THREEPHOR™ PL-M

Threephor PL-M is fluorescent whitening agent with neutral white color shade for paper. It has a broad spectrum of application, good general properties and is largely unaffected by pH.

1. Special properties

- Neutral white color shade after dyeing.
- Medium affinity to cellulose.
- Suitable in water hardness (>150ppm CaO).
- Compatible with most sizing agent.
- Easy to use as liquid type.

2. General properties

• Appearance	Brown liquid
• Color index No.	
• Chemical structure	Stilbene derivative
• Ionic character	Anion
• pH (1%)	8 ~ 10
• Specific gravity(25℃)	1.1~1.2
• Viscosity(25℃)	≤100cp

3. Storage stability

Threephor PL-M is stable when properly stored in closed containers at 20℃.
The product is sensitive to cold below 0℃ and sensitive to heat above 40℃.

4. Application

1) Wet End

- Threephor PM can be added either batchwise in the pulper or the mixing chest or continuously at suitable dosing points in the stock preparation system.
- Good build-up under water hardness conditions (>150ppm CaO).
- Care must be taken that the product is applied prior to either alum or cationic auxiliaries.
- The whiteness depends on the treatment time and the consistency of the furnish. The best effect is obtained if the product is dosed at a point where the furnish is of high consistency.

Average dosage: **0.05 ~ 1.5%**
(based on the weight of bone dry cellulose)

2) Size Press

- Threephor PM performs well with the conventional starch qualities used at the size pres. It can be used together with CMC, PVA, and anionic and weakly cationic synthetic sizing agents.
- Its effectiveness is influenced by the pH of the base paper. The best effects are obtained if the pH of the base paper is above 5.
- If the pH of the starch is below 5.0, we would recommend using **Threephor SH-C.**

Average dosage: **0.5 ~ 12g/L (size-press liquor)**

- If liquor pick-up is low owing to the condition of the equipment and/or hard sized base papers, amounts of up to 25g/L can be used.

3) Surface Coating

- To achieve the best effects with FWAs, co-binders are essential as carriers because of low affinity for coating pigments and synthetic lattices based on copolymers of acrylic acid ester or butadiene styrene.
- Suitable carriers are PVA, CMC, starch and synthetic co-binders.
- The best effects are obtained with the following amounts of co-binders, based on

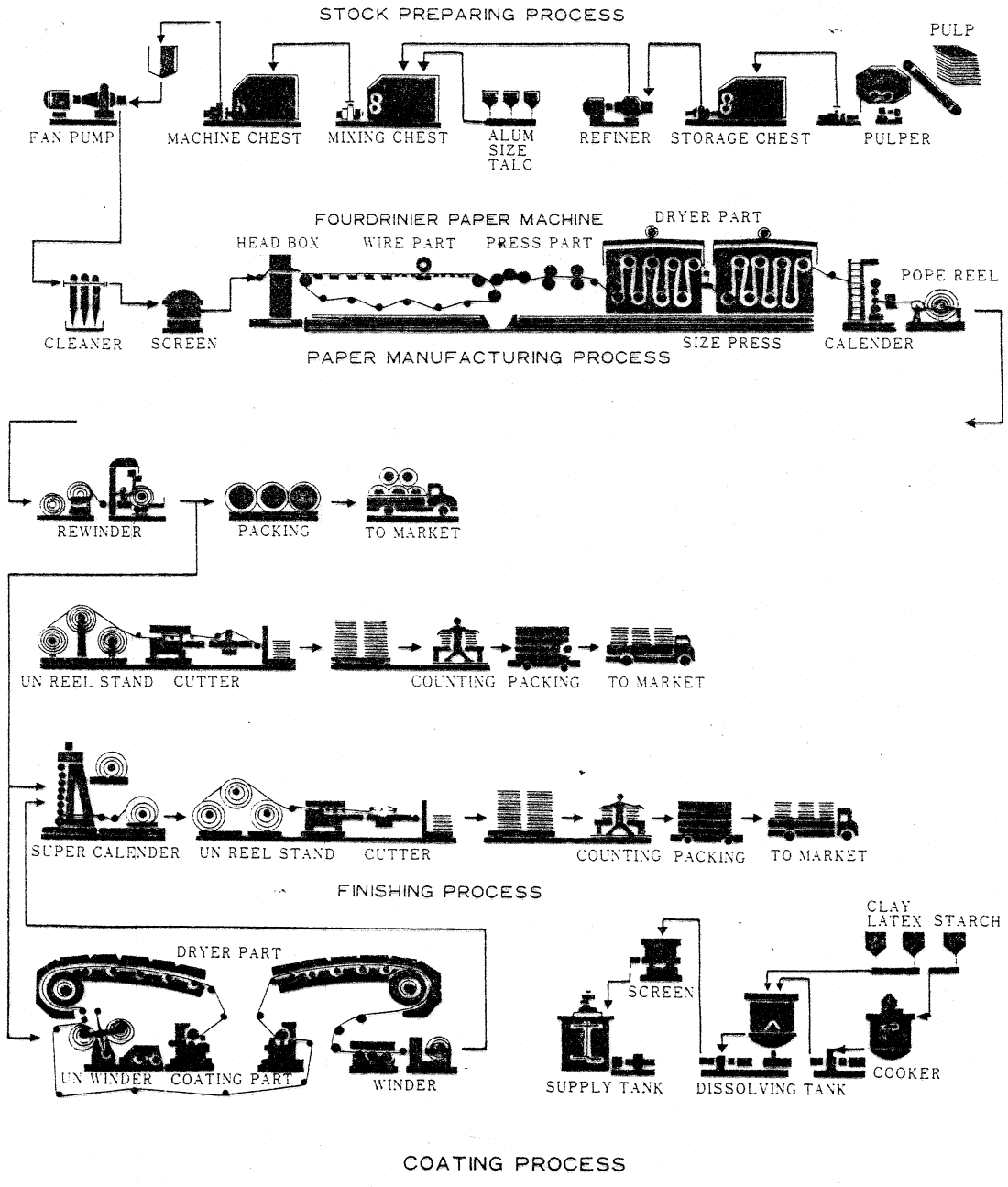
solids content:

PVA	1.2 parts
CMC	1.2 parts
Starch	6.0 parts
Synthetic co-binder	0.4 parts

Average dosage: **0.2 ~ 2.0 parts**
(parts based on the coating pigment)

- To obtain very high whiteness levels, we recommend **Threephor SH-C.**

【Paper manufacturing process】



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