

New generation single shot sizing chemical for high-speed looms

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SIZING of textiles is the process of coating or impregnating warp yarns with a polymer that improves the efficiency of the weaving operation. The polymer is usually made up of material that could be of natural origin, synthetic or a mixture of both

The basic objectives for spun warp yarn sizing is two fold:

- Protect the yarn from breakage during weaving
- Decrease the hairiness so that the tendency for adjacent warp yarns to entangle will be reduced

Around 40% of the world Sizing Chemicals market is contributed by synthetic sizing agents which are free of starch. Going forward, with the world population slated to reach around 10 billion by the year 2050, natural products like starch will come under increasing pressure for allocation to industrial use since it will be increasingly needed to feed the ever growing human population

Meanwhile, developments in sizing and weaving machinery with increased speeds is demanding robust sizing products that exhibit high sizing and weaving efficiency with reduced load on utilities like power, water and time. In addition usage of these products need to result in reduced load on effluent

Under these circumstances, single shot (one-shot) non-starch based synthetic sizing agents are gaining increasing acceptance by the industry due to their superior economics and efficiency as compared to traditional sizing chemicals

Sizing is the first step in wet processing of textiles and it has to be done well to avoid problems in subsequent steps of processing

The warp yarn undergoes a number of stresses and strains during the process of sizing and weaving of which the following ones are mostly encountered:

- Various bending forces
- Dynamic tension
- Frictional forces
- Development of static (electricity)

The ability to overcome the above challenges completely rests on the efficiency of the sizing chemical used. It is noticed that commonly used sizing chemicals usually lead to the following problems:

- Weaving looms do not reach constant weaving efficiency
- Film of the sized yarn gets broken easily leading to

significant dusting

- De-sizing of sized fabric requires costly specialty chemicals and results in high water consumption
- The entire process from sizing, weaving and de-sizing consumes more time leading to low productivity
- Results in high cost for effluent treatment due to larger discharge

The following properties are expected to be contributed by a robust single shot sizing chemical to fulfill current needs of the industry

Sizing operations

- Low liquor pickup
- Stable viscosity over prolonged storage
- No skinning
- High warp yardage
- Adequate friction and yarn strength
- Low hairiness
- High and uniform residual stretch
- Cross yarn free passage
- Easier dry splitting
- No corrosion to machine parts
- Less dusting

Weaving operations

- High and constant weaving efficiency
- Less dusting

De-sizing operations

- Readily washed out by hot water without additional chemicals
- High process reliability (uniform results after de-sizing)

Effluent Treatment operations

- Low COD / BOD contribution
- Economically recyclable

The sizing chemical which meets the above requirements at acceptable cost is the need of the industry today

The incorrect assumption that no single sizing chemical will meet the above requirements for compatibility with different

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types of yarn has led the industry to use complicated and varied mixtures of sizing materials which include starch, starch derivatives, PVA, acrylics, resins, CMC and lubricants with no appreciable increase in efficiency for weaving fine count yarns

It is only in the past few years that non-starch synthetic sizes have been accepted in the industry as a comprehensive solution to emerging requirements by the sizers/weavers

Leomine Organics Pt Ltd, Mumbai has launched two Single shot sizing products Leomine Size FPA and Leomine Size FPB with the following features and benefits:

Features:

- Single homogenous compound with and without inbuilt softener
- Low viscosity ; low size add-on
- Suitable for high speed shuttle-less looms
- Slurries in cold water without forming lumps ; completely soluble in hot water
- Forms elastic film with high adhesive power and abrasion strength
- No tendency to form skin in size box
- Does not gel

Benefits:

- Better penetration, minimum wet stretch
- Better elongation of yarn
- Reduces hairiness ; smoothens yarn ; reduces fiber entanglement
- Leads to trouble-free dry splitting
- Less dusting in sizing shed and weaving looms
- Single product for different yarn sorts
- Does not require humidity for good weaving performance
- Results in excellent weaving efficiency
- No need for de-sizing chemicals. De-s-zing done with hot water
- Improvement in fabric feel
- Water, time and energy savings
- Overall Sizing, weaving and de-sizing costs lower than those incurred using traditional chemicals
- Recyclable

The time has come to match usage of modern sizing and weaving machinery with new generation sizing chemicals to achieve immense advantages economically and ecologically.

Leomine Organics Pvt Ltd is playing its part in making its customers successful in this endeavor ■