

## The Fine Art of Perfumery: Instructions and Precautions

1. The extracts and tinctures before you have been diluted according to the Victorian perfume manuals (Piesse, Askinson, etc.). The size of the bottle was determined by the price of the material, the projected use, and the preparation of the most effective dilution.
2. Part of your lab fee covers the fancy bottle, the part covers the extracts and tinctures. Please, primarily because of the expense, I have allotted about  $\frac{1}{4}$ - $\frac{1}{2}$  of each bottle for the entire class. Please do not empty the entire frangipani bottle into your bottle and call it a finished perfume! Some of the natural products are expensive (ud', tuberose, cassie, jasmine), so only small vials are given; please use these judiciously.
3. Do not allow the extracts and tinctures to come in contact with the rubber stopper or your own vial. Squeeze the stopper gently to drop, avoiding the sides of the vial.
4. Most bottles are labeled on their sides with the perfume note class (the first number) and the estimated duration of the evaporation class (the second number). For the evaporation class, 1-14=top notes, 15-70=middle notes, and 73-100=base notes.
5. Become aware of the potential topical toxicity of essential oils. Natural is not synonymous with safe. The IFRA recommendations are attached, and you will not see any bergamot, lemon verbena, or styrax oils out for this reason. However, while the available notes are not documented to cause any problems in 99% of the population, just to be sure, test a small amount of your product on a small patch of skin just to be sure that YOU don't react.
6. First of all, before you even sit down in front of the extracts and tinctures, decide upon a theme of your choice. Do you have any impressions that you want to present in your perfume? Does the recipient of the perfume prefer any note over any other? Write down first your *modus operandi*!
7. Using the methods outlined in the lecture, add the extracts and tinctures to fill approximately  $\frac{1}{4}$ - $\frac{1}{2}$  of your bottle. Dilute with the perfume diluent, if necessary, to fill the entire bottle. Dilution may be necessary because of problems of precipitation in the use of many saturated solutions in 95% ethanol.
8. Your perfume will not really achieve its final characteristic note until 1-6 months after preparation. Do not be surprised if it changes in quality (to the better, usually).
9. The education of a perfumer encompasses many years in an apprentice-type situation. Many perfumers consider a lifetime as too short for their education. Thus, this is only a VERY brief introduction. After you try to mix some of the extracts and tinctures, however, I hope that you will appreciate the commercial products a little better, and you will be a better educated consumer.

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## Suggested Modus Operandi

The suggested mode of action is to create an "accord" around which you will weave the base notes, then the modifiers (middle notes), and then the top notes. The purpose of this workshop is not to reproduce Chanel No. 5! If you want a cheap Opium, then find one of the street vendors that sell illegal knockoffs (#123-XYZ smells like...and sometimes contain urine and/or antifreeze). Respect the expertise of the master perfumer who created your favorite! Besides, you lack many of the key ingredients which set Un Jardin Sur Le Nil apart from the rest (mostly because of the cost and/or difficulty of use).

Rather, I suggest that you use your favorite as an inspiration. For example, to create an Opium-inspired perfume of your own creation, use the published principal notes of Opium as a guide. Opium is an Oriental perfume, which means that it is marked by an overpowering sweet, heavy fragrance due to over-emphasis of the base notes. Thus, benzoin, tolu, and vanilla should be the key notes to begin. Accessory base notes are sandalwood, patchouly, frankincense, amber, and/or musk. Now, add some special base notes of your own choosing. Weave upon this base the principal modifier of carnation. Add accessory modifiers of rose, ylang-ylang, cinnamon, jasmine, and/or orris. Be sure to add some modifiers of your own choice. The top notes will be primarily aldehydes with orange, pimento, and/or bay. Add top notes of your own choice. Remember, the published notes are only notes, not actual ingredients. Thus, "cinnamon" could be cinnamon, cinnamon leaf, cassia, or cinnamic aldehyde. Likewise, do not look for "amber" (the note class derived from ambergris) in the available ingredients; remember that amber notes are encompassed by labdanum, clary sage, Ambroxan, etc., not amber itself, which usually smells smoky.

