



Notes on Minor Oils - Karo-karoundé (*Leptactina senegambica* Hook. f.).

v1.01 Mar 2010 (to be continuously expanded).

(N.B. Some material updated from monograph in *Natural Aromatic Materials*
– *Odours & Origins* by Tony Burfield (2000) pub AIA Tampa).

***Leptactina senegambica* Hook. f.**

(Fam. Rubiaceae)

Karo- Karoundé

CAS No 68916-95-0.

EINECS-CAS No: 94334-14-2

EC No: 305-095-5

INCI Name: *Leptactina senegambica*,

Hazard Code. Risk & Safety Phrases according to ECHA CoP 2009: T; R22-23,
S28-45.

Declared hazardous components according to ECHA CoP Att VI:

5% benzylnitrile T+; R26, T; R24, Xn; R22

Toxicological data. Effectively prohibited IFRA and the EU because of the high level of cyano- compounds, specifically benzyl cyanide, whose presence was banned in fragrances – the IFRA Standard for benzyl cyanide was last amended April 2004 [karo karounde absolute contains up to 5% benzyl cyanide]. Benzyl cyanide (CAS No. 140-29-4) is restricted by its listing (# 424) in Appendix II of the EU Cosmetics Act. For summary of benzyl cyanide toxicology see *FCT 20* (Suppl.), 803.

Karo karoundé absolute skn-gpg LDLo: 5g/Kg *FCTOD7* (1992) **30**, 61S.

Karo karoundé absolute orl-mus LD50: 1400mg/Kg *FCTOD7* (1992) **30**, 61S.

Distribution. *Leptactina senegambica* is a West-African flowering shrub that grows to 2m. (or more on higher ground) and is particularly prominent in mountainous areas in Fouta-Djalong to the S.E. of the Senegambia in Guinea, & in the dry uplands of Sierra Leone & Mali.

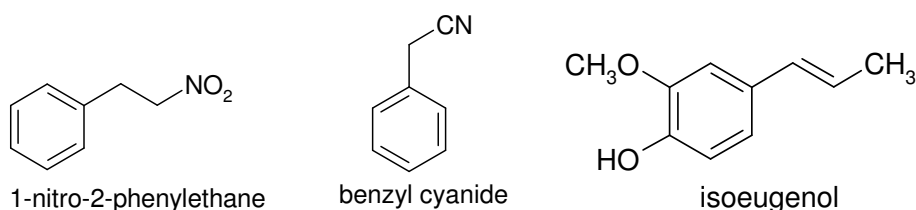
Description. Extraction of the powerfully scented white flowers with volatile solvents (usually petroleum ether / hexane) was formerly carried out at Labé and Mamou, French Guinea, yielding a waxy orange-brown concrete in approx.

0.15% yield. Joulain & Laurent (1988) describe the factory at Labé as processing up to 7 tons of hand-picked flowers per day during mid-March to mid-April. In the past this material was converted to an absolute in Guinea, or more often, shipped to Grasse for further processing and 'sophistication' as Arctander puts it (i.e. adulteration); Arctander estimated the production of karo-karoundé absolute at 100Kg/y at the time.. **The absolute** is invariably yellow (if decolourised) to orange-red (if not decolourised) with an odour, which is a cross between (dominant) tuberose and after-notes of cassis. Other commentators have described a carnation note, which possibly corresponds to the presence of isoeugenol in the absolute. It is also a little hay-like and fig-like, which has been interpreted as sweet and fruity by other commentators. Yet other experts have drawn a comparison to a woodier, spicier and more herbal version of jasmine absolute The dry-out retains characteristics of the freshly dipped strip.

Karo-karoundé absolute is useful in perfumery for white flower notes, and in heavy floral blends (Burfield 2000). It has been used extensively in gardenia, tuberose & hyacinth etc. floral bases

Composition. Sabetay *et al.* (1938a) described isoeugenol & benzyl cyanide and perhaps also indole (Joulain & Laurent (1988) argue that this in fact probably 2-phenylnitroethane) as constituents of the volatile oil obtained by steam distilling the concrete *in vacuo*.

