

Woody Notes in Perfumery Part III: Cedarwood and Derivatives in Soap Fragrances

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In part I of this cedarwood series (*Perfumer & Flavorist*, May/June 2001), we discussed various cedarwood oil types and derivatives. In part II of this cedarwood series (*Perfumer & Flavorist*, July/August 2002), we discussed the application of cedarwood and its derivatives in various types of fragrances. We have also given examples of the use of cedarwood in imitations of several essential oils, and of the use of cedarwood derivatives in some specialties.

This article will address soap fragrances, of which cedarwood and its derivative are a part. Cedarwood is a good fixative; it has a rounding effect on the odor of other perfume components and does not discolor in soap.

Introduction

Soap perfumes of the past could be classified in the following categories:

Single flower types: This category includes carnation, chrysanthemum, lilac, muguet, gardenia, magnolia, rose, sweet pea, violet, and so forth.

Established soap fragrance types: This category includes almond, cucumber, lavender, lily-milk, palmolive, pine, reuter, sandalwood and Windsor, among others.

Fantasy bouquets: This category includes fougere, cashmere, chypre, cuir de Russie, foin coupe, peau d'Espagne, musk and tabac.

A number of these classifications still apply today. Among these are cashmere bouquet, cucumber, lavender, palmolive, musk, rose, sandalwood and violet. Several have been updated. An example is palmolive, which contains a sandalwood-like new aroma chemical: 3,3-dimethyl-5-(2,2,3-trimethyl-3-cyclopenten-1-yl)-4-penten-2-ol (Polysantol, Firmenich).

T-1 lists some perfume materials considered as modifiers of cedarwood.

Classic Applications

Now, let us take a look at some traditional illustrative soap formulas containing cedarwood:

Cashmere Bouquet Type No. 1

cedarwood	250
bergamot	125
patchouli	100
geraniol	90
cassia	35
methyl cinnamate	25
benzoin resinoid	20
vetiver	5
	650

Chrysanthemum No. 592¹

terpineol	135
cananga	200
hydroxal S H&C	200
clove oil	70
geranium	90
spike lavender	60
bergamot synthetic	75
cedarwood Florida	40
sassafras	30
cinnamon Ceylon	10
musk ketone	10
Peru synthetic	80
	1,000

Chypre No. 7

cedarwood	180
amyl salicylate	110
ionone	45
terpinyl acetate	45
terpineol	40
benzyl acetate	30
spike lavender	25
citronella Java	25
coumarin	20
oakmoss resinoid	15
patchouli	10
vetiver bourbon	5
	550

Some materials considered as modifiers of cedarwood

T-1

For Lift and Freshness	For a Floral Note	For a Spicy Effect	For Sweetness	Fixatives
bergamot	aurantiol	cassia	coumarin	amber synthetic
lavender	jasmine synthetic	clove oil	heliotropin	musk synthetic (various types)
linalool	lily of the valley	cinnamic alcohol	vanillin	benzophenone
rosemary	geranium	eugenol methyl ether	tolu balsam	dimethylhydroquinone
sage clary	neroli synthetic			amyl salicylate
cedarleaf	rose synthetic			isobutyl salicylate
thyme	styrallyl acetate			patchouli
aldehyde C-11 (enic)	ylang ylang, or cananaga			
aldehyde C-12 (MNA)				resinoids: elemi galbanum labdanum myrrh oakmoss olibanum

Foin Coupe No. 593²

coumarin	400
terpineol	200
spike lavender	80
bergamot synthetic	120
cedarwood Florida	150
myrrh resinoid	30
musk ambrette	20
	<u>1,000</u>

Fougere No. 5

cedarwood	100
terpinyl acetate	60
benzyl acetate	40
α -amyl cinnamic aldehyde	40
lavender	40
oakmoss resinoid	40
elemi resinoid	40
coumarin	40
petitgrain	20
amyl salicylate	20
bornyl acetate	20
patchouli	20
musk xylol	20
	<u>500</u>

Musk No. 9

amyl salicylate	250
cedarwood	200
copaiba balsam	90
phenyl ethyl alcohol	70
terpineol	70
geranium bourbon	50
terpinyl acetate	50
heliotropin	45

sandalwood	45
bergamot	30
musk xylol	25
Peru balsam	25
patchouli	20
coumarin	20
vetiver bourbon	20
musk ambrette	15
	<u>1,025</u>

Opoponax for Soap³

opoponax resinoid	180
rose synthetic	60
palmarosa oil	80
patchouli	20
bergamot	250
neroli synthetic	50
cedarwood	135
Peru resinoid	200
musk xylol	25
	<u>1,000</u>

Palmolive Type No. 2

cedarwood	100
geranium bourbon	80
linalool	40
geraniol	40
patchouli	30
rosemary	25
benzyl acetate	15
musk xylol	15
cassia	10
lavender	10
clove	60
	<u>425</u>

Peau d'Espagne No. 4

amyl salicylate	185
cedarwood	170
copaiba balsam	120
terpineol	100
geraniol	100
bergamot synthetic	70
sandalwood	60
coumarin	50
musk xylol	35
linalool	30
geranium	30
methyl benzoate	20
vetiver	20
bouleau rectified (birch tar)	10
	1,000

Pine No. 10

pine needle oil	250
bergamot synthetic	75
ionone	40
cedarwood	40
dimethyl hydroquinone	25
geranium synthetic	25
amber synthetic	5
	460

Rose Geranium No. 8

geranium bourbon	200
geraniol	60
rose synthetic	40
eugenol	40
cedarwood	20
musk xylol	20
musk ambrette	10
Peru balsam	10
guaiaacwood	10
	410

Cedarwood is a good fixative; it has a rounding effect on the odor of other perfume components and does not discolor in soap.