Another *modus operandi* could be to consult published formularies. Some 19<sup>th</sup> and 20<sup>th</sup> century formularies will be displayed. The formularies will give formulas for the classes, not exact formulas for a particular perfume. I recommend that you consult the formulary only for inspiration. For example, a published Oriental perfume is as follows:

<u>base notes</u>	<u>middle notes</u>	<u>top notes</u>
patchouly oil=40 g	oil of myrrh=80 g	lavender oil=150 g
angelica oil=10 g	cardamon oil=20 g	bergamot oil=100 g
costus oil=10 g	rose oil=25 g	p-cresyl phenylacetate=25 g
C <sub>9</sub> -C <sub>10</sub> -aldehyde=10 g	amyl cinnamic	neroli=275 g
C <sub>10</sub> -C <sub>12</sub> -aldehyde=15 g	aldehyde=100 g	

Guided only by his imagination, one student created a Youth Dew-inspired perfume:

<u>base notes</u>	<u>middle notes</u>	<u>top notes</u>
vanillin=3 drops	styrax=3 drops	lemon=6 drops
benzoin=3 drops	jasmine=3 drops	bergamot=3 drops
tolu=3 drops	patchouly=6 drops	bois de rose=3 drops
	rose=3 drops	
	orris=3 drops	

Another student created an Oriental perfume of her own:

<u>base notes</u>	<u>middle notes</u>	<u>top notes</u>
sandalwood=3 drops	rose geranium=2 drops	lemongrass=2 drops
musk ketone=3 drops	orris=2 drops	bois de rose=1 drop
extrait of civette=3 drops	ylang-ylang=2 drops	cedarwood=2 drops
	jasmine=2 drops	
	frangipani=2 drops	
	muguet=2 drops	

Another student created a floral splash (Floral Dew):

<u>base notes</u>	<u>middle notes</u>	<u>top notes</u>
muguet=5 drops	rosemary=5 drops	neroli=10 drops
hydroxycitronellal=5 drops	ylang-ylang=5 drops	bois de rose=5 drops
	rose geranium=5 drops	
	frangipani=5 drops	

Another student created a Sweet Honesty-inspired perfume (Mutsie):

<u>base notes</u>	<u>middle notes</u>	<u>top notes</u>
vanillin=10 drops	rose=10 drops	bois de rose=3 drops
C-M aldo key=1 drop	carnation=10 drops	lilac=3 drops
C-M musk key=1 drop	heliotropin=10 drops	
cypress=1 drop	ylang-ylang=3 drops	
	orris=3 drops	
	jasmine=3 drops	

These still need work, but creations of these sorts can serve as bases for further development.

**Potential notes available:** the oils, etc. will be arranged alphabetically for easy access, but here are their note classes (first number) and estimated evaporation numbers (second number; 1-14=top notes, 15-70=middle notes, 73-100= base notes)) from some published sources (it is really, really difficult and somewhat elusive to give evaporation numbers for naturals, but this may be helpful for beginners). Because of the difficulty of using synthetics by beginners, the emphasis here is on naturals, but some elusive scents from synthetics are included. FYI, the quality of the available naturals was determined by the cost of this workshop; the use of some top quality naturals (or modifications thereof) would require a fee of several hundred dollars (or more) each, so I have attempted a compromise between quality and cost.

aldo key, Caswell-Massey 15/100  
allspice oil 6/ca. 6  
basil oil 12/14  
benzoin tincture 1/100  
bois de rose oil 16A/2  
boronia absolute 16G/ca. 21  
calamus oil 6/18  
carnation compounded base 16F/ca. 22  
carrot seed oil 6/11  
cassie absolute 16K/73  
cedarwood, Himalayan oil 2/8  
Chypre 15+7/43  
cinnamon leaf oil 6/22  
clove buds, Madagascar oil 6/22  
coriander oil 6/3  
coumarin 8/100  
cypress oil 2/100  
davana oil 18/ca. 100  
fir, balsam leaf oil 18/ca. 21  
flouve absolute 8/100  
Fougere 8/43  
frankincense tincture 1/100  
frangipani compounded based 16H/ca. 93  
galbanum gum 11/11  
geranium, rose oil 16A/24  
ginger oil 6/ca. 11  
grapefruit oil 14/ca. 8  
heliotropin 10/15  
hyacinth compounded base 16J/100  
beta-ionone 16G/21  
jasmine absolute 16C/43  
jasmine, artificial 16C/ca. 43  
labdanum resin absolute 5/100

