Rocks & Stones

Rock : The portion of the earth's crust having no definite shape & structure

Stone : The natural hard substance formed from (minerals & earth material) which are present in) rocks.

a) Geological Classification

1. Igneous Rocks

These are formed as a result of solidification of molten mass (magma) lying below or above the earth's surface. [Colour depend upon amount of Felspar]

→ Generally magma consists of " quartz, mica & felspar.

→ The texture of the rock is greatly influenced by the rate of cooling of magma

→ mostly these rocks are crystalline Glassy or fused texture.

eg: Granite, Syenite (Deep rocks) (Plutonic) & Dolerite, Basalt (Surface rocks) (Effusive volcanic)

2. Sedimentary Rocks

Also known as "Aqueous or Stratified rocks".

→ These are formed due to Gradual deposition of materials like Salts in water, or Sands, Clays . or fragments of magma ...etc.

→ The rocks are soft & can be easily split up along the bedding as well as normal planes.

eg: Dolomite, magnesite, Gypsum - (Chemical deposits)
Limestone, Shale, Chalk (organogenous rocks),
Sandstone (Fragmental rocks)

3. Metamorphic rocks

These are formed from Igneous or Sedimentary rocks as a result of the action of the earth movements, temp changes, Liquid pressures.. etc.

Igneous rock	Metamorphic rock
Granite / Syenite	Gneiss
Dolerite / Basalt	Schist

Sedimentary Rock	Metamorphic rock
Limestone / Dolomite	Marble
Sandstone	Quartzite
Shale	Slate

b) Physical Classification

1. **Stratified Rocks** : Show distinct layers along which rocks can be split.
   eg: Sandstone, Limestone, Shale, Slate, Marble...etc.
   (i.e Almost all Sedimentary & Sediment-metamorphic rocks)

2. **Unstratified Rocks** : Do not show any stratification & cannot be easily split into thin layers
   eg: Almost all Igneous (only) Rocks.

3. **Foliated Rocks** : Have a tendency to split up only in a definite direction
   eg: Almost all Igneous – Metamorphic rocks.

c) Chemical Characteristics

1. Silicious Rocks : The principal constituent is Silica (SiO_2), i.e Sand.
   → These rocks are very hard & durable.
   eg: Almost all Igneous & Igeneous-Metamorphic rocks.

2. Argillaceous Rocks : The principal consituent is Clay (Al_2O_3)
   → These are hard & Brittle.
   eg: Slate, Laterite (A sandy clay stone) ..etc

3. Calcarious Rocks : The principal Consituent is Lime (CaO)
   → These are good surface texture
   eg: Dolomite, Limestone, Marble .. etc.

Sno.	Stone	Suitability	Characteristics
1.	Granite & Syenite	1. Most Suitable for important Engg. works. 2. Used for Exterior facing of buildings 3. Fine grained granite offers high resistance to weathering	1. It can be easily polished & worked 2. Excess of felspar causes Early decay. 3. Water absorption < 1%
2	Marble	1. Most Suitable for Monuments, ornamental work 2. Flooring & Decorative works (Electric switch boards also)	1. Specific gravity = 2.65 2. Crushing strength = 70 N/mm²
3	Basalt	1. Road metal & Concrete aggregates	1. High sp gr = 2.6 - 3 2. High crushing = 150-190 N/mm²
4	Quartzite	1. Railway Ballast, Road metal & CA	2. High specific gravity = 2.89 1. Crushing str = 77-210
5	Slate	1. Used in Cisterns, Damp proofings. 2. Excellent, roof Covering material	1. 2.65 - 2.95 2. 65 N/mm² 3. Quartz + lime + Silica
6	Sandstone	1. Tile stone (Roofing), Flag stone (Paving) 2. Grit (Heavy works), Natural (Ornamental)	1. 2 - 2.75, 55 N/mm² 2. Affected by frost & atmos
7	Limestone	1. Flooring, roofing & Pavings & walls. 2. In the manufacture of Lime & Cement	1. Quartz + felspar (Strong & durable)
8	Gneiss	1. Rough stone works (like street pavings)	1. Sandy clay Stone
9	Laterite	2. very good road metal	1. Irregular in shape 2. Impure lime stone
10	Kankar	1. Foundation of buildings	1. Decomposed Laterite
11	Moorum	1. Fancy paths, like garden walks.	

