

Quality Assessment of Fragrance Raw Materials

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QUALITY OF FRAGRANCE MATERIALS

- The totality of properties/characteristics fulfilling the specified requirements of a fragrance material.
- Possessing right configuration suitable for the right application.
- A measure of excellence or state of being free from added adulterants.
- Reducing variations to a minimum limit

QUALITY OF FRAGRANCE MATERIALS

- Fragrance materials mainly include essential oils and aromatic chemicals etc.
- Essential oils are produced all over the world and quality of these oils vary widely.
- These are generally procured either directly from farmers or wholesale traders.
- Oils of same plant species vary due to variation in origin, cultivation practices of plant materials, distillation techniques, climatic conditions & soil types.

QUALITY OF FRAGRANCE MATERIALS

- Farmers are unaware of the proper cultivation practices and specific techniques for distillation, owing to which oils distilled, vary in configuration and properties to a great extent
- Sometimes bad trade practices also play an important role in deteriorating the quality of a particular essential oil or aromatic material by mixing cheap grade materials as adulterants for profit making.

Importance Of Quality Control

- •For a user ,it is very important to know the quality of the material procured ----
- i)to use the right material having specific configuration for its right application.
- ii) also to get value for the money spent
- This applies to every material procured either directly from farmer /cultivator or from a wholesale dealer
- Substandard products /chemicals should not be used in the finished products

How to check quality of Fragrance material

- This involves planning for conducting quality checks and will include:
- Preparing a list of materials to be tested.
- Arranging available standards for these listed materials.
- Setting up a laboratory set up for required analysis keeping in view the parameters to be checked as per standards available.
- Arrangement of qualified manpower to carry out these analysis work

Label Details and Physical State

- Label details need to be checked for every material received for testing to know the name, quantity of the material and other related details.
- Based on label details ,reference standards can be arranged and then accordingly list of parameters can be made for testing purpose.
- In case of both synthesized aromatic materials and natural materials including essential oils, it is very important to check label details related to safety

Label Details and Physical State

- handling/date of mfg/shelf life/storing details to prevent any kind of risks involved or deterioration in quality if stored in a wrong manner.
- Physical state of a fragrance material means whether a material to be tested is a liquid, solid or semi solid type.
- Depending on the physical state of material ---
- i. number of parameters to be analyzed are listed accordingly.
- ii. sample preparation is carried out accordingly e.g incase of solid samples, proper dissolution in specific solvent etc is carried out ,generally liquid Samples

Label Details and Physical State

- need no sample preparation except for some dark/viscous samples where proper dilutions are made and for semi solid materials like waxy, fatty and oleoresins etc--samples are prepared accordingly i.e. either by taking out volatile Oil contents or making a particular derivative as per requirement depending on particular application.
- iii)Any modifications required in set Test methods for any particular parameter are also decided on the basis of physical state.

Label Details and Physical State

- Every sample to be analyzed for various parameters need to be checked for presence of dirt or haziness etc and depending on the status it may be pre-processed before subjecting to further analysis.
- These preprocessing techniques may include sedimentation, decantation, filtration, evaporation or using sodium sulfate etc to remove moisture till a material to be tested is ready in desired form for further analysis (clear and free from moisture especially if to be checked in GC/GCMS).

QC PARAMETERS TO BE CHECKED IN FRAGRANCE MATERIALS

- •REFRACTIVE INDEX-The refractive index determines how much light is bent, or refracted, when entering a material.
- refractive index is a fundamental physical property of a substance, it is often used to identify a particular substance, confirm its purity, or measure its concentration. Refractive index is used to measure solids, liquids, and gases. Most commonly it is used to measure the concentration of a solute in an aqueous solution.

