

FAQ's on R-3000 NAJ and variants

1. What is R-3000 NAJ?

R-3000 NAJ is a hot water-soluble anionic polyester resin. Chemically it is sulphonated polyester terephthalate based resin.

2. Why R-3000 NAJ should be used for filament yarn sizing?

Being a polyester resin, it has excellent adhesion on polyester multifilament eliminates adhesive failure on the polyester yarn. Traditionally acrylic or acrylic-PVA combination has been used for polyester filament sizing, which do not have affinity towards polyester substrates.

3. How is cohesive strength and abrasive strength compared to acrylic?

The product has very high cohesive strength and abrasion resistance, which is unmatched, compared to most of the acrylics available in the world. This helps in eliminating dropping of dry resin, fluff generation and filamentation. Due to high cohesive strength, this product is particularly suitable for air jet looms. Typically acrylic resins would not be able to hold the multifilament bundle due to jetting of air stream especially in denser sorts.

4. Why different variants of R-3000 NAJ?

Today polyester of different sorts and varieties are woven on different kinds of high speed shuttleless looms. Refer individual product brochures for details.

5. Can we mix R-3000 NAJ with PVA?

R-3000 NAJ is the best polyester sizing agent for filament yarn sizing and weaving on high speed air jet looms, finer denier and denser sorts. However for projectile / rapier weaving and medium sorts the sizer can blend PVA with NAJ or work only with NAJ at lower pick up on cost to

cost basis. To prepare a mixture first cook **R-3000 NAJ** and then add PVA to complete the cooking.

6. What are the precautions to be taken for the use of R-3000NAJ?

One must use preferably de-mineralized water (D.M Water) having conductivity of less than 10 m.c/cm to achieve best solubilization as well as improved desizeability. High concentration of electrolytes particularly divalent ions can affect desizing.

7. What is the procedure to solubilize R-3000 NAJ?

One needs to use high-speed stirrer with cowls blade with baffles on the inner wall of the vessel (SS 304 /316). Heating can be done indirectly either by steam or hot oil system. Refer product brochure for more details or contact Zydex.

8. Why R-3000 NAJ should be used for filament yarn sizing?

- Important characteristic of **R-3000 NAJ** grade polyester resin is proper thermoplastic properties which prevents blocking problem. The product glass transition T_g is between 55 to 58 deg C. Due to this, warp-blocking tendency is zero, which is unique for the product.
- The product being a polyester resin product, it has excellent adhesive to polyester yarn and which practically eliminates adhesive failure on the polyester yarn.
- The product gives same strength and adhesive with lower 50% lower solids compared to other acrylic resins available in the world.
- **R-3000 NAJ** resin sized yarn can be stored up to 3 months as there are no weather effects on the sized yarn, which is not possible in acrylic resin sized yarn.

9. Do we need to take any special precaution during the production run?

It is advisable to have proper filtration system installed during transfer of resin from size cooker to the size box. It is also advised to use good filter after the solution is ready and transfer to storage tank. The polyester resin generates poor re-emulsification compared to acrylic and can heat the insoluble particles during the running operation if there are very frequent stops in the sizing machine

10. What is the glass transition temperature of R-3000 NAJ?

The glass transition temperature of **R-3000 NAJ** is between 55 to 58°C and is available in granular forms. Due to this, zero blocking tendency is seen with **R-3000 NAJ**, which is unique for the product.

11. What is the recommended add on percentage of R-3000 NAJ?

It can range from 3.5% to 8% depending on the denier and the density of the construction. Our technical service department can provide excellent starting point depending on the denier, quality of construction, type of sizing machine used and type of weaving looms to get the customer started. Final optimization of the pick up percentage should always be done by trial and error after observing the results.

12. What is the de-sizing procedure recommend for the polyester size?

First, one should avoid use of sodium hydroxide. One can use max. up to 2 gm/ltr if needed. Anything above can lead to insolubility of the size. The correct desizing procedure is to use 2-5 gm/ltr of sodium carbonate (Na₂CO₃), 0.5 – 1 gm/ltr of Zycowet P or 5 gpl detergents at 90°C with residence temperature for 2-3 minutes.

Desizing test: Dye the desized fabric with 0.25 gpl cationic blue dye and 2 –3 drops of acetic acid at 24 deg C temp. for 5 min then wash &

dry it. Check the colour of dyed fabric. It must be very light. This indicates the good desizing of the sample.

- If the desized fabric stiffness observed across the width then, check weft yarn properties like % elongation, % shrinkage etc.
- If we observe the stiffness on the desized fabric along the length, then check squeeze roller pressure uniformity.
- If the dyed fabric is observed with stiffness, then check dyeing condition and dye uniformity on the fabric.

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