Clay products (Bricks)

Clay:

Clay is the most important raw material used for making bricks.

→ Purest clay consists mainly of kaolinite ($2SiO_2 Al_2O_3 . 2H_2O$) with small quantities of minerals, such as quartz, mica, felspar, calcite, magnesite.

→ Bulk sp.gr of clay brick ranges from 1.6 - 2.5.

Classification of burnt Bricks

[IS classification based on Compressive strength & dimensional tolerance only]

1. First Class Bricks

1. The property of this brick are the perfect definition for Good brick.
2. These bricks are Table-moulded & they are well burnt in kilns.
3. These are of Deep red, Cherry (or) Copper colour.
4. The surface should be smooth & Rectangular, with parallel, sharp with straight edges & square corners.
5. These should be free from flaws, cracks & stones.
6. No impression should be left on the brick when a scratch is made by finger nail.
7. A metallic or ringing sound should be come when two bricks are struck against each other. [weight of standard brick = 3000 g]
8. Water absorption should be 12 - 15% of its dry weight when immersed in cold water for 24 hours.
9. Crushing strength of brick ≯ 10.5 N/mm²

Recommended for pointing, Flooring, Reinforced brick work & Exposed face work in masonry structures.

2. Second Class Bricks

These are the same property of the First class bricks, Except that.

1. These bricks are ground-moulded & they are burnt in kilns
2. Small cracks & distortions are permitted.
3. Little higher water absorption 16 - 20% is allowed
4. Crushing strength of brick ≯ 7 N/mm²

Recommended for All important & unimportant hidden works.

3. Third class Bricks

1. These bricks are ground-moulded & they are burnt in clamps.
2. Under burnt, Soft & light coloured producing dull sound.
3. Water absorption is about 25%.

Recommended for Building temporary structures.

4. Fourth Class Bricks

1. Over burnt, Badly distorted in shape & size and are brittle in nature.

Ballast (Disintegrated) of such bricks is used for Foundation/Floors in lime concrete & Road metal.

Heavy Duty burnt Clay Bricks

These are similar to burnt clay bricks & of same size, but with high compressive strength.

Class 400: Compressive strength $\geq$ 40 N/mm^2, but $<$ 45 N/mm^2

Class 450: Compressive strength $>$ 45 N/mm^2

Water absorption $<$ 10%.

Bulk density $<$ 2500 kg/m^3

Composition of Good Brick Earth

Constituent	Proportion	Functioning	If Excess, Causes
Lime	< 10%	1. Reduces the shrinkage on drying & preserve the form. 2. It melts & helps to bind it	1. Over melt & looses it's shape 2. Changes Red to Yellow
Alumina	20-30%	1. Impart plasticity to the clay, so it can be moulded	1. Produces cracks in brick on drying.
Silica	50 - 60%	1. It enables the brick to retain it's shape and imparts durability. 2. Prevents shrinkage & warping	1. Makes the brick brittle and weak on burning 2. Excess of Alumina & silica Bricks shrink during drying & warp during burning.
Magnesia	< 1%	1. Effect/help to impart colour upto Yellow	1. Leads to decay of bricks
Iron oxide	< 7%	1. Gives Red colour on burning (Sufficient O_2) Gives Dark brown (if O_2 is insufficient) 2. Improves impermeability & durability 3. Gives Strength & Hardness	1. Makes brick colour Dark blue (or) may be Black colour
Alkalis	< 10%	1. These are mainly in the form of Soda or Potash. 2. Great value as Fluxes (i.e to fusion)	1. Causes Efflorescence. 2. Makes the clay unsuitable for bricks.

Important harmful Substances in brick earth

1. Lime present in lumps - Absorbs moisture, swells & causes disintegration of bricks.
2. Iron pyrites (FeS_2) - Tend to oxidise & decompose the brick during burning, may split into pieces. & Discolourises the brick.
3. pebbles, Gravels, Grits - will result in weak & porous brick. and Spoil the appearance. May crack while working.
4. Organic matter - Water absorption is increases & thus Strength reduced.