Sandalwood No. 3

cedarwood	150
copaiba balsam	100
sandalwood EI	100
geraniol	100
heliotropin	25
geranium bourbon	15
ionone	10
	500

Violet Bouquet No. 6

ionone	185
cedarwood	100
guaiaacwood	50
geranium	50
benzyl acetate	50
clove	25
musk xylol	25
vetiver	12
vanillin	3
	500



Due to the dermatological considerations, certain materials in today's soap perfumes are restricted in percentage used, or may have to be specially processed; other materials are prohibited, according to IFRA's recommendations.

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Dermatological Considerations

Due to the dermatological considerations, certain materials in today's soap perfumes are restricted in percentage used, or may have to be specially processed; other materials are prohibited, according to IFRA's recommendations. A few examples of such perfume materials are:

Bergamot: This material is restricted because of its phototoxicity to 0.4 percent in consumer products.

Cassia: This ingredient is limited to 1 percent in a fragrance compound.

Cinnamic alcohol: This material is restricted to 0.8 percent in consumer products.

Hydroxycitronellal: This ingredient is limited to 5 percent in a fragrance compound.

Musk ambrette: This material is unequivocally prohibited.

Oakmoss: This ingredient is restricted to 0.6 percent in consumer products.

Opoponax: This material may only be obtained from the gum by solvent extraction or steam distillation.

Peru balsam: This ingredient may only be used as an extract or distillate, limited to 4 percent in consumer products.

Aroma Chemicals in Contemporary Soap Perfumes

In earlier soap and perfume formulas, more natural perfume materials were used. Later, newer aromatic chemicals were introduced, such as acetals, which included nonylacetaldehyde diethyl acetal and lauric aldehyde dimethyl acetal. Carbinols with interesting background odor tonalities began to find use, including benzyl ethyl carbinol and benzyl isopropyl

carbinols. Among the other later aroma chemicals were isocyclocitral (replacing citral) and dihydromyrcenol, which imparts a sweet lime-like and floral odor. Other veteran materials include Sandela (Givaudan) and Vertenex (IFF), and various jasmine and rose specialties, including Hedione (Firmenich) and Damascenone (Firmenich).

Today's soap fragrances contain a variety of aroma chemicals, many of which have multifaceted profiles and complicated

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structural formulas. For illustration, let us take a look at a few selected aroma chemicals.

Woody: This category includes:

- α -cedrene epoxide, which possesses a woody, amber, sandalwood and tobacco odor tonality;
- acetyl octahydro tetramethyl naphthalene (Iso E Super, IFF), a complex mixture of isomeric ketones with a woody, amber and floral odor tonality;
- cyclododecyl methyl ether (Palisandin, Haarmann & Reimer), a cedarwood-like material with earthy patchouli and tobacco notes;
- p-tertiary butyl cyclohexyl acetate, which possesses a woody and floral odor tonality;
- and trim ethylcyclohexenyl pentenone (methyl ionone α iso, two main isomers, Quest), a material with a woody, tobacco and violet odor.

Citrus, green, herbal: This classification covers:

- mixed 3,5-dimethyl- and 2,4-dimethyl-3-cyclo hexene nitriles — a combination of certain fractions impart a strong green, cuminic note with an herbal, cinnamic, woody background, while in woody perfume compositions they act as bas modifiers;⁴
- 3,7-dimethyl-6-octene nitrile (citronellyl nitrile), which has a citrus odor with a green nuance;
- and 2-methyl-6-methylene-7-octen-2-yl acetate (three main isomers), of which Quest's Neobergamate Forte possesses a fresh citrus lime odor.

Floral: This category includes:

- ethyl-2-acetyloctanoate (Jessate, Quest), which imparts a floral, jasmine, fruity, herbaceous and green odor;

- tetrahydroalloocimenol (Tetralol, Millennium), which consists mainly of tetrahydrolinalool and tetrahydromyrcenol, imparting a floral, citrus odor tonality;
- and 6-butyl-3,6-dihydro-2,4-dimethyl-2H-pyran (three isomers), such as Quest's Gyrane, which imparts a geranium odor with rose and mint notes.

Applications

Although the vogue in soap perfumes is continually changing, there always remain a few relevant older traditional soaps, as illustrated previously. The rose scent also continues to be popular, as exemplified by a rose bouquet containing cedarwood in Dove soap. However, more sophisticated soap perfume types, adapted from fine fragrances, have been developed. Newer herbal, green, fruity fragrances include cedarwood, cedrol, cedryl acetate and cedryl methyl ether.

Today's soap fragrances contain fewer essential oils, but cedarwood remains part of contemporary soap perfumes. Additionally, its derivatives contribute a woody note in addition to amber, tobacco and musky odor tonalities. These materials find application in various citrus, floral, green, woody and semi-oriental fragrances. They are also compatible with modern papaya, avocado and raspberry fruity notes.

It must then be concluded that cedarwood and its derivatives are likely to remain valuable soap perfume components for the foreseeable future.

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