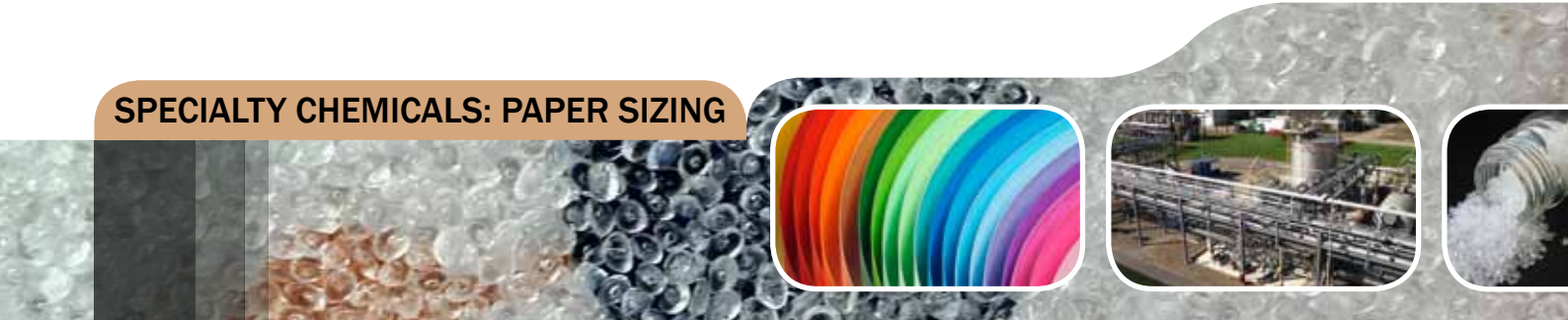


SPECIALTY CHEMICALS: PAPER SIZING



SIZE DOES MATTER



XIRAN® surface sizing polymers

For all papermakers, the synthetic surface sizing agents conveniently and economically alter the paper surface properties, allowing them to produce high value added performance papers. Due to the emergence of high speed offset and digital printing processes coupled with advanced ink formulations and high speed photocopying, the expectation from printing and writing paper to deliver higher performance at

optimum cost of over all sizing operation has never been so challenged in the past.

Styrene maleic anhydride copolymers (SMA) have been in use in the paper industry for many years side by side with other styrene based copolymers such as styrene acrylic emulsions, but it has been a challenge for these age old technologies to meet the demands of the paper makers to the fullest satisfaction.

XIRAN®



**XIRAN®
NEAT
RESIN**

SZ

SZ : GRANULATE - PELLETS

XL

XL : LIQUIDS - SOLUTIONS

SPECIALTY CHEMICALS: PAPER SIZING



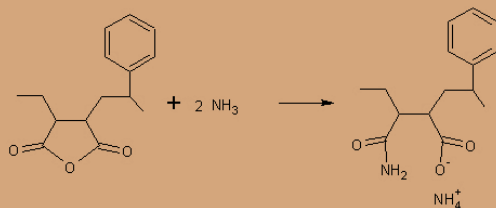
FRESH THINKING, GREAT PRODUCTS

A perfect leap into the next generation

Styrene maleic anhydride copolymers, produced under the brand name XIRAN® is a new generation surface sizing polymer providing unique value to paper. Polyscope with its state of the art production location, now offers this unique polymers for the advantage of the paper industry.

XIRAN® hydrolyzed resin offers full flexibility

Solubilizing of XIRAN® resins is done by opening up the anhydride ring through hydrolyzing in an alkaline environment thereby producing the respective salt. Depending on the end user's requirement, the base can be selected, and generally they are ammonium or sodium. For example the ammonia-salt is produced as follows:



The product

The ammonium salt of the XIRAN® SZ 26080 size based formulation is used for all types of paper and board surfaces. It provides good sizing values, it provides a good film splitting property and therefore a uniform coverage of

polymer on the paper surface. When applied with starch at the size press or wet calender stack, the polymer solution imparts water resistance and coating holdout. Besides this it will improved coated surface characteristics at reduced coat weights. The ammonium salt of SZ 26080 with its anionic charge makes it compatible with many papermaking surface treatment additives.

XIRAN® surface sizing agents are compatible with various pigments and insolubilizers in a given surface size formulation adding further value in terms of surface strength, stiffness, printability and dimensional stability.

XIRAN® advantages:

- Inkjet color print density
- Improved water repellency
- Toner adhesion
- Improved surface strength
- Dimensional stability
- Reduce linting and uesting in high ash papers
- Provides a good "feel"
- Superior cost performance
- Compatibility with additives
- Improved coefficient of friction
- Additive in inkjet coating formulations or surface pigmentation

XIRAN®	Mw	BFR	FDA	hydrolyzed solids*, %
SZ 26080	80000	+	+	10-20
SZ 26120	120000	+	+	8-15

* low solids for ammonium salts, higher for sodium salts