Manufacture of bricks

1. Preparation of Brick Earth

i. Unsoiling

The top layer of soil, about 20 cm in depth is taken out & thrown away.

ii. Digging

The clay is then dug out from the ground & it is spread on the levelled ground.

Cleaning

Should be cleaned of stones, pebbles, vegetable matter... etc.

iii Weathering

The clay is then exposed to atmosphere/weather for atleast one month to develope homogeneity & for softening of clay mass.

iv. Blending

The clay is made loose then add water & any ingradient to it.

v. Tempering

Kneading the clay mass by feet of men or cattle. Done within 36 hours.

- Tempering is also done in pug mills called pugging (Yield about 1500 bricks)

2. Moulding

The process of giving a required shape to the brick. From prepared brick earth.

a) Hand Moulding (prefered for soft-mud)

- Ground moulding - Adopted when a large & level land is available. Do not have Frog & lower surface too rough.
- Table moulding - Adopted when Frog's should be needed. After moulding, the brick is carried to the drying site

b) Machine Moulding (prefered for stiff mud)

- Plastic Method - Stiffer clay is forced through a rectangular opening. The comeout brick bar can be cut of by brick length.
- Dry-press Method - Clay is fed into a mould on a mechanical operated press. By applying high press, the mould takes the shape of brick

3. Drying

The moulded bricks are kept in Sun to remove the moisture & to control the shrinkage & save fuel and time during burning.

→ Moisture content is brought down to about 3% Under exposed conditions within 3-4 days.

→ A gap of about 1.0m is left in adjacent stak to allow free movement of worker

4. Burning

Dehydration period (400-600°C) - To Vapurize the remaining moisture

Oxidation period (650-900°C) - Ferrous Iron is oxidized to the Ferric form.

Vitrification period (900-1200°C) - Melting & become strong upto cherry red.

The burning may be done in

a) clamps - (Yield about 60% of 1st class bricks)

b) kilns - (Yields about 90% of 1st class bricks)

Testing of Bricks

5, 10 & 15 (for Physical Characteristics Tests)
(for Dimensional Tests)

For testing bricks are taken randomly about 20, 32 & 50 No's from a stack of (2k-10k), (10k-35k), (35k-50k) bricks respectively. (∵ k = 1 thousand)

→ If lot contains ≤ 2000 bricks, the No. of Sampling shall be subjected to aggrement between the purchaser & Supplier.

1. Water absorption test

a) 24 hours immersion Cold water test

→ If the brick have more water absorption capacity, it will loose it's strength earlier.

→ This test is conducted in clean water at 27 ± 2°C

b) 5 hours boiling water Test

→ The immersed specimen should be boiled for 5 hours

→ Followed by Cooling down to 27±2°c by natural loss of heat within 16-19 hrs

∴ The water absorption in % = $\frac{\text{Weight of water absorbed}}{\text{Weight of brick before test}} \times 100$

2. Compressive Strength test

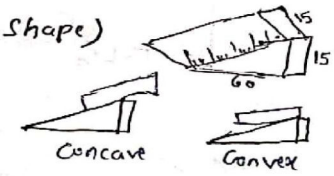
→ Load applied at the rate of 14 N/mm² per minute till failure

Compressive/Crushing Strength = $\frac{\text{Maximum load at failure}}{\text{Area of the bed face of brick.}}$

3. Warpage test

Warpage (bend or twist out of shape) of brick is measured with the help of a Flat steel or glass surface (wedge shape)

Warpage = The greatest distance of brick surface from the edge of straightness.



- Two types → 1. Concave Warpage 2. Convex warpage.

4. Efflorescence Test

This test is performed to know the presence of any alkaline matter in the brick.

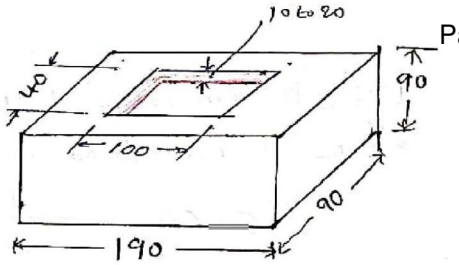
→ Bricks are kept in a 150mm dish, Containing 25mm depth of water till entire water absorbed or evaporated. The water again filled by 25mm.

