

ASTRINGENT

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→ These are the topical agents that causes precipitation of surface protein.

→ Astringent ^{Latin word} → **Astringere** → to bind fast.

⇒ So astringent is an agent that causes either local constriction or shrinking of soft tissues due to the precipitation of surface protein.

⇒ In other words it is drying agent that precipitate surface protein, shrink, & constrict the skin.

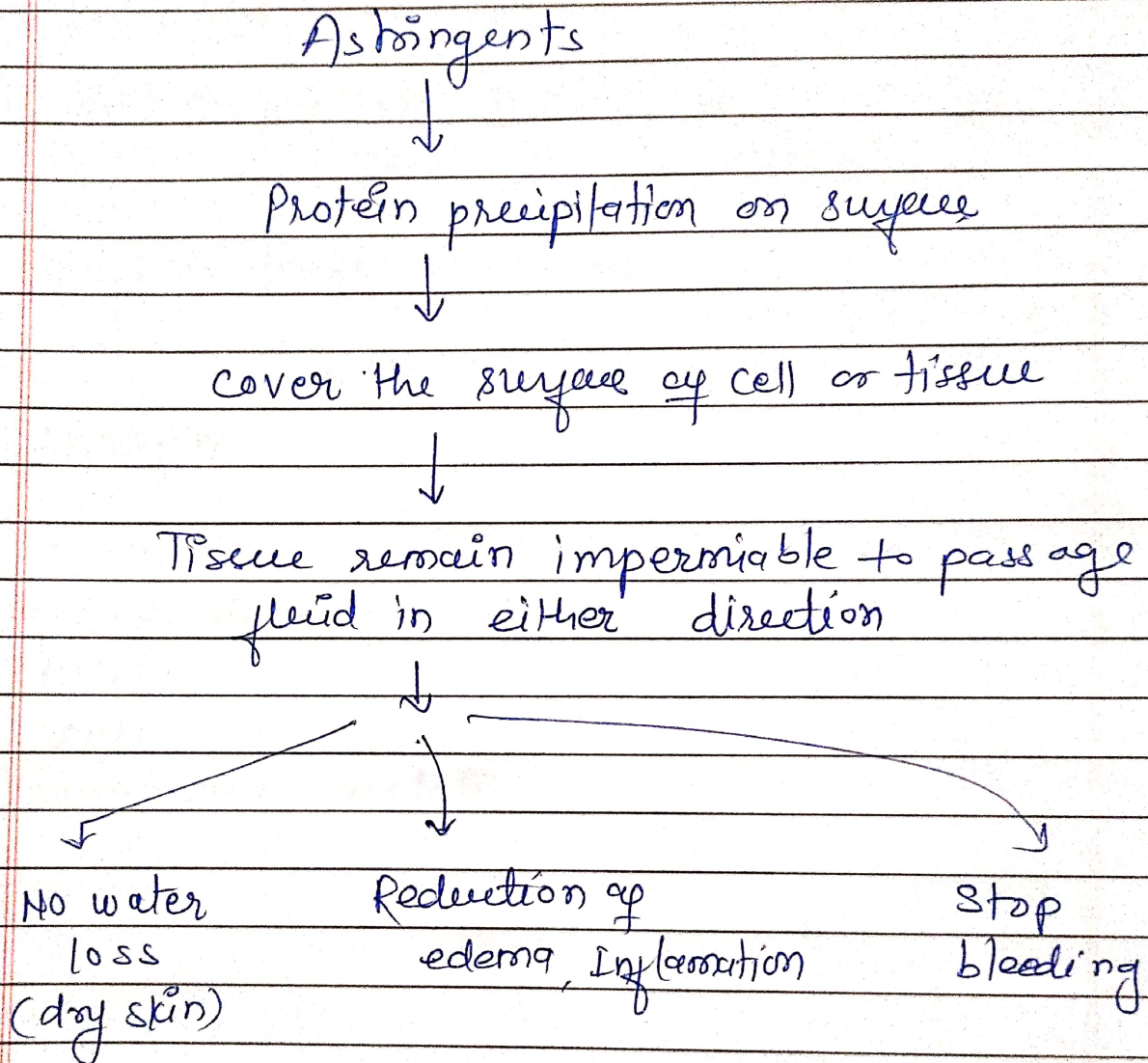
⇒ These have limited power of penetration, lacking deeper effect.

⇒ This can be applied on damaged skin & mucous membrane.

e.g. Stop bleeding.

Clean faces and prevent acne breakouts
Treat haemorrhoids.

Mechanism of Action



USES

- 1) Prevent bleeding from small cuts & wounds
- 2) Restrict blood supply to inflamed area so reduce inflammation.
- 3) Also used as antiperspirant (↓ sweating)

In deodorants as they constrict the pores of skin and destroy microbes.

→ Used to promote healing & hardening of skin so used in cosmetics.

→ Used to treat diarrhea.

