

Sweet Pea (Pois de Senteur) in Perfumery

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Sweet Pea is a late comer to perfumery, compared with jasmin, rose, violet and other florals.

No natural sweet pea flower oil is available, and therefore only synthetic sweet pea compounds are used in perfumery.

Early sweet pea compounds were built on a base of benzylidene acetone and contained bromstyrol which was later replaced by cinnamic alcohol. Civet and musk tinctures were used as fixatives.

Sweet pea compounds have many variations. In some, a rose-honey complex is added. In others, a floral base comprising jasmin, lily of the valley and orange flower compounds or their components, as well as a small amount of violet component is used. Aurantiol sometimes replaces the orange flower compound. Amyl salicylate, benzyl salicylate and benzophenone may be included.

Botanical Origin: Sweet pea, *Lathyrus odoratus*, originated in Europe.¹

Type of oil, Yield, Method of Production: Steam distillation did not yield any oil from the sweet pea flowers. Very poor results were obtained on treatment of the flowers by enfleurage (cold fat) or maceration in hot fat.²

Chemical Composition: Since no natural sweet pea flower oil can be obtained, its composition is unknown.

Synthetic Compounds: According to the Cerebelaud odor classification, sweet pea belongs to the orange flower odor group.³

Sweet Pea

Sweet Pea Base No. 196⁴

	%
Jasmin compound	168.0
Hydroxycitronella	133.0
Neroli compound	125.0
Terpineol extra	125.0
Phenyl ethyl acetate	124.0
Phenyl ethyl phenyl acetate	100.0
Benzylidene acetone	75.0
Phenyl ethyl alcohol	55.0
Nerol	45.0
Vanillin	35.0
Amyloxyisoeugenol	10.0
Eugenol	5.0

Sweet Pea No. 12⁵

	%
Linalool	23.0
Phenyl ethyl alcohol	15.0
Heliotropin	10.0
α -Amyl cinnamic aldehyde	5.0
Benzyl acetate	5.0
Phenyl propyl alcohol	5.0
Ylang	5.0
Dimethyl benzyl acetate	5.0
Phenyl ethyl acetate	5.0
Cinnamic alcohol	5.0
Aurantol	5.0
Neroli oil	3.0
Hydrolat Fl. d'oranger, partially decolorized	3.0
Anisic aldehyde	2.0
Rose Otto	1.0
Phenylacetaldehyde	1.0
Rosacetol Givaudan	1.0
Musk ambrette	1.0

Sweet Pea I⁶

	%
Phenyl ethyl alcohol	200.0
Cinnamic alcohol	200.0
α -Amyl cinnamic aldehyde	125.0
Benzyl acetate	70.0
Neroli oil	70.0
Dimethyl benzyl carbonyl acetate	50.0
Phenyl ethyl acetate	50.0
Aurantol	30.0
Phenyl acetaldehyde	3.0
Aldehyde C-9	2.0
Aldehyde C-10	2.0
Aldehyde C-12	2.0

Sweet Pea Base No. 194⁷

	%
Jasmin synthetic	300.0
Orange flower synthetic	280.0
Phenyl ethyl acetate	280.0
Vanillin	115.0
Undecalactone, aldehyde C-14	25.0

Sweet Pea No. 13 for Soap⁸

	%
Petitgrain	20.0
Cananga	10.0
Geraniol	10.0
Phenyl ethyl alcohol	10.0
α -Terpineol	10.0
Benzylidene acetone	10.0
β -Methyl naphthyl ketone	10.0
Linalool	9.0
Ionone AB	5.0
Rosacetol Givaudan	2.0
Musk ambrette	2.0
Geranyl acetate	1.0
Styrallyl acetate	1.0

Other variations of sweet pea compounds are less floral and more pungent. Some of these may contain a green lily of the valley/lilac base. For the green-pungent note, phenyl acetaldehyde or its dimethyl acetal, dimethyl benzyl carbonyl acetate, methyl acetophenone and styrallyl acetate are used.