* Efflorescence is classified by % of Efflorense area on drying brick

Classification	% of Efflorescence
Nil	No visual diposite
Slight	< 10%
Moderate	10-50%
Heavy	> 50%
Serious	heavy & powdered

→ * moderate for brickclass upto 12.5
* Slight for higher classes.

Frog



An indent of 1 to 2cm deep formed on the top called as Frog.

→ The size of Frog should be 10×4×1 cm

→ Is provided for 9cm high bricks.

(Is not provided in 4cm high bricks & extruded bricks) Brick with Frog.

→ The purpose of providing frog is to form a key for holding the mortar, therefor the bond is strong.

Types of bricks

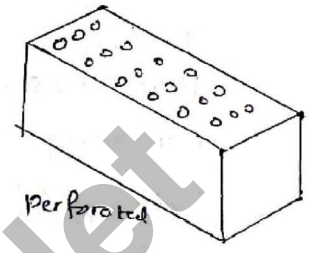
a) Solid Bricks

→ Frogs not exceeding 20% of the total volume of brick

→ small holes ≯ 25%.

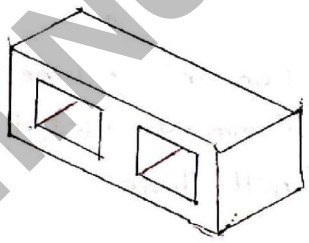
b) perforated bricks

Having small holes may > 25%.



c) Hollow bricks - Holes opened two ends.

d Cellular bricks - Holes closed at one end



Fire Clay or Refractory Bricks

The clay which can resist high temperature (1700–1800°c) without melting & became soft is known as Fire clay or Refractory clay.

→ Burning in special kilns (Hoffman's kiln)

a) Acid Refractory Bricks -

Also called Silica Bricks (97% Silica, 2% lime)

→ used in linining furnaces, Steel industry, Coke oven ...etc (having Siliceous & Acid slag)

→ Cannot be used in rapid temperature change (i.e Cooling & reheating)

b) Basic Refractory Bricks

Also called Magnesia bricks (Magnesia > 85%)

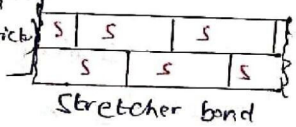
→ Highly resistance to corrosion, Used in lining furnaces (having Basic slag)

Bonds in Brick work

[English bond is Stronger than Flemish bond for walls thicker than ≤ 1½ brick]

a) Stretcher bond

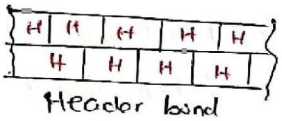
Used only when wall thickness = Half brick (i.e $\frac{10}{9}$cm)



Stretcher bond

b) Header bond

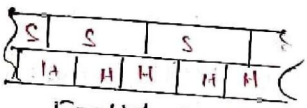
Used only when wall thickness = one brick (i.e 20cm)



Header bond

c) English bond

→ Same appearance on both faces ⇒ when Even multiple of half brick walls.

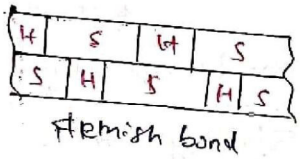


English bond

→ Stretcher on one face & header on another face ⇒ when odd multiple of half brick walls.

d) Flemish bond

The facing & backing having same appearence.



Flemish bond

→ Bats are needed for ⇒ odd multiple of half brick walls. (Bats = bricks of lesser thickness)

& not needed for ⇒ even " " " "

Lime (CaO)

Until the invention of portland cement, lime used used as the chief cementy.

→ Lime is not found in nature in free state.

$$\underset{\text{Lime stone}}{CaCO_3} \xrightarrow{\text{Calcination}} \underset{\text{quick lime}}{CaO} + CO_2\uparrow$$

(∵ Calcination = The heating to redness in contact with air)

Varieties of Lime

a) **Limestone**

Pure limestone is called - Calcite.

Containing magnesite is called - Dolomitic limestone

Containing $\left(\frac{1}{2}CaCO_3 + \frac{1}{2}MgCO_3\right)$ is called - Dolomite.

b) **kankar lime**:

Is an impure lime obtained by calcination of kankars. (Dug out from underground)

→ Commonly used for making hydraulic lime.

c) **Shell lime**

Is very pure lime obtained by shells of sea animals.