Refractometers

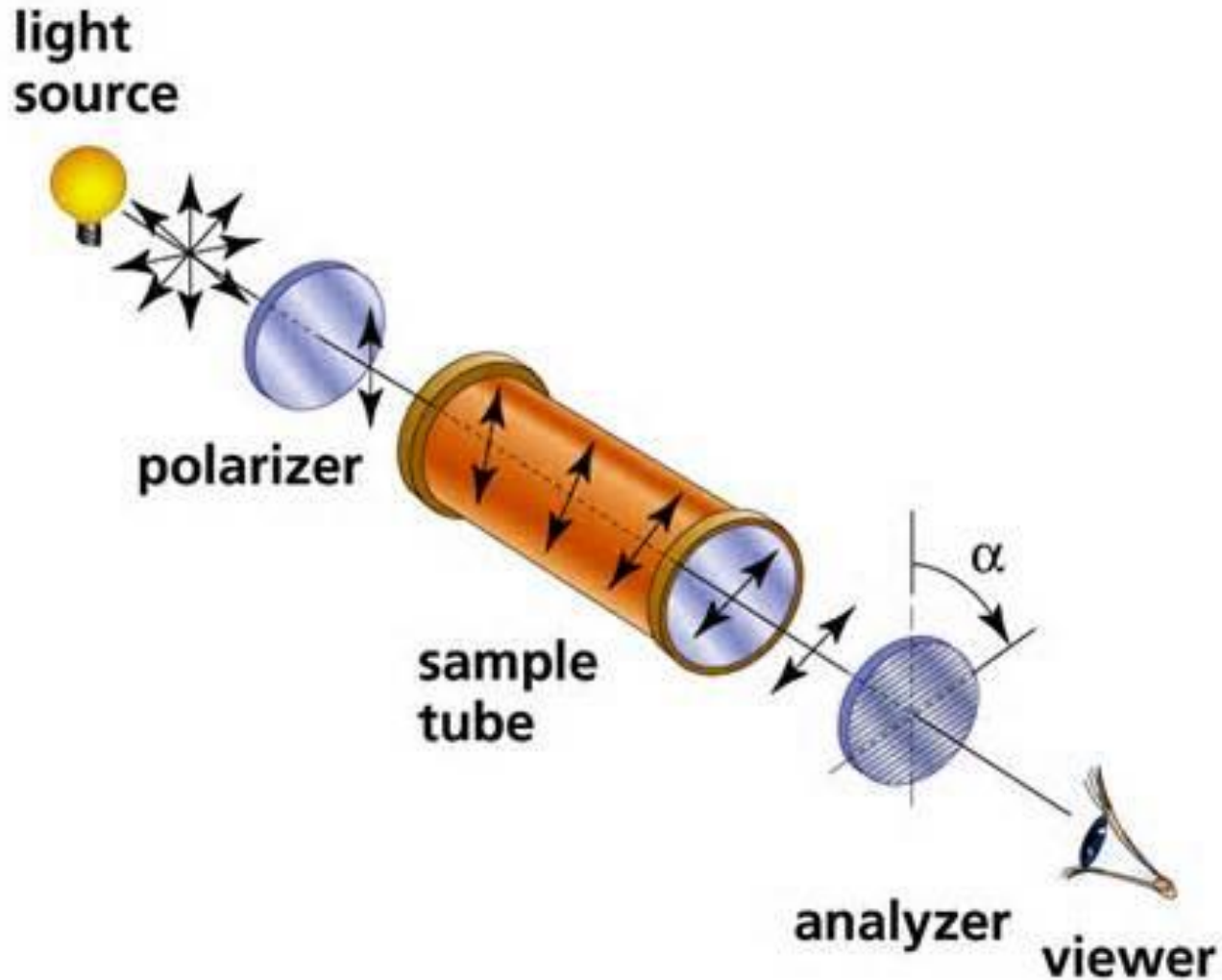


QC PARAMETERS TO BE CHECKED IN FRAGRANCE MATERIALS

- Optical Rotation: **(optical activity)** is the turning of the plane of linearly polarized light about the direction of motion as the light travels through certain materials.



