



ASCENT W.S.R 1000 (Papermaking Wet Strength Agent) (Polyamide Epichlorohydrin Resin-PAE)

Introduction:

With the constant improvement of economic level, people's requirements on the quality of paper are increasing high. A great number of paper products must have excellent resistance to fracture under moist state, in other words, must have a certain degree of wet strength. While the traditional papermaking wet strength agents are urea resin and melamino-formaldehyde, both belonging to formaldehyde resin with intense pungent smell and certain toxicity, and can be used in acid condition to acquire the wet strength. However the whiteness will descend a lot and the paper will be weak after the finished paper acquiring the wet strength. Our **Ascent WSR 1000** Polyamide polyamine epichlorohydrin resin (PAE) is water soluble, cationic and thermosetting resin. This product is a non-formaldehyde polymer, non-toxic and tasteless, with a wide range of PH value and suitable for acid, neutral or slightly alkaline papermaking conditions, as well as the acid condition. Wet strength effect is better than the urea-formaldehyde resins and melamine formaldehyde resin. PAE resin, which is an excellent wet strength agent, develops fast in recent years with India's paper industry development. The high performance papermaking wet strength agent (PAE) that we produced has been widely used in a great amount of domestic factories and the finished paper products' wet strength index has surpass the similar products in domestic and foreign counties.

1. Properties:

Appearance	Light yellow to light amber translucent liquid
pH	4-6
Nature	Cationic
Solid	+15
Self Life Time	Six months at Normal Temperature
Solubility	Soluble in Water

2. Method of Application

After diluted our product with cold water to a concentration of 1% solution, add it to the pulp slurry after the beating. Add diluted **WSR-1000** solution into the relatively concentrated pulp slurry, which is generally better. There are no specially requirements on the adding points, but it required to choose place that were able to have a full contact and mix with the slurry. Adding dosage is generally 0.3 to 1.0% (dry weight as fine paper). Paper prepared by **WSR-1000** could be basically solidified on the machine. After leaving the plane, paper will have a further maturation and the strength will continue to rise. During papermaking process, if the retention aids are used in conjunction, the wet strength would be better.



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3.Application

WSR-1000 active ingredient is polyamide epichlorohydrin thermosetting resins that can be used as below:

1. Paper products with the need for drying or wiping water, such as: napkins, wet tissue paper, facial tissue, paper napkins, kitchen towels, wiping window paper, industrial wipes, lens wiping paper, cosmetic paper etc.;
 2. Outdoor paper: such as kraft paper, packing paper, outdoor poster paper, construction paper, sack paper, map paper, germinating paper, fruit bag paper;
 3. Wet wrapping materials: such as paper cups paper, meat paper, wrapping paper and boxes for fruits and vegetables, frozen and refined food packaging paper, pressure sensitive copy paper, filter paper, leaching processing paper and tea bag paper;
 4. Paper soaked in water: as photographic raw paper. Instead of disposable textile products, such as hospital bed sheets, toilet paper and other disposable hospital garb.
 5. Other issues such as cigarette paper, banknote paper, paper used for invoices.
- WSR-1000**, as wet strength agent excellent efficiency (PAE), has been widely accepted by the papermaking industry

4.Advantages:

a. High efficiency

Compared with conventional urea-formaldehyde or melamine-formaldehyde and **WSR-1000** wet strength agent (PAE), when add the same dosage, the effect of **WSR-1000** is more obvious. Depending on different pulp raw materials and the adding dosage of **WSR-1000**, the wet strength generally can be improved some best results, while the dry strength can be improved more than 30% (effect of pulp is the best). Due to the strong positive charge on the molecular chain and fiber, it also can improve the drainability of pulp and papermaking speed and the retention rate of packing, sizing materials and fine fibers. In addition, for the feel of the paper, the finished products are more soft and of better absorbent ability than the one using urea-formaldehyde resin and melamine-formaldehyde resins.

b. Wide range of applicable PH

Due to their positively charged, **WSR-1000** can be absorbed by the fiber in a PH extensive range from acidic to alkaline, which could achieve good results without the need for aluminum sulfate retention. **WSR-1000** is more appropriate to be adsorbed and aging under neutral or slightly alkaline conditions, so it is particularly suitable for neutral papermaking.

c. Easy to use, non-toxic, non-hazardous

Due to the low viscosity, and being easily dispersed in cold water, **WSR-1000** can easily be diluted into various concentrations of the desired solution. With many containing -OH, -NH₂, -COOH and other natural and synthetic



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water-soluble polymers used in conjunction, PAE can achieve more good results. **WSR-1000** is non-formaldehyde wet strength agent for consumption paper and food paper and other occasions.

