

# Osmanthus

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This a part of our series on aroma materials produced by carotenoid degradation.

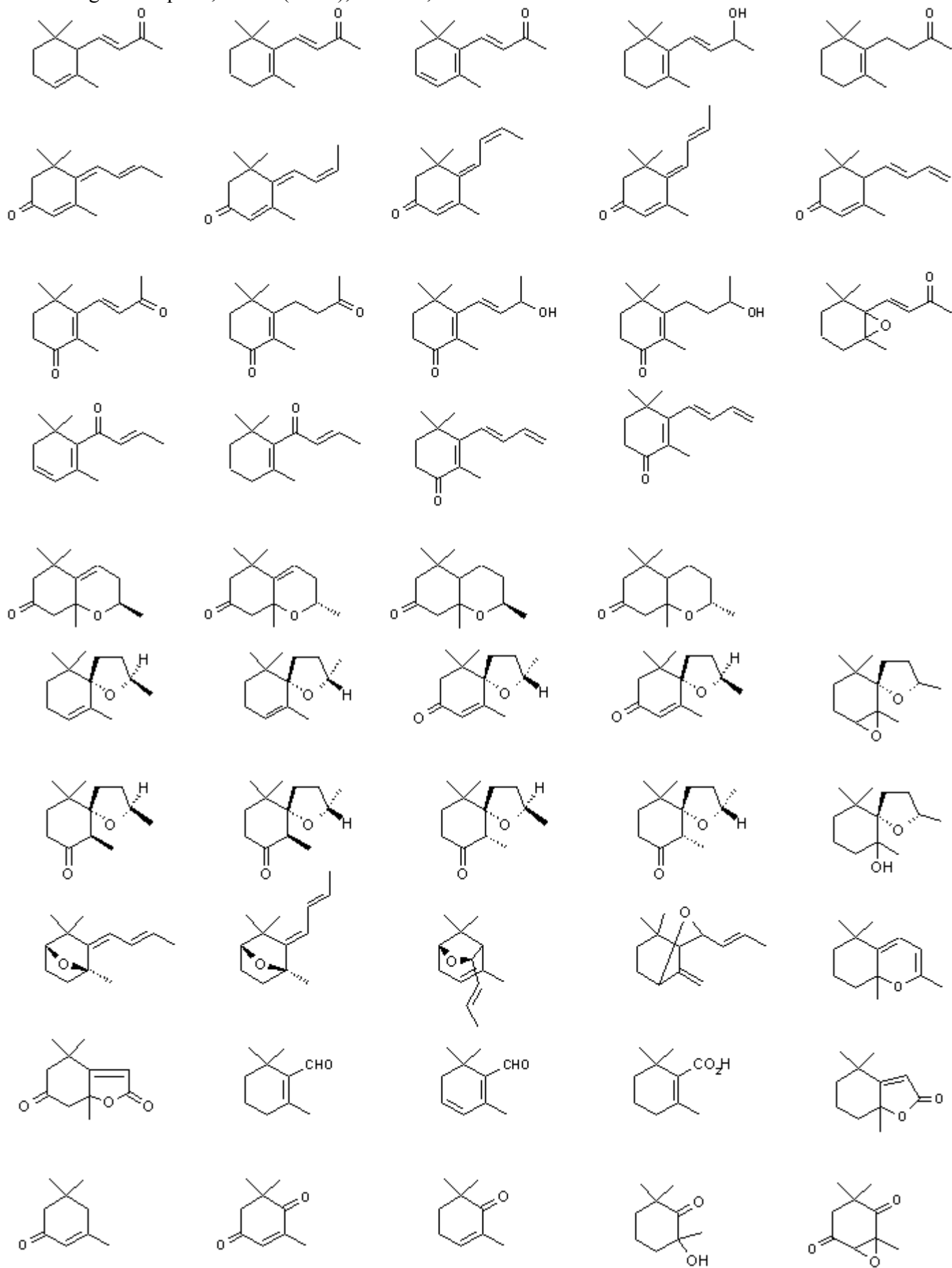


## Osmanthus fragrans - Chinese Stamps (1995)

**Osmanthus fragrans** is a flower native to China that is valued for its delicate fruity-floral apricot aroma. It is especially valued as an additive for tea and other beverages in the far east. While the flowers of osmanthus range from silver-white (*Osmanthus fragrans* Lour. *var. latifolius* Mak.) to gold-orange (*Osmanthus fragrans* Lour. *var. thunbergii* Mak.) to reddish (*Osmanthus fragrans* Lour. *var. aurantiacus* Mak.), the extract (alcohol absolute) is usually prepared from the gold-orange flowers. Osmanthus absolute is very expensive (~U.S. \$4000.00 per kilogram) and accordingly is used in only the most expensive perfumes and flavors.

Various workers have examined the different colored varieties and find that the gold-orange variety (e.g., *Osmanthus fragrans* Lour. *var. thunbergii*) tends to have more of the desirous notes and tend to be higher in carotenoid derived materials. Among the carotenoids of *Osmanthus* are all *trans*-beta-Carotene, all *trans*-alpha-Carotene and Neo-beta-carotene B.

In addition to *cis*-jasmone, gamma-decalactone and various delta-lactones which contribute to the flavor of *Osmanthus*, an extensive number of ionone derivatives and Theaspirane derivatives derived from carotenoids are present. The stuctures of some of these are shown below:



The following table shows the constituents reported by Kaiser and Lamparsky (1981) from an analysis of *Osmanthus abosolute*. In this work they specifically did not report on certain alcohols, esters and aldehydes (but do mention that these classes are present). Other workers note that *cis*-3-hexenol, *cis*-3-hexenyl butyrate, *cis*-3-hexenyl propionate, *cis*-3-hexenyl benzoate, *cis*-3-hexenyl 2-hexenoate, nonanal, octanal, decanal, benzaldehyde, ethyl hexanoate and other esters are present.