Optical rotation



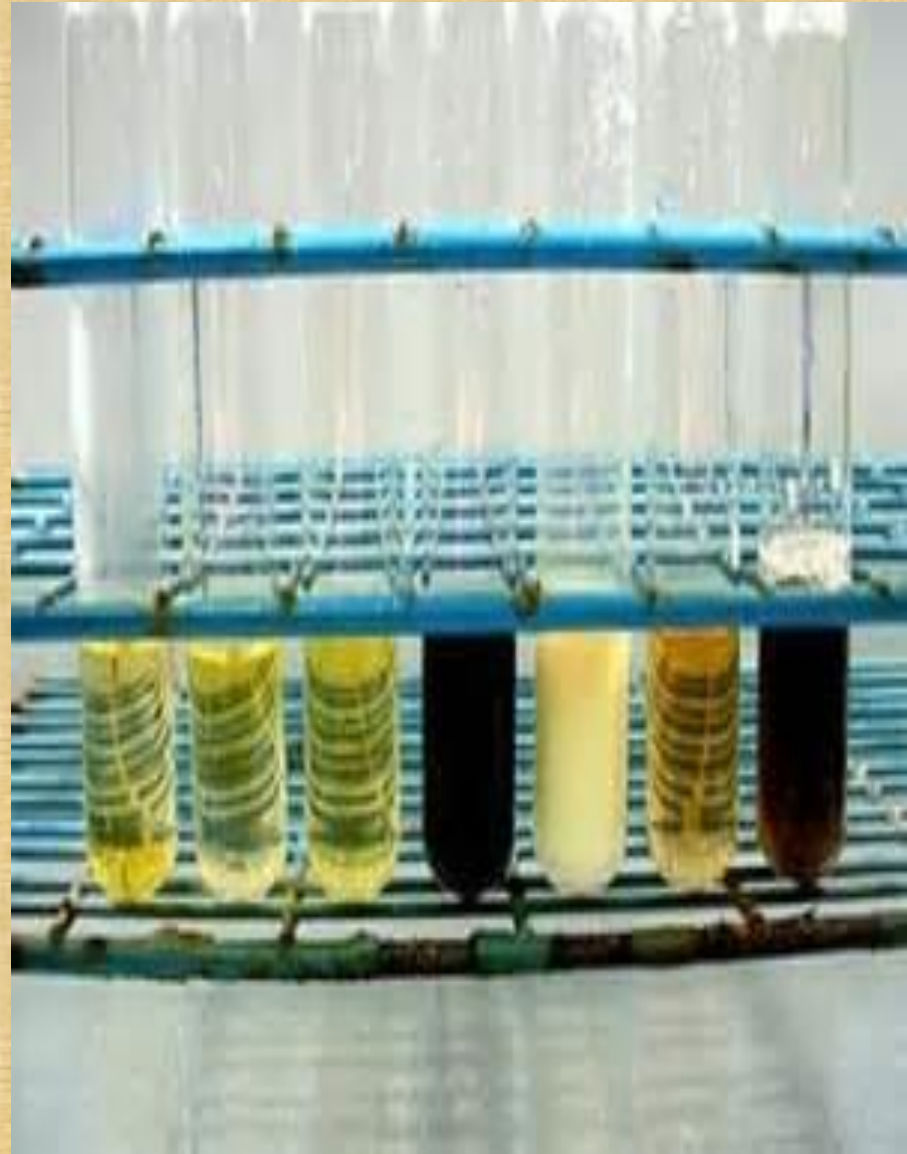
QC PARAMETERS TO BE CHECKED IN FRAGRANCE MATERIALS

- SPECIFIC GRAVITY - **Specific gravity** is the ratio of the density of a substance to the density (mass of the same unit volume) of a reference substance



QC PARAMETERS TO BE CHECKED IN FRAGRANCE MATERIALS

- SOLUBILITY- **Solubility** is the property of a solid, liquid, or gaseous chemical substance called *solute* to dissolve in a solid, liquid, or gaseous solvent to form a homogeneous solution of the solute in the solvent. The solubility of a substance fundamentally depends on the physical and chemical properties of the solute and solvent as well as on temperature, pressure and the pH of the solution



QC PARAMETERS TO BE CHECKED IN FRAGRANCE MATERIALS

- GAS CHROMATOGRAPHY -In gas chromatography, the *mobile phase* (or "moving phase") is a carrier gas, usually an inert gas such as helium or an unreactive gas such as nitrogen. The *stationary phase* is a microscopic layer of liquid or polymer on an inert solid support, inside a piece of glass or metal tubing called a column (an homage to the fractionating column used in distillation). The instrument used to perform gas chromatography is called a *gas chromatograph* (or "aerograph", "gas separator").
- The gaseous compounds being analyzed interact with the walls of the column, which is coated with a stationary phase. This causes each compound to elute at a different time, known as the *retention time* of the compound. The comparison of retention times is what gives GC its analytical usefulness

