

Perfumes

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Defination:

A perfume may be defined as a mixture of pleasant smelling substances incorporated into a suitable solvent.

Earlierly, all the substances used in perfumary were of natural origin e.g. products of plant metabolism, & are found in leaves, fruits, flowers, bark, roots & rhizomes of plants. After this synthetic compounds having the same odour as natural were discovered & recently scientists synthesized a variety of compounds having wide range of fragrances.

→ Chemically a perfume is composed of three main ingredients:

1) Vehicle or Solvent

2) Fixative

3) Odoriferous substances.

Characteristic of good perfume is: Pleasant odour, persistence, stable, compatibility & non allergic.

Vehicle or Solvent:

→ The solvent is required to keep the odoriferous substance in solution.

→ A good solvent used in perfumary must be volatile, inert, non-irritant to human skin & almost odourless.

→ The most commonly used solvent is the highly refined ethyl alcohol mixed with more or less water acc. to the solubilities of the oil employed. The solvent with its volatile nature carries the odoriferous substances to the cells of the nose. The slight natural odour of the alcohol is deodorized by adding a small amount of gum benzoin or other resinous

fixatives to it & allowing to keep for a week or two.

Fixative

Generally a perfume has two or more odoriferous substances of different volatility.

In such cases, the more volatile fragment gives its odour first, then the less volatile & so on, the result is that such perfumes will give a series of impressions rather than a desired fragrance. To overcome this difficulty, a fixative is added. Fixatives are the substances of lower volatility than the perfume oils. Their main function is to equalise the rate of evaporation of the various odoriferous constituents of perfume by retarding or increasing their volatilities. All the fixatives are classified into four groups viz;

- 1) Animal fixatives (castor oil, musk, ^{musk} zibata)
- 2) Resinous "
- 3) Essential oil fixatives (clary sage, vetiver,orris)
- 4) Synthetic fixatives

Some fixatives are used only as fixative & some act as fixative as well as odoriferous substances.

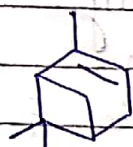
Odoriferous Substances:

Most of the odoriferous substances used in perfumery may be grouped under following headings.

- 1) Essential oils
- 2) Isolates
- 3) Synthetic & Semi synthetic

1) Essential oils: These are volatile odoriferous substances obtained from fruits, flowers, phenols, leaves & roots of various plants. They are usually mix. of diff types of comp. viz esters, alcohols

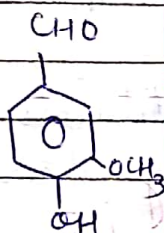
2) Isolates: These are pure chemical compounds obtained either from essential oils or other natural perfume material.



Pinene

e.g. Eugenol from the clove oil,
Pinene from turpentine

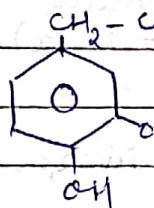
3) Synthetic & semi-synthetic: Some odorous sub. are completely synthetic whereas others are prepared from an isolate or other natural starting materials. The latter are known as semi synthetic. Some examples of semi synthetic odoriferous sub. are,



Vanillin

⇒ Vanillin prepared from eugenol (clove oil)

⇒ Ionone prepared from citral (lemon grass oil)



Eugenol

Synthesis of some synthetic perfumes.

Various synthetic compounds have been found to have musk like odour & these compounds have been widely used almost in all perfumes. These are called artificial or nitro musk.