Examples

$ZnSO_4$

potash Alum

$AlCl_3$

$ZnCl_2$

Aluminium acetate

Zinc Sulphate

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M. formula = $ZnSO_4 \cdot 7H_2O$

M. wt. = 287 g

Synonym = white vitriol

Physical properties

colour : colourless, transparent crystal

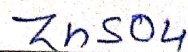
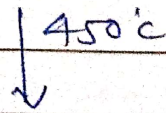
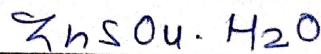
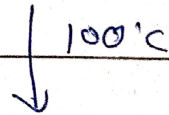
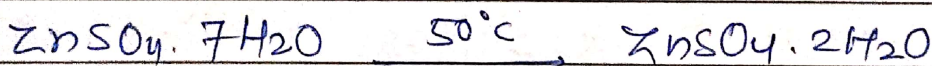
odour : Odourless

solubility : soluble in H_2O , insoluble in C_2H_5OH

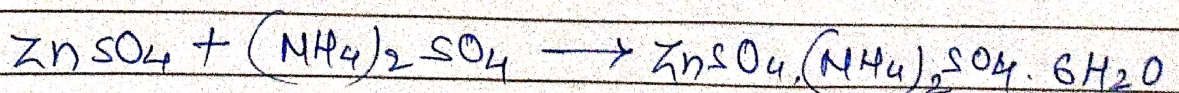
taste : metallic taste

⇒ Chemical Property

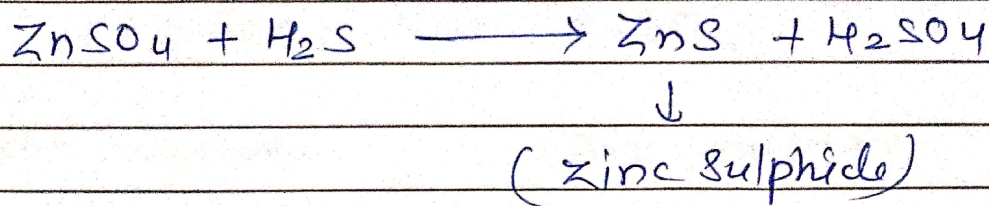
① Dehydration of $ZnSO_4$



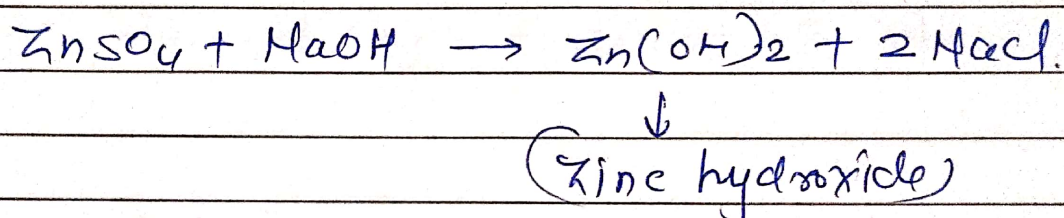
② Formation of double salt \bar{c} Potassium & ammonium SO_4



③ Reaction with H_2S .

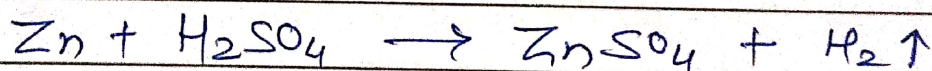


④ with NaOH



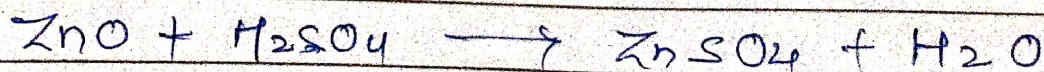
Method of Preparation

① By boiling metallic Zn with H_2SO_4 .

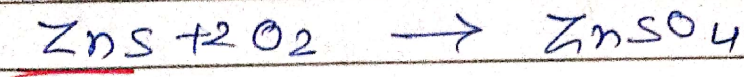


Note: Excess of Zn metal used to consume all H_2SO_4 .

② By reaction of ZnO with H_2SO_4



③ By heating ZnS in air



(zinc Sulphide)

(zinc Sulphate)

Assay

→ It is assayed by Gravimetric Analysis.

Test for purity

→ It complies to the limit test of ammonium, heavy metals and iron.

→ Zn is detected by opalescence of caused by ferrocyanide.

Incompatibility

→ It is incompatible to Alkali carbonates and hydroxides.

Storage

→ It is preserved and stored in well closed containers in a cool place.

USES

- 1) Internally, it is used as emetics especially in case of narcotic poisoning.
- 2) Externally, it is used as Astringent in solution and powder form.
- 3) Used as an antiseptic lotion.
- 4) It's aq. solution is used for protein precipitation reaction.
- 5) 0.25% w/v solution is used as an ophthalmic astringent.
- 6) It is mild germicidal and styptic (to stop bleeding).
- 7) In wound healing it is used as pharmaceutical aid.

Potash Alum

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→ It is a chemical compound widely used as potassium sulfate dodecahydrate.

→ It is a double salt, commonly used in medicine and H₂O treatment processes.

→ chemical formula → $KAl(SO_4)_2 \cdot 12H_2O$

M. wt. →

M. P. → $92-95^\circ C$

B. P. → $200^\circ C$

PROPERTIES

→ It is colourless, transparent, crystalline structure.

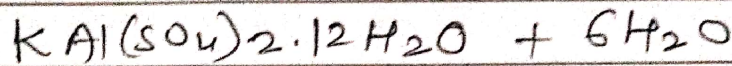
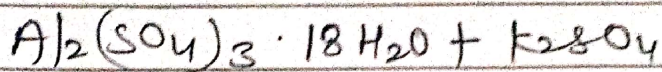
→ Dissolve in water.

→ Acidic in nature, alum powder solution turns a litmus paper red.

→ on heating alum powder first change to liquid but on further heating it swells and form a froth.

Preparation

It is prepared by mixing hot concentrated solution of K_2SO_4 & an equivalent quantity of hot solution of $Al_2(SO_4)_3$ after cooling gives potash Alum.



IP Limits : contain not less than 99.5%
of alum.

Assay : Gravimetric method

USES

- 1) Used as an Astringent
- 2) Source of Al^{3+} ion
- 3) Used in styptic pencil to stop bleeding from small cuts.
- 4) Used in preparation of precipitated diphtheria and tetanus toxoid.