→ Constly, used for paintings & important work (Soil Stabilization...etc)

Definitions

1. **Quick or pure lime (CaO) or Caustic lime**

The lime obtained after calcination of limestone. (Sp.gr is about 3.1-3.4)

2. **Fat or Rich or White or very pure lime**

It hay high Calcium oxide (CaO), about 95%.

→ manufactured by burning shells, marble, White Chalk, Pure limestone...etc.

→ Sets & hardens by/only the presence of CO_2 from atmosphere.

3. **Hydraulic lime**

Lime containing small quantity of impurity like [Alumina (Clay), Silica (Sand), Iron Compounds, $MgCO_3$, Sulphates .. etc]

→ It hay the property to set & harden under the water.

4. **Hydrated lime or Slaked lime**:

When quick lime is finely crushed, then slaked with a minimum amount of water. It will form fine homogeneous powder is called hydrated lime.

$$[CaO + H_2O \longrightarrow Ca(OH)_2 + Heat]$$

5. **Milk lime**: When slaked lime is mixed with small amount of water a "Thin Solution" like paint is obtained, is called milk lime.

6. **Lump lime**: The quick lime coming out of kilns.

Slaking: The process of $\underset{\text{(quicklime)}}{CaO} + \underset{\text{(water)}}{H_2O} \xrightarrow{\text{slaking}} \underset{\text{Hydrated lime}}{Ca(OH)_2} + Heat.$

Classification of hydraulic lime (According to the % of Clayey impurity)

a) Feebly Hydraulic Lime - 5-10% of Clayey impurity
b) Moderately Hydraulic Lime - 10-20%.
c) Eminently Hydraulic Lime - 20-30%.
d) Poor or Lean Lime - >30%.

Application of Lime

Suitable for ordinary construction work. [Fat lime - Plastering & Pointing; Hydraulic lime - Masonry]

Does not Suitable for - water logged areas & Damp conditioning areas.

Mortar

A paste prepared by adding required quantity of water to a mixture of binding material (like cement or lime) and fine aggregate (like sand or Surkhi)

→ Mortar made with coarse sand is stronger than Fine sand.

→ Commonly used mortars. 1) Cement - Sand 2) Cement - lime - Sand
3) Lime - Sand (1:2-3) 4) Lime - Surkhi (1:2) 5) Lime - Surkhi - Sand. (1:1:1)

*) Functions of F.A

a) **Sand:**
→ Increases the crushing strength of mortar and reduces shrinkage
→ for Fat lime helpful to penetrate CO_2 for Carbonation.

b) **Surkhi**
Also called Calcinated clay puzzolana" (i.e obtained by burning the clay)
→ It's chief function is to impart strength & hydraulic property to mortar.

Grout

Cement mortar of fluid consistency used to fill voids & joints in masonry and to repair the cracks is known as Grout.
→ Also used to increase bearing capacity of soil by injection

Gunite: The application of mortar on Concrete under great pressure through a cement gun.

S.No	Type of work	Cement	Sand
1	Pointing	1	1-3
2	Reinforced brick work	1	3
3	Foundation	1	3-4
4	Masonry	1	4-5
5	Plastering		
	a) Interior	1	4
	b) Exterior	1	5-6

Type of mortar with Sand	Mix Proportion	permissible Crushing Strength (N/mm^2)
Cement	1:3	0.75
Cement	1:6	0.45
Lime	1:3	0.45
Cement-lime		0.50
a) Interior	1:1:9	
b) Exterior	1:1:6	

Wood & Wood Products

Trees

Exogenous
[Grow outwards, mostly used for Engineering purpose]

Endogenous
[Grow inwards, having fibrous mass. Eg: bamboo, Cane Palm.. etc]

