41.	Candelilla Wax	<i>Euphorbia cera</i>	8006-44-8	C31 hydrocarbon

42. Ongokea Oil*Ongokea gore*C18:3 acetylenic
triglyceride

Nature has provided a plethora of materials that are potentially useful in the personal care applications. The type and source of natural raw materials is a major variable to be considered by the formulator in making new cosmetic products. The formulator needs to know some basic information on the sources and chemistries of these raw materials to make informed decisions on product formulation. Not only performance, but also as importantly, cost and label copy is determined by the selection of oils and waxes, both per se and in surfactant molecules.