| <b>Constituent (as % of volatiles)</b> | <b>%</b> |
|--|----------|
| Linolenic acid                         | 17.4     |
| Linoleic acid                          | 8.7      |
| Palmitic acid                          | 8.6      |
| beta-Ionone                            | 7.6      |
| Oleic acid                             | 7.0      |
| Dihydro-beta-ionone                    | 6.4      |
| Ethyl linolenate                       | 6.3      |
| (+)-Decan-4-olide                      | 4.0      |
| Ethyl palmitate                        | 3.4      |
| Ethyl linoleate                        | 3.1      |
| Dihydro-beta-ionol                     | 3.0      |
| Stearic acid                           | 1.7      |
| trans-Geranic acid                     | 1.6      |
| Eicosanol                              | 1.5      |
| Ethyl oleate                           | 1.4      |
| Geraniol                               | 1.2      |
| p-Methoxyphenylethanol                 | 1.0      |
| Tetradecanoic acid                     | 1.0      |
| (-)-Linalool                           | 0.8      |
| 4-Oxo-dihydro-beta-ionol               | 0.8      |
| cis-Linalool oxide (furanoid)          | 0.7      |
| Retroionenes (4 isomers)               | 0.7      |
| trans-Linalool oxide (furanoid)        | 0.6      |
| alpha-Ionone                           | 0.6      |
| cis-Linalool oxide (pyranoid)          | 0.6      |
| Ethyl stearate                         | 0.5      |
| (+)-Theaspirane B (trans)              | 0.4      |
| p-Ethylphenol                          | 0.4      |
| trans-Linalool oxide (pyranoid)        | 0.4      |
| (+)-Theaspirane A (cis)                | 0.3      |
| 4-Hydroxy-beta-ionol                   | 0.3      |
| 4-Hydroxy-beta-ionone                  | 0.3      |