lavender, French oil 17/4  
lavender, Spanish oil 17/4  
lemongrass oil 14/14  
lilac compounded base 16D/ca. 5  
muguet compounded base 16B/ca. 80  
musk key, Caswell-Massey 3/100  
myrrh tincture 1/21  
narcissus, artificial 16I/11  
neroli absolute 16E/50  
nutmeg oil 6/11  
orange, sweet oil 15/11  
ox-eye daisy absolute 19a/ca. 23  
palmarosa oil 16A/14  
parsley oil 17/23  
patchouli oil 2/100  
petitgrain oil 14/12  
phenylethyl alcohol 16A/4  
pine needle oil 18/ca. 21  
rose, Bulgarian absolute 16A/15  
rosemary oil 18/21  
sage, clary oil 5/20  
sage, Dalmatian oil 17/4  
sandalwood, Mysore oil 2/100  
spearmint oil 13/3  
sweetfern absolute 6/ca. 11  
tabac absolute 9/ca. 73  
tangerine oil 14/11  
tarragon oil 12/14  
thyme, white oil 18/7  
thuja oil 18/ca. 7  
tuberose absolute 16H/43  
ud'oud/agarwood/aloeswood oil 2/100  
vanillin 10/100  
vetiver oil 2/100  
violet compounded base 16G/21  
violet leaf oil 16G/18  
wisteria compounded base 16H/43  
ylang-ylang oil 16H/ca. 24

## Code of Practice, International Fragrance Association (IFRA)

IFRA has created industry guidelines to restrict ingredient usage as a result of oral toxicity, acute percutaneous toxicity, skin irritation potential, skin contact sensitization potential and/or phototoxicity and skin photosensitization potential. New fragrance ingredients for which no adequate in-use experience exists should be used only after satisfactory evaluation by competent toxicologists. Natural ingredients are highlighted. Please remember that potential toxicity will vary by not only your genes but also previous exposure and age; this will be further accentuated by the combination of heat and light, *i.e.*, photosensitization (a note to holistic aromatherapists who might apply steam wraps with oils). In spite of these precautions, a small percentage of the human population may still react, so always test a topically applied material first on a small patch of skin. These rules will change and become more restrictive, *e.g.*, the EU is now attempting to limit the use of lavender because of the formation of toxic oxides (apparently not a problem in aerosols where the oil is free of air and the propellant inhibits oxidation), and phthalates and nitro musks may (or may not?) be co-carcinogens (the scientific jury is still out).

acetylated vetiver oil: must be allergen-free

acetyl ethyl tetramethyl tetralin (AETT): should not be used as a fragrance ingredient

5-acetyl-1,1,2,3,3,6-hexamethyl indan: limit to 10% in fragrance compounds

acetyl isovaleryl: should not be used as a fragrance ingredient

**allantroot oil (elecampane oil): should not be used as a fragrance ingredient**

allylestere: limit to less than 0.1% in fragrance compounds

allyl heptene carbonate: limit to 0.01% in fragrance compounds

allylisothiocyanate: should not be used as a fragrance ingredient

amylcyclopentenone (2-pentyl-2-cyclopenten-1-one): limit to 0.5% in fragrance compounds

**angelica root oil: limit to 3.9% in fragrance compounds**

anisylidene acetone: should not be used as a fragrance ingredient

benzene: maintain as low as possible and limit to 10 ppm in fragrance compounds

benzylidene acetone: should not be used as a fragrance ingredient

**bergamot oil: limit to 2.0% in fragrance compounds**

**bitterorange oil, expressed: limit to 7.0% in fragrance compounds**

p-tert-butylphenol: should not be used as a fragrance ingredient

carvone oxide: use only in conjunction with materials preventing sensitization, such as spearmint oil

**cassia oil: limit to 1% in fragrance compounds**

**chenopodium oil: should not be used as a fragrance ingredient**

cinnamic alcohol: limit to 4% in fragrance compounds

cinnamic aldehyde: use only in conjunction with materials preventing sensitization, such as equal weights of eugenol or d-limonene

cinnamic aldehyde-methyl anthranilate Schiff base: use only in conjunction with materials preventing sensitization, such as one part eugenol to two parts Schiff base

**cinnamon bark oil, Ceylon: limit to 1% in fragrance compounds**

citral: use only in conjunction with materials preventing sensitization, such as 25% d-limonene, or mixed with citrus terpenes or a-pinene

**costus root oil, absolute and concrete: should not be used as a fragrance ingredient**

**cumin oil: limit to 2% in fragrance ingredients**

cyclamen alcohol: should not be used as a fragrance ingredient

diethyl maleate: should not be used as a fragrance ingredient

dihydrocoumarin: should not be used as a fragrance ingredient

2,4-dihydroxy-3-methyl-benzaldehyde: should not be used as a fragrance ingredient