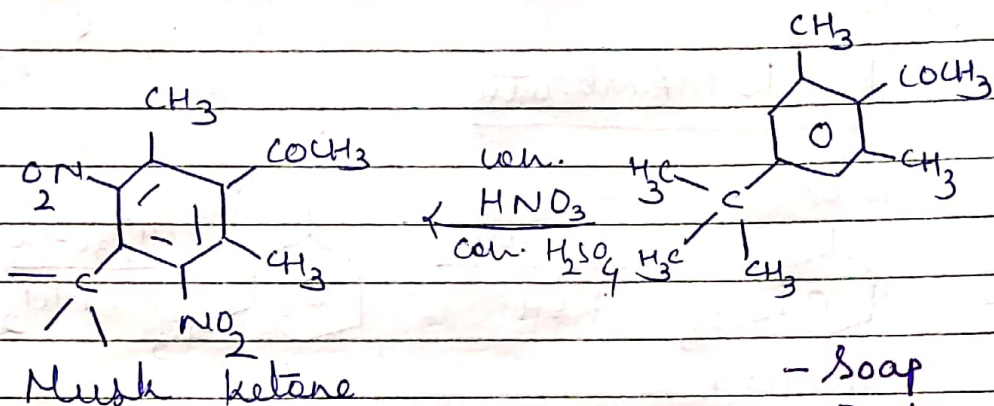
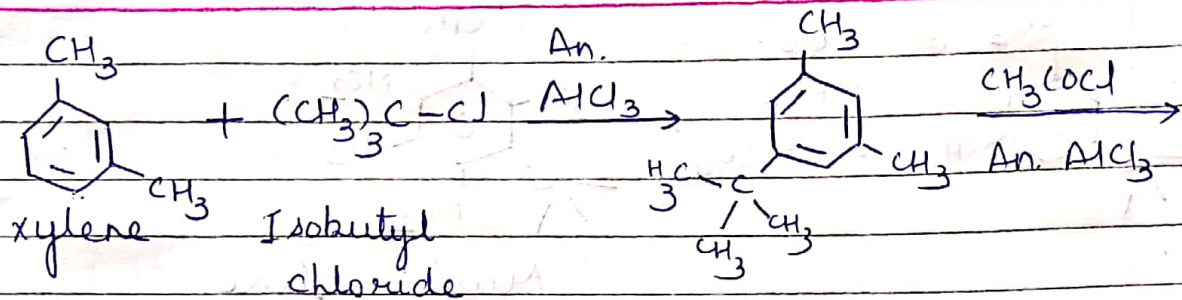
e.g. Musk xylene