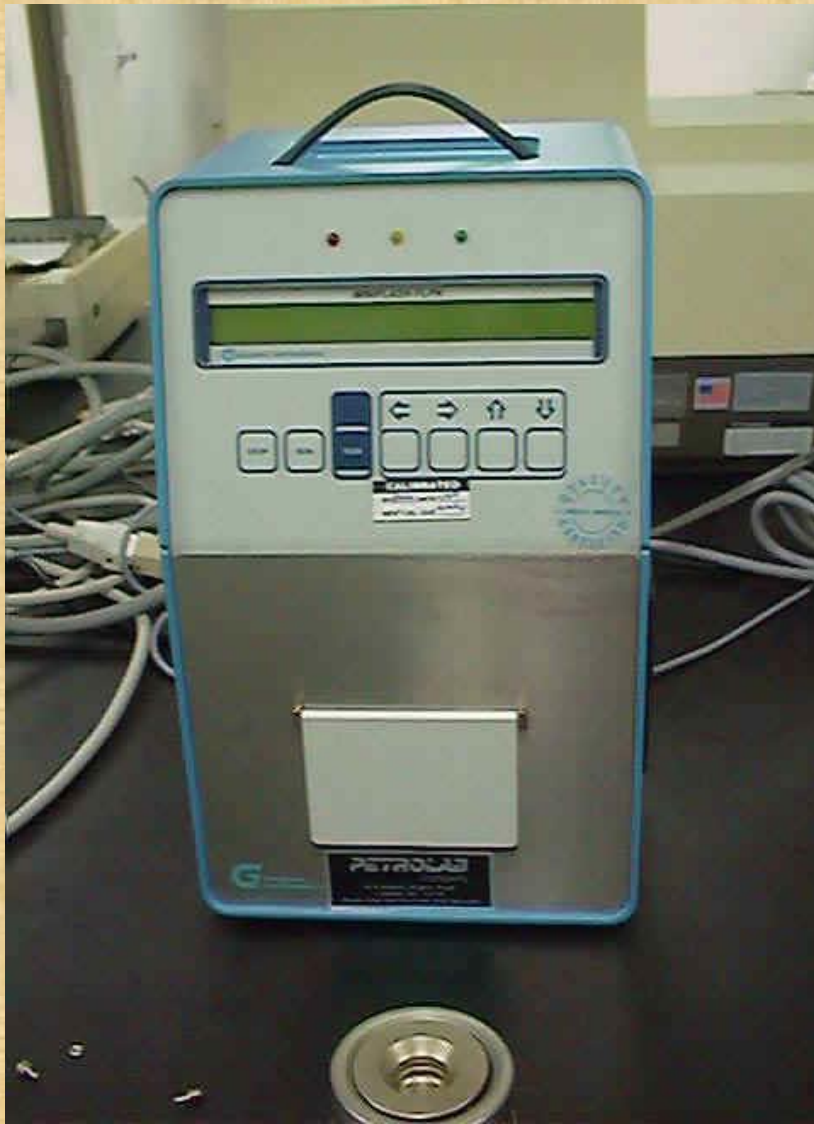
GC-MS



Flash point

- The **flash point** of a volatile material is the lowest temperature at which it can vaporize to form an ignitable mixture in air. Measuring a flash point requires an ignition source. At the flash point, the vapor may cease to burn when the source of ignition is removed.
- The flash point is not to be confused with the auto ignition temperature, which does not require an ignition source, or the fire point, the temperature at which the vapor continues to burn after being ignited. Neither the flash point nor the fire point is dependent on the temperature of the ignition source, which is much higher

Flash point tester



QC PARAMETERS TO BE CHECKED IN FRAGRANCE MATERIALS

- OLFACTION



CONCLUSION

- Quality check is an important and integral part of each and every raw material used in perfumery and fragrance materials---
- 1.To provide consistent quality product to consumer.
 - 2.To get value for money spent.
 - 3.To use a right kind of material for right application imparting a better odor profile.
 - 4.To avoid any legal or regulatory hassles by checking raw materials for presence of any undesired component etc which may go into final product.
- Quality checking in case of fragrance materials is a continuous process and needs regular upgrading to find out increasing variations and adulterations