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|--|------|
| 4-Oxo-beta-ionol                                       | 0.3  |
| 4-Oxo-dihydro-beta-ionone                              | 0.3  |
| 6,10,14-Trimethyl-2-pentadecan-2-one                   | 0.2  |
| 6-Pentyl-alpha-pyrone                                  | 0.2  |
| Dihydro-alpha-ionone                                   | 0.2  |
| Ethyl tetradecanoate                                   | 0.2  |
| (-)-7-Oxodihydrotheaspirane B1                         | 0.1  |
| (+)-7-oxodihydrotheaspirane A1                         | 0.1  |
| (+)-Nerolidol  | 0.1  |
| 2-Phenylethanol  | 0.1  |
| 4-Oxo-beta-ionone                                      | 0.1  |
| 1-Nonanol  | 0.07 |
| 7(Z)-Decene-5-olide (Jasmin lactone)                   | 0.07 |
| Citronellol  | 0.07 |
| Dodecan-4-olide  | 0.07 |
| Eugenol  | 0.07 |
| 2(3)-Dehydrotheaspirane                                | 0.06 |
| (-)-7-Oxodihydrotheaspirane A2                         | 0.05 |
| (+)-7-Oxodihydrotheaspirane B2                         | 0.05 |
| 1-(2,6,6-Trimethyl-1,3-cyclohexadiene-1-yl)-3-butanone | 0.05 |
| 7(Z)-Decen-4-olide                                     | 0.05 |
| Benzyl alcohol   | 0.05 |
| Damascenone  | 0.05 |
| Dehydro-beta-ionone                                    | 0.05 |
| Dehydro-beta-ionone                                    | 0.05 |
| Ethyl nonanoate  | 0.05 |
| Ethyl octanoate  | 0.05 |
| p-Menth-1-en-9-al                                      | 0.05 |
| Photoisomer of beta-ionone                             | 0.04 |
| 1-(2,6,6-Trimethyl-1,3-cyclohexadiene-1-yl)-3-butanol  | 0.03 |
| beta-Ionone epoxide                                    | 0.03 |
| cis-jasmone  | 0.03 |
| Decan-5-olide  | 0.03 |
| Decan-5-olide (delta-Decalactone)                      | 0.03 |
| Nerol  | 0.03 |
| Phenylacetonitrile                                     | 0.03 |
| (E)-Retroionol   | 0.02 |
| (E)-Retroionone  | 0.02 |

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|--|-------|
| 1-(2,3,6-Trimethylphenyl)but-1-en-3-one                          | 0.02  |
| 2(Z),7(Z)-Decadien-5-olide                                       | 0.02  |
| 2,5-Epoxy-megastigma-6(E),8(E)-diene                             | 0.02  |
| 5(Z),8(Z),11(Z)-tetradecatrien-4-olide                           | 0.02  |
| alpha-Ionol  | 0.02  |
| alpha-Terpineol  | 0.02  |
| beta-Ionyl ethyl ether   | 0.02  |
| Coumarin   | 0.02  |
| Hexadecan-4-olide  | 0.02  |
| Hotrienol  | 0.02  |
| Megastigma-5,7(E),9-triene-4-one                                 | 0.02  |
| Nerol oxide  | 0.02  |
| Nonan-4-olide  | 0.02  |
| Octan-4-olide  | 0.02  |
| (Z)-Retroionol   | 0.01  |
| (Z)-Retroionone  | 0.01  |
| 2-Decene-5-olide (Massiolactone)                                 | 0.01  |
| 2-Methyl-2-vinyl-5-(2'-6methylhepta-2,6-dienyl)furan (2-isomers) | 0.01  |
| 3-Oxo-alpha-ionone   | 0.01  |
| 4-Oxo-isophorone   | 0.01  |
| 5(Z),8(Z)-tetradecadien-4-olide                                  | 0.01  |
| 5(Z)-tetradecen-4-olide  | 0.01  |
| 6,7-epoxy-theaspirane  | 0.01  |
| 6-Heptyl-alpha-pyrone  | 0.01  |
| 6-Hydroxy-dihydrotheaspirane                                     | 0.01  |
| 6-Propyl-alpha-pyrone  | 0.01  |
| 7(Z)-Decen-5-olide   | 0.01  |
| ar-Ionone  | 0.01  |
| cis-7,10-Epoxy-2,6,10-trimethyl-2,5(E),11-dodecatriene           | 0.01  |
| Geranyl acetate  | 0.01  |
| Megastigma-4,6,8-triene-3-ones (4-isomers)                       | 0.01  |
| Megastigma-4,7(E),9-triene-3-one                                 | 0.01  |
| Megastigma-5,8(E),diene-4-one                                    | 0.01  |
| trans-7,10-Epoxy-2,6,10-trimethyl-2,5(E),11-dodecatriene         | 0.01  |
| 2,5-Epoxy-megastigma-6(Z),8(E)-diene                             | 0.003 |
| 2,3-epoxy-4-oxo-isophorone                                       | <0.01 |
| 2,6,6-trimethylcyclohex-1-en-carboxylic acid                     | <0.01 |