Musk ketone

Musk ambrette

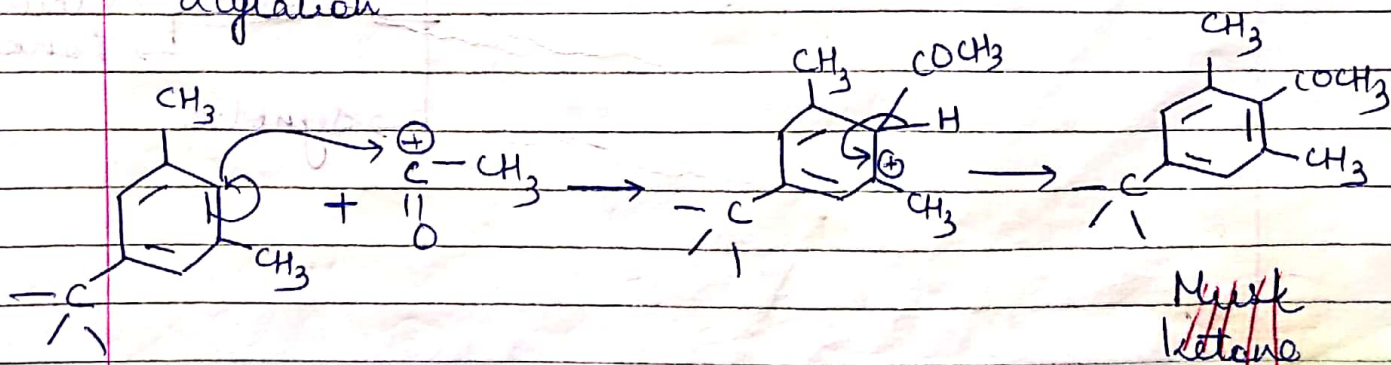
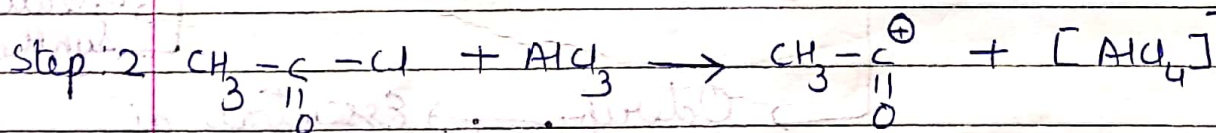
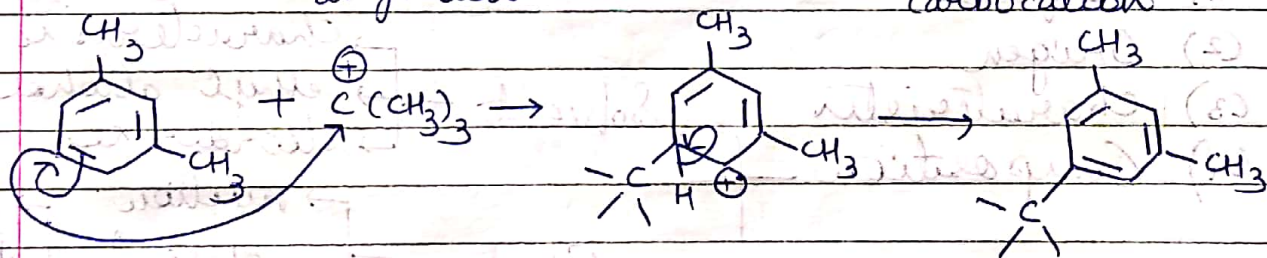
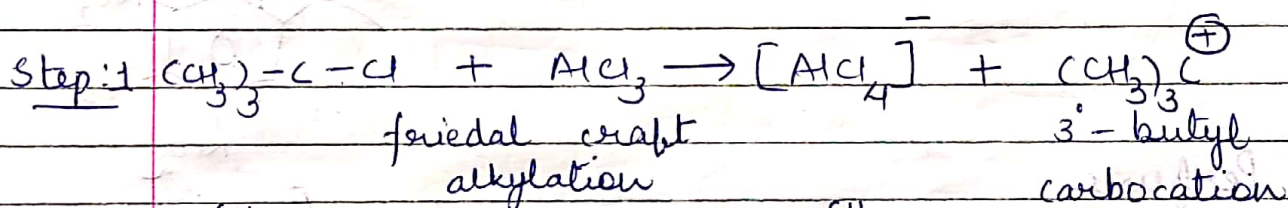
1) Musk xylene & Musk ketone

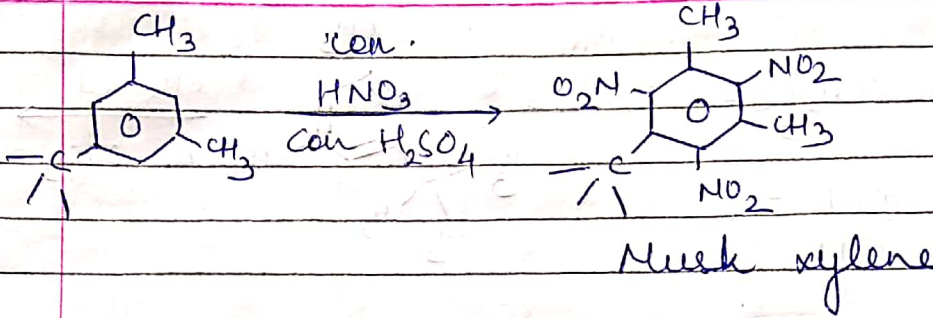
These are synthesized from m-xylene. Musk xylene has powerful musk like odour. Among the nitro comp musk xylene has been widely used.