WSR-1000 is non-dangerous, and can be packed by plastic barrel; when it got leakage and damaged, just rinse it with water without pollution to the environment.

d. Easy recycling of broken waste paper

Generally papermaking recycling is easier than dealing with urea-formaldehyde or melamine- formaldehyde wet strength paper. To recycle high wet-strength paper which had added a lot **WSR-1000**, unbleached paper's PH can be increased to 10~11 to beating. And the temperature could be increased to about 65 °C. When bleached paper's PH is adjusted to 5 to 8, the temperature should be controlled at 35°C. Adding 0.1% (on dry pulp) sodium hypochlorite would have a better treatment effect.

e. Synergies of AKD neutral sizing agent

Many foreign papers (especially sized paper), in production formula, often add **WSR-1000** resin for 0.05% to 0.1%, which has good retention and drainage effect to AKD particles, which can improve its sizing degree

f. Emulsion rosin sizing synergist

WSR-1000 has good retention effect to high saponification rosin, high free rosin and so on, which increases the amount of about 0.1%.

g. Improve the wet web strength

In a secondary fiber papermaking process, since the inner pulp contains a large number of fines so that the paper web dewatering unit slows and wet web strength is poor, which would be prone to breakage and other production irregularities. Add 0.02% of the **WSR-1000** wet strength agent (PAE) may improve operating conditions while the dimensional stability of the paper also can be improved.

Ascent WSR -1000 wet-strength additives comprise a family of products proven to significantly improve the wet strength of paper. Commercial applications confirm that Ascent WSR -1000 wet-strength additives provide a number of value-added benefits:

- Improved wet strength
- Improved retention and drainage
- Enhanced creping control
- Improved dry strength
- Reduced chemical costs
- Improved machine runnability

We provide Ascent WSR -1000 wet-strength additives in a wide range of solids content to ensure the perfect fit for your needs. Our portfolio can help you balance freight costs, shelf life and product stability concerns.



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How They Work

Ascent WSR -1000 wet-strength additives are water-soluble polymer products. The most commonly used solutions are formulated with polyamide-epichlorohydrin (PAE) resin chemistry and are intended primarily for the consumer market. PAE resins function in neutral/alkaline papermaking processes. We have a high level of wet-strength permanence, help improve machine efficiency and do not adversely affect paper absorbency.

Ascent WSR -1000 additives work during the curing process, when the functional groups on the Ascent WSR -1000 polymer react with cellulose fiber to form a covalent bond. The polymer molecules cross-link, forming a network in the cellulose web that provides strength when the paper becomes wet. Ascent WSR -1000 wet-strength products can also reinforce existing fiber-to-fiber bonds, which further enhance the strength of the paper.

For even greater paper performance Ascent Catabond Liquid can be used with Ascent WSR -1000 wet-strength additives. This combination can increase wet and dry tensile performance.

5. Storage Condition

Storage: Avoid direct sunlight, prohibiting contact with concentrated acids. Storage temperature is 0 ~ 35 °C and the product can be stored for up to 6 months under 5 ~ 35 °C.

6. Packaging and Transportation Safety

Packaging: 50 kg carboys or 200 kg polyethylene barrels or 1000 kg IBC barrels.

Transportation: The product is non-flammable, non-explosive and low corrosive and non-dangerous. It can use plastic buckets as containers on railways, highways, aviation, marine to achieve the purpose of the safe transport, and if the leaking occurs during transportation, you can simply rinse on the spot.



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