4,6-dimethyl-8-t-butyl coumarin: should not be used as a fragrance ingredient

dimethylcitrate: should not be used as a fragrance ingredient

3,7-dimethyl-3-octen-1-ol (6,7-dihydrogeraniol): should not be used as a fragrance ingredient

ethyl acrylate: should not be used as a fragrance ingredient

farnesol: must have a minimum of 96% farnesol isomers

**fig leaf absolute: should not be used as a fragrance ingredient**

furfurylideneacetone: should not be used as a fragrance ingredient

trans-2-heptenal: should not be used as a fragrance ingredient

hexahydrocoumarin: should not be used as a fragrance ingredient

trans-2-hexenal: limit to 0.01% in fragrance compounds

trans-2-hesenal diethyl acetal: should not be used as a fragrance ingredient

trans-2-hexenal dimethyl acetal: should not be used as a fragrance ingredient  
a-hexylidene cyclopentanone: limit to 8% in fragrance compounds  
hydroabietyl alcohol: should not be used as a fragrance ingredient  
hydroquinone monoethylether: should not be used as a fragrance ingredient  
hydroquinone monoethylether: should not be used as a fragrance ingredient  
hydroxycitronellal: limit to 5% in fragrance compounds  
isoeugenol: limit to 1% in fragrance compounds  
6-isopropyl-2-decalol: should not be used as a fragrance ingredient  
**lemon oil, cold pressed: limit to 10% in fragrance compounds**  
**lemon verbena absolute and oil: see verbena**  
**lime oil, cold pressed: limit to 3.5% in fragrance compounds**  
**marigold oil and absolute (Tagetes oil and absolute): limit to 0.25% in fragrance compounds**  
menthadienyl formate: limit to 0.5% in fragrance compounds:  
7-methoxycoumarin: should not be used as a fragrance ingredient  
a-methyl anisylidene acetone: should not be used as a fragrance ingredient  
6-methyl coumarin: should not be used as a fragrance ingredient  
7-methyl coumarin: should not be used as a fragrance ingredient  
methylcrotonate: should not be used as a fragrance ingredient  
4-methyl-7-ethoxycoumarin: should not be used as a fragrance ingredient  
methyl heptadienone (6-methyl-3,5-heptadienone): limit to 0.01% in fragrance compounds  
methyl heptene carbonate and ethyl heptene carbonate: limit to 0.01% in fragrance compounds  
p-methylhydrocinnamic aldehyde: limit to 1% in fragrance compounds  
methyl methacrylate: should not be used as a fragrance ingredient  
methyl N-methyl anthranilate: limit to 50% in fragrance compounds  
3-methyl-2-(3)-nonenenitrile: limit to 1% in fragrance compounds  
methyl octene carbonate: limit to 0.01% in fragrance compounds  
**musk ambrette: limit to 4% in fragrance compounds**  
nitrobenzene: should not be used as a fragrance ingredient  
nootkatone: limit to 1% in fragrance compounds with 4% d-limonene  
**oak moss absolute and resinoid (concrete): limit to 3% in fragrance compounds**  
1-octen-3-yl acetate: limit to 1.5% in fragrance compounds  
**opopanax: use only from *Commiphora erythraea* var. *glabrescens***  
pentylidene cyclohexanone: should not be used as a fragrance ingredient  
perilla aldehyde: limit to 0.5% in fragrance ingredients  
**Peru balsam: use only from *Myroxylon pereirae***  
phenylacetone (methyl benzyl ketone): should not be used as a fragrance ingredient  
**Pinaceae family oils: use only oils with peroxides level less than 10 millimoles peroxide/liter**  
phenylacetaldehyde: use only in conjunction with materials preventing sensitization, such as phenylethylalcohol or dipropylene glycol  
propylidene phthalide: limit to 0.05% in fragrance compounds  
pseudoionone (2,6-dimethylundeca-2,6,8-trien-10-one): limit to 2% in fragrance compounds  
pseudomethylionones: should not be used as a fragrance ingredient  
**rue oil: limit to 3.9% in fragrance compounds**  
safrole, isosafrole, dihydrosafrole: should not be used as a fragrance ingredient  
**sassafras oil: safrole content should not exceed 0.05% in fragrance compounds**  
**savin oil: use only from *Juniperus phoenicea*, not *J. sabina***  
sclareol: use only if minimum melting point is 96°C.  
**styrax, American and Asian: should not be used as fragrance ingredients**  
**verbena absolute: limit to 1% in fragrance compounds**  
**verbena oil: should not be used as a fragrance ingredient**