

PACKAGING MATERIAL

PACKAGING MATERIAL:- Packaging plays a hugely important role in the safe storage and administration of pharmaceutical products.

PRIMARY PACKAGING :- Which are in direct contact with the product (bottle, closure, blister.....).

SECONDARY PACKAGING :- Are additional packaging materials that improve the appearance of the product and include outer wrappers or labels that do not make direct contact with the product.

TYPES OF PRIMARY AND SECONDARY PACKAGING MATERIAL AND THEIR USE

MATERIAL	TYPE	USE
Glass	Primary	Metric medical bottle, ampoule
Plastic	Primary	Ampoule Dropper Bottle
Plastic	Secondary	wrapper to contain primary pack
Board	Secondary	Box to primary pack
Paper	Secondary	Labels

Glass: Glass is widely used a drug packaging material

Types of Glass

Type-I glass : Composition: Neutral glass, borosilicate glass [silica (silicon dioxide, SiO_2)] and boron oxide)

Type-II glass : Composition: soda-lime-silica glass. Soda (Na_2CO_3) is used to decrease the glass transition temperature of silica

Type-III glass: Composition: soda-lime-silica glass: It has a similar composition to Type II glass but contains more leachable oxides



Types of Glass Containers:-

1. **Bottles:** These are either amber metric medical bottles or ribbed (fluted) oval bottles. Both types are supplied with a screw closure.
2. **Containers for Parenteral Products:** Small-volume parenteral products, such as subcutaneous injections, are typically packaged in various containers made of Type I glass.
3. **Jar:** Powders and semi-solid preparations are generally packed in widemouthed cylindrical jars made of clear or amber glass.
4. **Dropper Bottles:** Eye drop and dropper bottles for ear and nasal use are hexagonal-shaped amber glass containers fluted on three sides. They are fitted with a cap, rubber teat and dropper as the closure.



PLASTICS AS PACKAGING MATERIAL : PLASTICS AS PACKAGING MATERIAL Plastics in packaging have proved useful for a number of reasons, including the ease with which they can be formed, their high quality, and the freedom of design to which they can be changed.

Types of Plastic Containers:

1. Closures
2. collapsible tubes



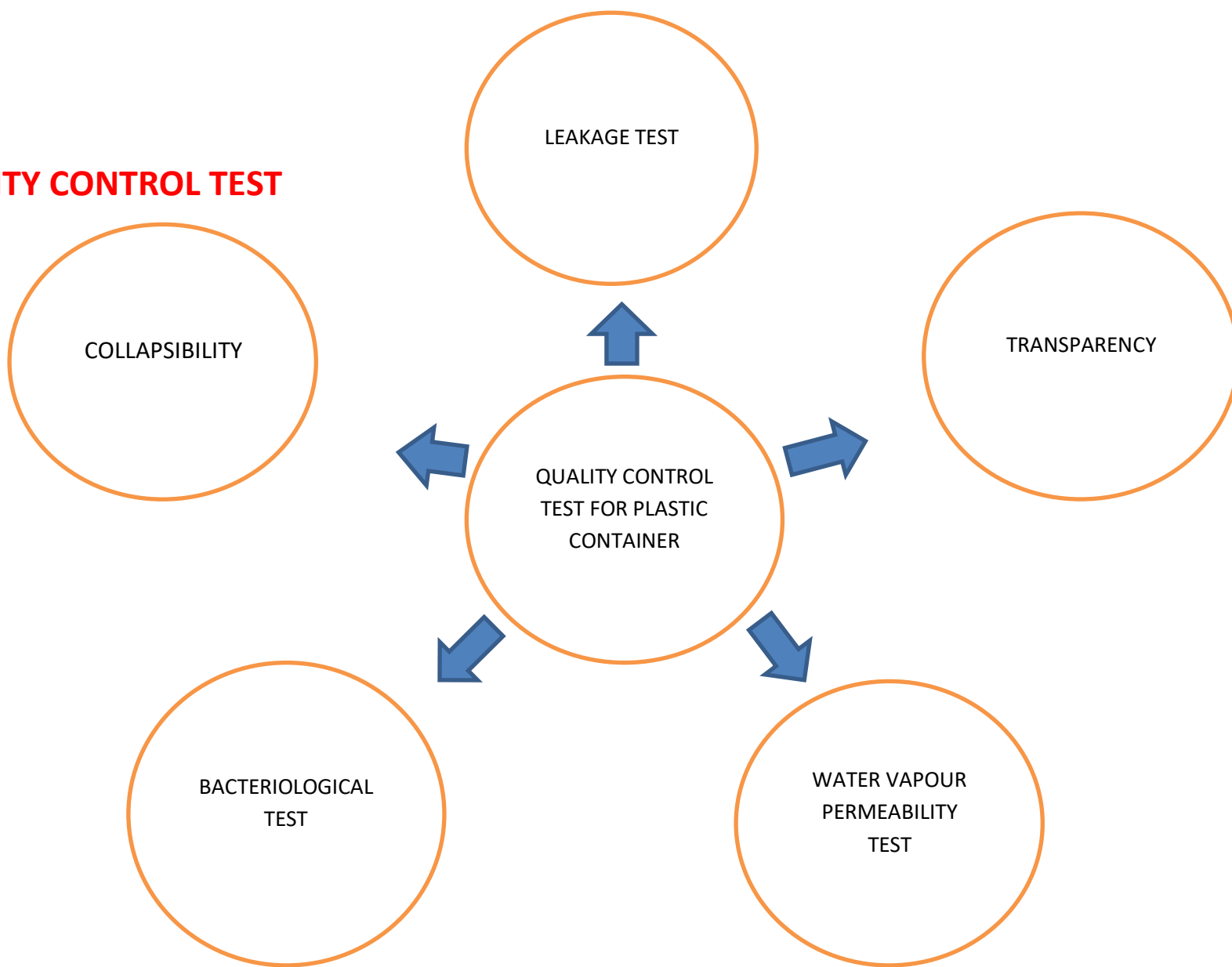
3. Unit dose packaging (blister, strip)



4. paper



QUALITY CONTROL TEST



QUALITY CONTROL TEST FOR GLASS CONTAINER:

- **CHEMICAL RESISTANCE TEST**
A. Powder glass test

TEST	CONTAINER	VOL.0.02N H2SO4 (ml)
Powder glass test	Type -1 Type- 3 Type N.P	1.0 8.5 15

B. Water attack test:

TEST	CONTAINER	VOL.0.02N H2SO4 (ml)
Water attack test	Type 2 Size(ml)100 Less than 100	1.0 0.7 0.2

- **LEAKAGE TEST:-**
 - Drug filled container is placed in contained filled with the coloured solution (methylene blue) and autoclave at 121 degree celcius for 10 min under the pressure
 - Later on the container are observed whether coloured get entered in the container or not

- **HYDROLYTIC RESISTANT TEST:-**
 - This test is only for unused glass container

- **THERMAL SHOCK TEST:-**

step 1:

- Place a sample in a container in upright position in a tray and immersed tray in hot water for a given time

step 2:

- Transfer the container in cold water bath temperature should be controlled examine cracks before and after test(45 degree temp should be there)

step 3:

- The amount of thermal shock bottle can withstand is based on construction.

REFERENCE : 1. Theory and practice of industrial pharmacy by liberman & lachman vol .1&3

2. Industrial pharmacy-1 by Dr.Rani Kankate, Dr.K.L Senthilkumar, Thakur publication

3. Drug stability- principle and practice by cartensen and C.J.Rhodes, 3rd edition , marcel dekker series, vol 107

4. A modern pharmaceutics by Gilbert .S. Banker & C.T.Rhodes, 3rd edition

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