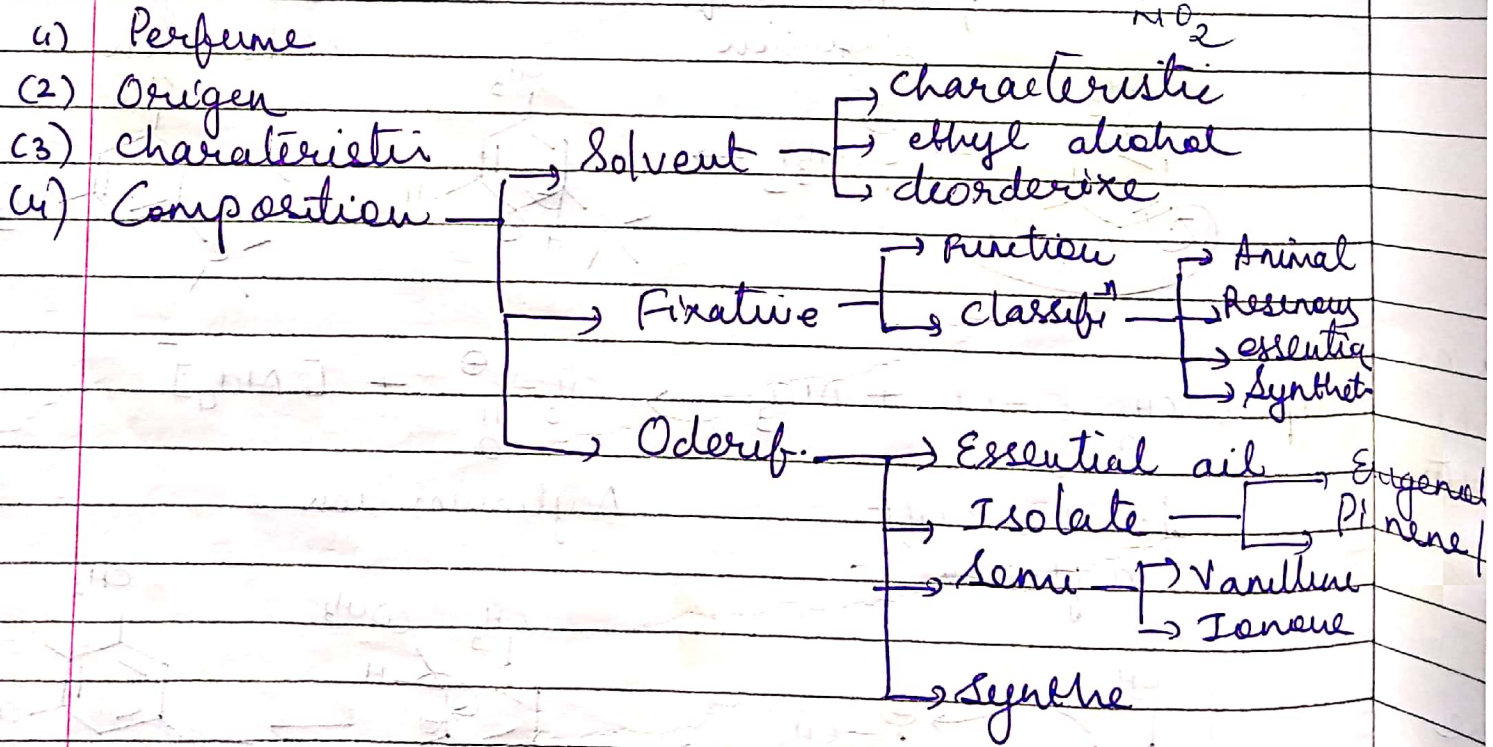
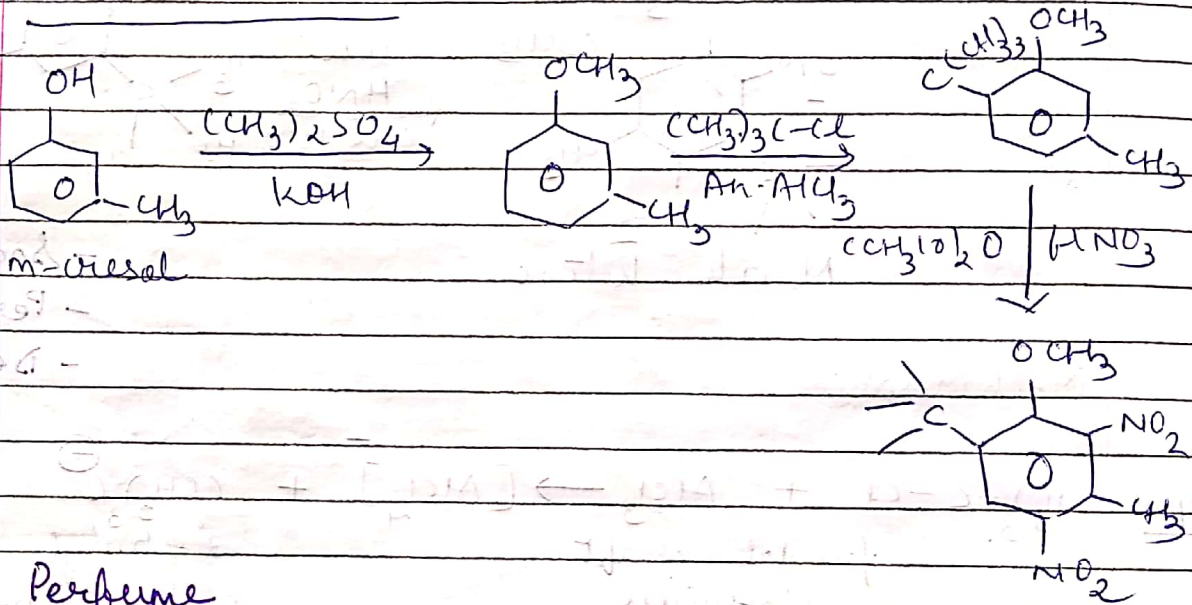
- Soap
- Perfume
- Detergent