Bergamot, sweet orange oil and aldehydes C-9, C-10, C-11, and C-12 are usually employed for the top note.

Of the absolutes, cassie, jasmin, jonquil, mimosa, orange flower and tuberose may be mentioned.

Among the fixatives are musk ambrette, coumarin, guaiacwood, heliotropin, ionones, isobutyl benzoate, isobutyl phenyl acetate, vanillin and vetiverol. Of the naturals, olibanum, styrax and tolu resinoids may be mentioned.

Sweet pea compounds for cream are mostly built on an orange flower base; some contain aldehyde C-14.

Benzylidene acetone gave very good results in early soap compounds. It was usually combined with cinnamic alcohol and a honey base. Among aromatics then used were amyl cinnamic aldehyde, anisic aldehyde, benzyl acetate, geraniol and its formate ester, ionone, linalool, nerol, phenyl ethyl alcohol, methyl acetophenone, methyl naphthyl ketone, musk ambrette, phenyl propyl alcohol, phenyl acetaldehyde dimethyl

Sweet Pea

Sweet Pea No. 1

A lighter floral type sweet pea fragrance based on lily of the valley.

	%
Lily of the valley compound	332.0
Phenyl ethyl alcohol	80.0
Benzylidene acetone	40.0
Linalool	40.0
Musk xylol	40.0
α -Ionone	40.0
Ylang	24.0
Dimethyl benzyl carbonyl acetate	20.0
Methyl acetophenone	16.0
Styrallyl acetate	16.0
Phenyl ethyl acetate	12.0
Coumarin	12.0
Aldehyde C-12 (MNA) 10%	12.0
Methyl heptine carbonate	8.0
Musk ambrette	8.0

Sweet Pea No. 2

A pungent-green type compound without benzylidene acetone for use as a component of other fragrances.

	%
Phenylacetaldehyde, 10%	318.0
Hydroxycitronellal	90.0
Methyl acetophenone	60.0
Amyl salicylate	60.0
Terpineol	60.0
Ionone	30.0
Methyl heptine carbonate	12.0

acetal, styrallyl acetate and terpineol. Of the natural oil, cananga, cloves, geranium and petigrain may be cited. Helicrysum oil was among the more unusual natural components used.

The following early and later conventional sweet pea formulas may serve as examples.

Additional conventional sweet pea formulas illustrating the variety of sweet pea compounds are shown in the examples numbered 1-6.

Due to dermatological consideration, many components of sweet pea compounds had to be eliminated, among them bromstyrol, benzylidene acetone, coumarin, heliotropin and musk ambrette. Other ingredients had to be used in limited amounts, i.e., cinnamic alcohol, isoeugenol, dimethyl anthranilate, methyl heptine carbonate. Some components could be used only of high purity or specially processed; among such are ionones, bergamot and styrax; some components had to be used with quenchers, i.e., phenyl acetaldehyde.

Sweet Pea No. 3

A more expensive soap fragrance on the orange flower side for color soap.

	%
Linalool	90.0
Amyl salicylate	80.0
Ionone	60.0
Benzophenone	60.0
p-Methyl acetophenone	40.0
Methyl naphthyl ketone	40.0
Ylang	40.0
α -Amyl cinnamic aldehyde	40.0
Coumarin	20.0
Rose compound	20.0
Indol, 1%	20.0
Styrax resinoid	8.0

In more modern sweet pea compounds, new jasmin and rose aromatic chemicals are added, i.e., methyl jasmonate, jasmin lactone, pentyl cyclopentanone, damascenols and rose oxide. Hydroxycitronellal may be replaced by cyclamen aldehyde, Lyril,^a Lilial^b or newer aldehydes of a lily of the valley odor, i.e., Dupical,^c Oncidal,^d etc. The aryl carbinols can be used to advantage, and the newer methyl ionone derivatives are replacing ionones.

In the pungent notes, Benzacetex^a is offered as a nonsensitizing replacement of benzylidene acetone. Phenyl acetaldehyde is difficult to replace, as is its acetal of a much milder odor. Hyacinth Body and Hyacinth Body No. 3,^a as well as a combination of newer oxyacetaldehydes may be helpful.