|  |       |
|--|-------|
| 2,6,6-Trimethylcyclohex-2-en-1-one               | <0.01 |
| 2-Hydroxy-2,6,6-trimethylcyclohexanone           | <0.01 |
| 3-Oxo-retroionol                                 | <0.01 |
| 9-Oxo-dihydroeudalan (2-isomers?)                | <0.01 |
| 9-Oxo-eudalan (2-isomers?)                       | <0.01 |
| beta-Cyclocitral                                 | <0.01 |
| beta-Damascone                                   | <0.01 |
| Dihydroactinodiolide                             | <0.01 |
| Isophorone (3,5,5-trimethylcyclohex-2-en-1-one)  | <0.01 |
| Safranal   | <0.01 |
| Theaspirone                                      | <0.01 |
| 1-(2,3,6-Trimethylphenyl)but-1-en-3-ethoxy ether | trace |
| 2,3,6-Trimethylphenylbutan-3-ol                  | trace |
| 2,5-Epoxy-6-megastigmen-9-ol                     | trace |
| 2,7-Epoxy-megastigma-4,8(E)-diene                | trace |
| 2-Methyl-2-vinyl-5-isopropenyfuran (2-isomers)   | trace |
| 4,7-Epoxy-megastigma-5(11),8(E)-diene            | trace |
| 9-Hydroxytheaspirane                             | trace |
| Dehydro-ar-ionone                                | trace |
| Hexan-4-olide                                    | trace |

Osmanthus is an expensive, but important tool for the perfumer.

The following are descriptions of a number of perfumes that are 'reputed' to contain osmanthus.

**Cassini (Oleg Cassini) 1979 - Chypre-Fruity floral**

Top Notes: Mandarin, freesia, osmanthus

Heart Notes: Jasmine, Bulgarian rose, tuberose, chrysanthemum, carnation

Base Notes: Mousse de chene, amber, oakmoss

**Desirade (Aubusson) 1990 - Floral Semi-Oriental**

Top Notes: Italian bergamot, Russian coriander, Madagascar ylang-ylang, pineapple, aldehydes

Heart Notes: Chinese osmanthus, jasmine, rose, cassia, tuberose, orange blossom, violet

Base Notes: Sandalwood, patchouli, vetiver, Somalian opopanax, plum, raspberry, vanilla, musk

**Destiny (Marilyn Miglin) 1990 - Floral-Fresh**

Notes: Calla lilies, white rose, fo-ti-tieng, osmanthus, karo karunde, white orchid, narcissus