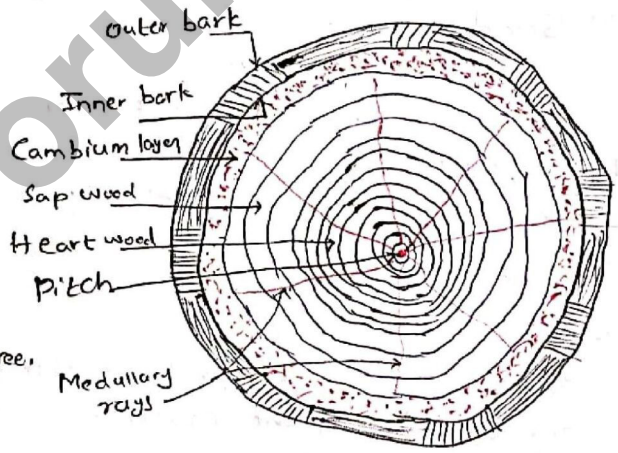
Confiners (Soft wood)
[Ever-green trees, having pointed needle (सुई). eg: Chir, deodar, koil, pine, Fir, walnut.. etc]

1. Long straight Trunk
2. Distinct annual rings

Deciduous (Hard wood)
[Broad leaf-trees
eg: Teak, oak, Sal, babul... etc]

1. Heavier & broad trunk
2. Indistinct annual rings (Except poplar & bass trees)

Macro Structure (The C/s layers are visible to naked eye)



C/s of Exogeneous tree.

1. **Pith** on **Medulla**
   The innermost central portion.
   → Varies 10-15mm in dia
2. **Heart wood**
   The wood having inner annual rings.
   → Also called "portion of the trunk".
   → It gives strong & firm support to the tree.
3. **Sap wood**
   The wood having outer annual rings.
   → Also called "Alburnum".
   → The active part in the tree, containing living cells.
4. **Cambium layer**
   Thin layer between Sapwood & Inner bark.
   → To grow wood cells on outside & bast (living) cells on inside
5. **Inner bark**
   Inner skin covering Cambium layer.
6. **outer bark**
   The outermost protective layer, containing cells of wood fibre.
   → Also called "Cortex".
7. **Medullary rays**
   Thin radial fibres extending from pith to Right angles to Cambium layer
   → It holds together the annual rings of heartwood & Sapwood.

Defects of Timber

1. Due to Conversion

Diagonal grain, Torn grain, Chip mark, Wane

2. Due to Fungi

Blue stain, Sap stain, Brown rot, white rot, Dry rot, wet rot. Heart rot.

3. Due to Abnormal Growth (or) Rupture of tissues due to Natural forces

Heart shake, cup shake, Star shake Ring galls, knots, upsets, Foxiness, Druxiness.

4. Defects due to Seasoning

Radia shake, Twist, Split, Bow, cup, warp. Honey combing.

Seasoning of Timber

Seasoning : The process of drying timber, ie Removing moisture (sap) present in freshly felled tree.

Hygroscopicity of wood : The capacity of wood to absorb water vapour from air.

Objects of Seasoning

1. Reduces the Shrinkage & warping after placement in structure.
2. Reduce it's weight
3. Reduces the Split & decay of timber
4. Increse the Strength, durability & workability & Resilience.
5. Make it Suitable for painting.

a) Natural (or) Air Seasoning
   1. About 4-6 months may require for natural Seasoning
   2. It reduces the moisture content of the wood to 12-15%.

b) Artificial or) Rapid or) kiln Seasoning
   1. About 4-6 days may repuired for kiln Seasoning
   2. It can reduces the moisture content of wood up to < 10%.

Miscellaneous

1. Well Seasoned timber may contain 10-20% of moisture for Engg. purpose.
2. Strength of timber is max in the direction parallel to the grains
3. Tensile strength = 3x Compressive Strength (Parallel to the grains)
4. On application of external stress on timber, it behaves like an Elastic mater
5. Thickness of Fibre boards varies from 3-12mm.

PAINTS

Paints are the non-transparent protective coatings of fluid material and they are applied over the surfacy of timber & Metals.

Paints are classified of Oil Paints, Wata paints, bituminous Paints, Fire proof Paints ...etc.

* Ingredients/Constituents of an Oil Paint *

1. Base

Is a mettallic oxide in fine powder makes the paint durable on the Surface, impart primary colour (Colouring pigment may be added for find colour). It reduces the Shrinkage Cracks in the film on drying.

→ Base is the principal Consituent / Chief ingredient of the paint.