Joulain & Laurent (1988) describe benzyl cyanide (4.75%) and 2-phenylnitroethane (1.10%) as a major components of the absolute amongst the 230 other identified substances. The authors found that the major part of the absolute consisted of .saturated & unsaturated fatty acids and their ethyl-, 2-methylbutyl-, benzyl- and phenylethyl- esters. Other contributors to the odour include nitrogen compounds (including aliphatic nitriles), phenols and lilac alcohols.



Karo karoundé absolute (or ingredients giving the corresponding perfume impression) has been said to have been used in fragrances such as *Panthère* (Cartier), *Timbuktu* (L'Artisan 2004), *Pleasures* – together with a supercritical CO₂ extract of Baie roses from Reunion (Estée Lauder), *Lavaniila Vanilla Blossom* (Sephora), *Shaal Nur* (Etro 1997), *Seqoia Comme des Garçons* & *Bianco Classico* (Cioccolato Mon Amour), amongst others..

References & Bibliography.

Anon? "Myristo nitrile" *Food and Chemical Toxicology* (Jan 2000) **38**, 161-163
Cropwatch comments: substance reported to occur in fried, cured pork (TNO,

1994), karo-karoude flower absolute (Joulain and Laurent, 1988) and *Michelia* spp...

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Arctander S. (1960) *Perfume Materials of Natural Origin* Elizabeth, New Jersey.pp323-4,

Burfield T. <http://www.aromaconnection.org/2007/03/index.html> and search for under benzyl cyanide].

Guenther E. (1952) *The Essential Oils*. Van Nostrand **5**, 356-357

Ohloff, G. (1981) *Flavour 1981* P. Schreier ed. W de Gruyter (1981) p757.. .

Pajaujis Anonis, D. (1993). *Flower oils and floral compounds in perfumery*. (Flower Oils).pp104-6.

Joulain D. & Laurent R. (1988) "The absolute from karo-karoude flowers." *Dev-Food-Sci*. Amsterdam : Elsevier Scientific Publications. 1988. v. 18 p. 607-625. ill. In the series analytic: *Flavors and fragrances: a world perspective* / edited by B.M. Lawrence, B.D. Mookherjee and B.J. Willis. *Proceedings of the 10th International Congress of Essential Oils, Fragrances and Flavors, Nov 16-20, 1986*, Washington, D.C. Includes references. **Abstract**. Hexane extraction of the flowers of Karo-Karoude (*Leptactinia senegambica*) harvested in Guinea gave a 0.15% yield of an orange-brown waxy concrete which, upon treatment with ethanol using the conventional method, gave a 60% absolute yield. Fractionation of the absolute was carried out by normal distillation under reduced pressure followed by falling-film molecular distillation, silica gel, chromatography and functional chemical group separation. Then, by using a combination of the following analytical techniques: preparative GC followed by IR and NMR, GC/MS using both EI and positive or negative CI, more than 230 constituents were identified, in addition to benzyl cyanide and isoeugenol (respectively 4.75% and 0.45% of the absolute) which had already been found in this natural mixture. Besides many minor elements of olfactory importance, including nitrogencontaining substances, the major part of the absolute is composed of a bulk of saturated and unsaturated fatty acids, together with their ethyl-, 2-methylbutyl-, benzyl- and phenylethyl- esters. The identification of coniferyl derivatives, and aliphatic nitriles is emphasized.

Keay, R. W. J. & F. N. Hepper. 1953–1972. *Flora of West Tropical Africa*, ed. 2. (F WT Afr.).

Sabetay S., Palfray L. & L. Trabaud L. (1938) *Comptes-Rendes Acad. Sci.*, **207**, 540 (1938)..

Sabetay S., Palfray L. & L. Trabaud L. (1938a) *Perfumery & Essential Oil Record* **29**, 344.