**DNA (Bijan) 1993 - Floral-Ambery**

Top Notes: Rosewood, minty geranium, ylang-ylang, bergamot

Heart Notes: Jasmine, lily of the valley, tuberose, clove, osmanthus

Base Notes: Myrrh, oakmoss, sandalwood, vetiver, vanilla, benzoin, amber

**Elysium** (Clarins) 1993 - Floral-Fruity

Top Notes: Jasmine, honeydew, ylang-ylang, dewberry, linden blossom

Heart Notes: Lily of the valley, freesia, rose, osmanthus

Base Notes: Sandalwood, papaya, musk, cedarwood

**Histoire D'Amour** (Aubusson) 1984 - Chypre-Floral

Top Notes: Mandarin, bergamot, basil, osmanthus

Heart Notes: Jasmine, rose, narcissus, orange blossom, ylang-ylang, galbanum

Base Notes: Oakmoss, musk, patchouli

**Il Bacio** (Marcella Borghese) 1993 - Floral-Fruity

Top Notes: Honeysuckle, rose, jasmine, freesia, orchid, lily of the valley

Heart Notes: Peach, plum, melon, passion fruit, pear, osmanthus, iris

Base Notes: Amber, sandalwood, violet, musk, cedarwood

**La Prairie** - Floral-Fruity

Top Notes: Bulgarian rose, honeysuckle, peach, tagetes, osmanthus, peony, violet leaves

Heart Notes: Orange blossom, peach, plum, tuberose, heliotrope, rose

Base Notes: Sandalwood, amber, oakmoss, patchouli, musk, cedarwood

**Oh La La!** (Azzaro) 1993 - Oriental

Top Notes: Raspberry, peach, mandarin, bergamot, fig leaves, muscat grape

Heart Notes: Yellow rose, jasmine, narcissus, ylang-ylang, orange blossom, osmanthus

Base Notes: Cinnamon, sandalwood, amber, vanilla, patchouli, tonka bean

**1000** (Jean Patou) 1972 - Floral

Top Notes: Greens, bergamot, anjelica, coriander, tarragon

Heart Notes: Chinese osmanthus, jasmine, rose, lily of the valley, violet, iris, geranium

Base Notes: Vetiver, patchouli, moss, sandalwood, amber, musk, civet

**Sunflowers for Women** by Elizabeth Arden - 1993

Elizabeth Arden introduced Sunflowers in 1993 as a response to the push on natural products. Arden calls it a "prestige fragrance without prestige pricing". This is a fruity, floral scent for the everyday adventures.

Top Notes: bergamot, melon, peach

Middle Notes: cyclamen, osmanthus, jasmine, tea rose

Base Notes: sandalwood, moss, musk

**Realities** (Liz Claiborne ) 1990- Fresh, Oriental

Introduced in 1990 by American sportswear designer Liz Claiborne, Realities was her second fragrance launch. A Claiborne spokesperson says that 'Realities celebrates the intimacy and reality of a woman's life as she and her family truly live it. This fresh, oriental fragrance has notes of bergamot, chamomile, sage, osmanthus, Bulgarian rose, jasmine, white lily, carnation, freesia, vanilla, amber, sandalwood and peach.

**Escape** by Calvin Klein 1991

Calvin Klein introduced Escape in Fall of 1991. It was created to reflect a woman's deepest passions and desires to escape the boundaries of everyday life and discover romance and adventure, uninhibited.

This fresh fruity floral is a blend of ingredients from all over the world. It opens with chamomile, apple, lichee, tagette, coriander, hyacinth, black currant, ylang-ylang and mandarin nuances. At its heart are rose, osmanthus, plum, peach, muguet, clove, jasmine and carnation followed by a base of musk, sandalwood, tonka and vetiver.

**Chaumet** by Chaumet (1999)

Top Note: Green ivy, freesia, citrus fruits

Middle Note: Tea flower, jasmine, osmanthus

Base Note: White musks, sandalwood, cedarwood

**Ultraviolet** 1999 - is a spicy floral oriental scent.

The top notes include fresh capsicum, a heart of Japanese osmanthus and a base of vanilla and gray amber. The perfume was launched in Europe before entering the U.S. in early February 2000 through the Dallas division of Dillard Department Stores.

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