In the violet odor tonality, 2-trans-6-cis-nonadien-1-al, 2-nonyl-1-al dimethyl acetate and 2,6-nonadienol are used as replacements for the violet leaf absolute and methyl heptine carbonate.

Hexenol and its esters, especially the salicylate and benzoate, linalool oxide, neroli oxide and ocimene are useful components. Among nitriles, cinnamyl nitrile and nonyl nitrile may be mentioned, the latter of an aldehydic and orange odor.

Of the newer aldehydes, trans-2-decenal of a citrus-orange odor, and trans-2-nonenal of an orris-like odor may be cited.

^aIFF

^bGivaudan

^cNaarden

^dDragoco

Sweet Pea No. 5

A variation of a sweet pea fragrance based on jasmin/lily of the valley/orange containing jonquil absolute.

	%
Benzyl acetate	120.0
Linalool	75.0
Methyl anthranilate	60.0
Phenyl ethyl alcohol	35.0
Hydroxycitronellal	30.0
α -Amyl cinnamic aldehyde	25.0
Benzyl salicylate	25.0
Jonquil absolute	25.0
Resinoid tolu	20.0
Lilac compound	20.0
Heliotropin	15.0
Petitgrain terpeneless	6.0
α -Ionone	6.0
Methyl cinnamate	5.0
Phenyl acetaldehyde, 10% in phenyl ethyl alcohol	5.0
Anisic aldehyde	5.0
Methyl heptine carbonate, 10%	5.0
Vanillin	3.0

In the group of lactones, dodecadiene-4-olide, called Tuberose lactone, may provide a tuberose absolute note.

Alkoxy pyrazine, especially isobutyl methoxy pyrazine found in petitgrain oil, may find application in the orange-neroli odor part of sweet pea compounds.

Macrocyclic musks, civettone and a variety of newer synthetic musk compounds are used as fixatives.

Application

The sweet pea fragrances have been successful in their time. Among the more famous, *Pois de Senteur* by Caron, built on honey and orange flower odor tonalities, may be cited.

In general, the sweet pea odor is not universally liked, and it is more appreciated in America and England than in other countries of the world.

Sweet pea compounds, especially the more pungent-green variety, are valuable components of sophisticated heavy floral fragrances. A good example of such fragrance type is *White Shoulders*.

Sweet pea compounds also find application in creams, lotions and soaps.

An interesting olfactory accord may be obtained in combining the floral pungent odor of sweet pea with the spicy odor of carnation, which is but one of the possibilities of the use of sweet pea in future fragrances.

Sweet Pea No. 6

Based on lilac and violet with a touch of tuberose for use in soap or as a component in other fragrances.

	%
Lilac compound	500.0
Methyl heptine carbonate, 10%	100.0
Linalool	80.0
Phenyl acetaldehyde, 10% in phenyl ethyl alcohol	60.0
p-Methyl acetophenone	30.0
Coumarin	30.0
Olibanum resinoid	20.0
Lemongrass	20.0
Methyl naphthyl ketone	20.0
Aldehyde C-11, 10%	15.0
Tuberose compound	10.0

Sweet Pea No. 6

A more complex floral sweet pea fragrance version comprising aldehydes.

	%
Hydroxycitronellal synthetic	150.0
Musk ambrette	135.0
Benzyl acetate	125.0
Hydroxycitronellal	125.0
Linalool	50.0
Neroli compound	50.0
Bergamot	50.0
Methyl naphthyl ketone	45.0
α -Amyl cinnamic aldehyde	40.0
Heliotropin	30.0
Aurantol Givaudan	30.0
Methyl cinnamate	25.0
Linalyl acetate	25.0
Benzyl acetate	25.0
Guaiacwood	25.0
Methyl anthranilate	25.0
Orange sweet oil	15.0
Aldehyde C-8, 10%	20.0
Aldehyde C-9, 10%	15.0
Aldehyde C-10, 10%	15.0

References

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