Some of examply of base are

a) White Lead

Lead becomes discoloured, when exposed to Sulphur vapours.

→ Most Suitable for wood surfacy

→ Not Suitable for Iron Surfacy & Delicate worky.

b) Red Lead

Also acts as Drier when combined with Linseed oil

→ Most Suitable for Iron Surfacy.

c) Zinc White

Non-poisonous, less durable & is difficult to work

d) Iron Oxide

Effective in preventing rusting & is Cheap and durable.

→ Generally used for priming Coat of Iron Surfacy.

e) Lithophone

A mixture of Zinc Sulphide and barytes (barium Sulphate) When exposed to daylight, it Changy Colour,

→ Hence Used for interior worky only.

f) Aluminium powder

It keeps moisture content of wood Surfacy & also prevents Cracking.

→ Generally used for a priming Coat to new wood work.

g) Titanium White

Non-poisonous and provides a thin transparent film.

→ Used for receiving the Coat of an enamel.

2. Vehicle or) Carrier or) Binder

It holds the Constituents of paint in Suspension & help to spread it over the Surface.

a) Linseed oil (Raw, Stand, Pale boiled, Boiled, Double boiled)

b) Tung oil c) Poppy oil d) Nut oil.

3. Solvent (or) Thinner

Is added to make the application of workable consistency (i.e easy & smooth)

Turpentine oil, Spirit (most commonly used solvents)

Naptha, Benzine (used as substitutes) & petroleum

4. Colouring pigment

Added if colour of the Base is not desirable.

5. Drier

Used to accelerate the process of drying. (Hence it is an Admixture)

A drier absorbs oxygen from air and transfered to the Binder.

The quantity of drier ✱ 8 %.

Letharage, Lead acetate, Red Lead, Sulphate, maganese dioxide.

6. Adultrant

It is an another admixture, used to increase the durability.

→ keep the pigment in Suspension for a long time

→ Advantage of it's roughness in development of bond with next Coat.

Barium Sulphate is most commonly used best adultrant.

VARNISHES

It is the Homogeneous mixture of Resinous Substance in Solvent.

Objects of Varnish

1. Brighten & Shine the appearance of the grain in wood
2. protect the painted Surface from atmospheric actions.
3. Drier may be used as per requirement.

Solvents for Resins.

S.No.	Resin	Solvent
1	Amber, Copal	Boiled Linseed oil
2	Lac or Shellac	Methylated Spirits of Wine
3	Gum dammer, mastic, Rosin	Turpentine oil
4	Cheaper types of Resins	Wood naptha

DISTEMPERS

It is the mixture of White Chalk (Base) & Water (Solvent)

Objects of distemper

1. Applying on plastered surfacy to create a Smooth surface.
2. Hence plastered Surfacy are not exposed to weather

facts

1. Distempers are available in powder or paste form.
2. They are mixed with hot water before use.
3. Distempers are cheaper than paints.
4. Colouring pigments, Driers may be used as per requirement.

MISCELLANEOUS PAINTS

1. Enamel paints

Is a mixture of Base and Varnish

→ These are acid resistant and water proof
→ Not affected by alkalis and gases.
→ Mainly used for wood work.

2. Aluminium paints

Is a mixture of Aluminium powder (as base) and Varnish

→ Attractive appearance, visible even in darkness.

3. Fire proof or Asbestos paints

The main consituent is Fibrous asbestos

→ Used for stopping leakages (i.e Damp proof)

4. Anti corrosive paints

Dry red lead (Base) with Linseed oil (vehicle)

5. Cellulose or Lacquer paints

Made by Celluloid sheets or Nitrocotton dissolved in Petroleum.

→ Castor oil is also added to improve adhesion
→ A Cellulose pain hardens by evaporation of the tinner.
(whereas ordinary pain hardens by oxidation)
→ They resist adverse weathering conditions.

6. Plastic paints

Plastic (Base) with Water (Thinner)

→ These are highly costly.
→ 1 lit of plastic paint covers about 15 m^2 of wall surface per Coat.

7. Putty

Lime or Chalk (Base) with Raw linseed oil (Binder)

→ These are Cheap & used for Exterior facings.

Note:

For all paints, varnishes, Distempers additives like Colouring pigments Driers are may be added as per requirement.