Mechanism:





Musk Ambrette



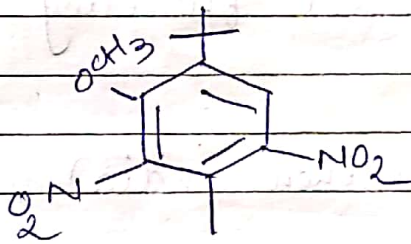
50 mg/kg in deo

200 mg/kg Aq. alcoholic products

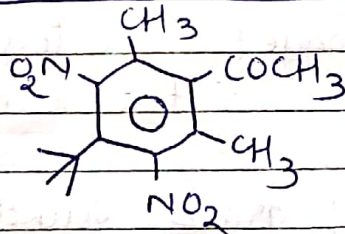
500 mg/kg Sanitary washes

shampoos & perfumes must be free from nitro musk

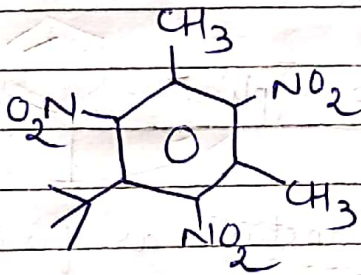
Musk ambrette



Musk ketone



Musk xylene



geraniol / clove
 nene / turpentine

Musk zibata: Obtained from the glands of musk rat (Macrocyclic ketone)

Ambergris oil: Secretion of certain whales

Civet: Secreted from the ^{Periputial} ~~peranal~~ gland of the male musk deer.

Castor oil: ~~castor~~ exudate

Clary sage: extracted from the flowering tops & the leaves

Vetiver: grass (found in northern india)

Synthetic fixatives

Acc. to applicaⁿ

- Used only as fixatives to replace some of the animal fixatives
- High boiling
- Odourless esters
e.g. glyceryl diacetate (259°)
ethyl phthalate (295°c)
benzyl benzoate (323°c)

Function: as fixatives as well as odorous subs.

e.g. Cinnamic acid ester

Acetophenone

Vanilline

Coumarin

Benzophenone