Sarex

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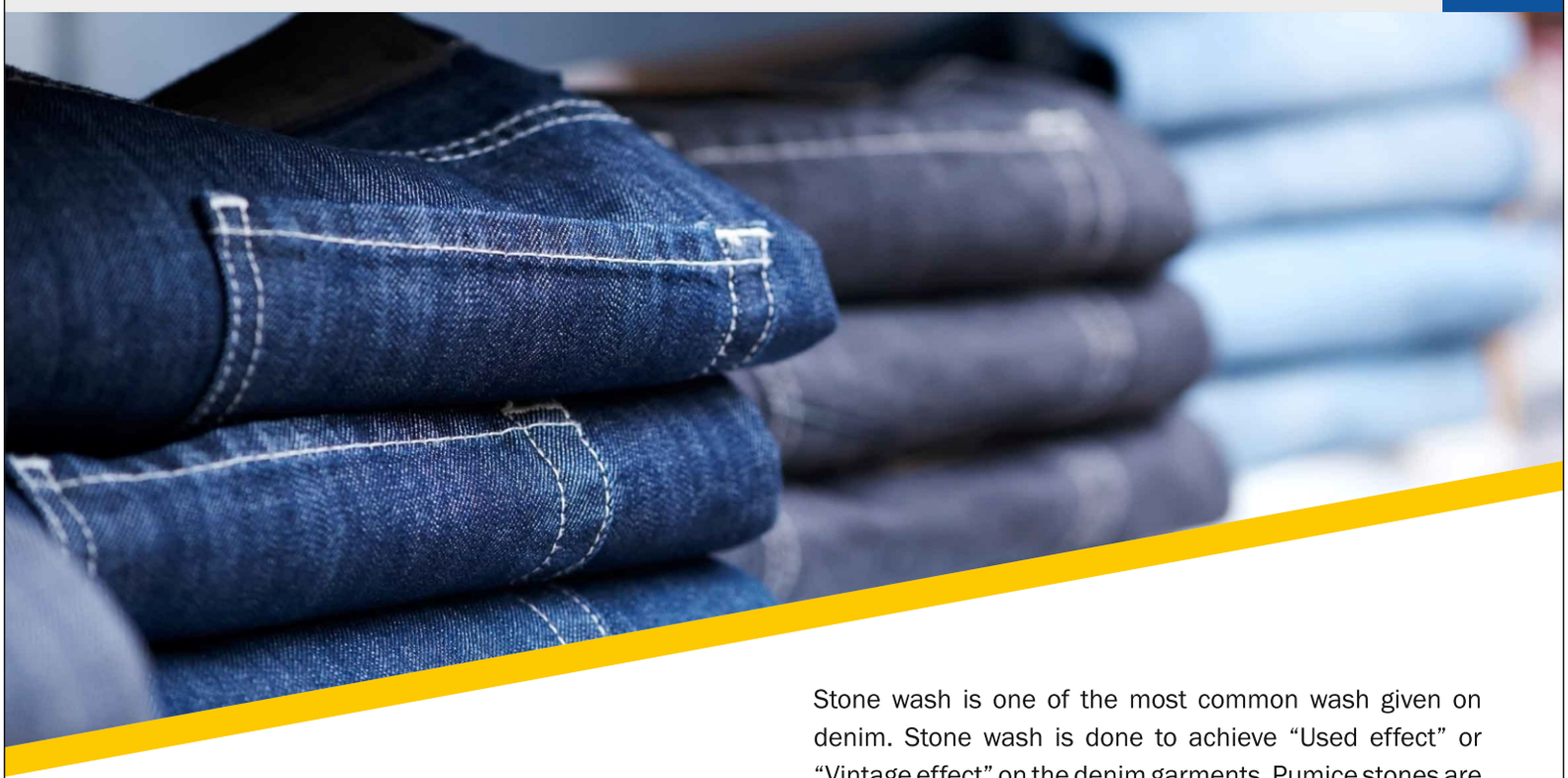
Saraquest

Exclusive Insight

CONTENT



NEUTRAZYME-573

Stone Replacement Enzyme

Denim is the most fashionable and preferred fabric among the young generation and has became most popular for its special finishes and different washes. The blue coloured indigo denim changes the colour and fades during wearing and after the washing treatments. Different looks and varying hues can be achieved on the same raw denim fabric by applying different wet process. Wet process of denim can be applied in different combinations to obtain the desired effect and colour. A number of technological factors have contributed to making denim the fashion icon that it is today. One of the most important parts of creating beautiful denim jeans is, washing. Denim washes is an important textile operation for adding value to denim/jeans fabrics and making them attractive to younger customers, particularly by equipping them with a faded or worn fashion look. Washing has such an important part in the denim chain because of the umpteen effects that consumers look for in their jeans. Different looks and varying hues can be achieved on the same raw denim fabric with different wet processes. A better washed product ensures a higher standard of denim. The purpose of washing varies and the outlook of denim also varies because of different washing methods. Denim washing is one of the key areas in getting the faded look. One after another several washes were introduced such as stone wash, acid wash, moon wash, etc.

Stone wash is one of the most common wash given on denim. Stone wash is done to achieve “Used effect” or “Vintage effect” on the denim garments. Pumice stones are the key elements of stone washing. Because the fabric is washed along with pumice stones, during stone washing process, these stones scrap off dye particles from the surface of yarn of the denim fabric which shows a faded and worn out effect on the denim fabric.

Stone washing the denim with pumice stones has some disadvantages. For instance, stones could cause wear and tear of the fabric. Also it creates the problem of environmental disposition of waste of the grit produced by the stones. High labor costs are to be borne as the pumice stones and their dust particles produced are to be physically removed from the pockets of the garments and machines by the laborers. Denim is required to be washed several times in order to completely get rid of the stones. The process of stone washing also harms big, expensive laundry machines.

Difficulty in removing residual pumice from fabric, damage to equipment and clogging of machine drainage passage due to particulate material proved to be major drawbacks

with the technique. To minimize such drawbacks, stone-washing of denim can be carried out with the aid of enzymes. The enzymes used are cellulase enzymes, specifically acting on the cellulose part, mainly on the surface of the fabric. This gives the desired look and at the same time, removes hairiness from surface thus giving a smooth and soft feel. The method of giving the denim a stone wash look by use of enzymes like cellulase is known as Enzymatic Stone-washing or Enzyme washing. Enzyme washing is an alternative method and has almost replaced stone washing. In denim fabrics, due to enzymatic abrasion, dye is released from yarns, giving contrasts in the blue colour. The fibrillation produced during ageing process is a result of the action of cellulases and mechanical action. The pumice stones damages the washer drum and reduce the fabric strength due to abrasion in the stone washing process. The application of cellulases prevents damage to the machine and garments, eliminates the time for disposal of used stones, increases the loading amount of garments in the washing drum and improves the quality of waste water. Moreover the use of cellulases results in a softer fabric hand, and strength loss is lower when compared with stone washing. Sarex has developed a product, Neutrazyme-573, which is a neutral cellulase enzyme. Below mentioned are some of its unique features.

Unique Features:

- Powerful neutral cellulase enzyme for abrasion of denim for achieving stone wash effect.
- It is recommended to achieve high colour contrast finish and improved wash look.

Application:

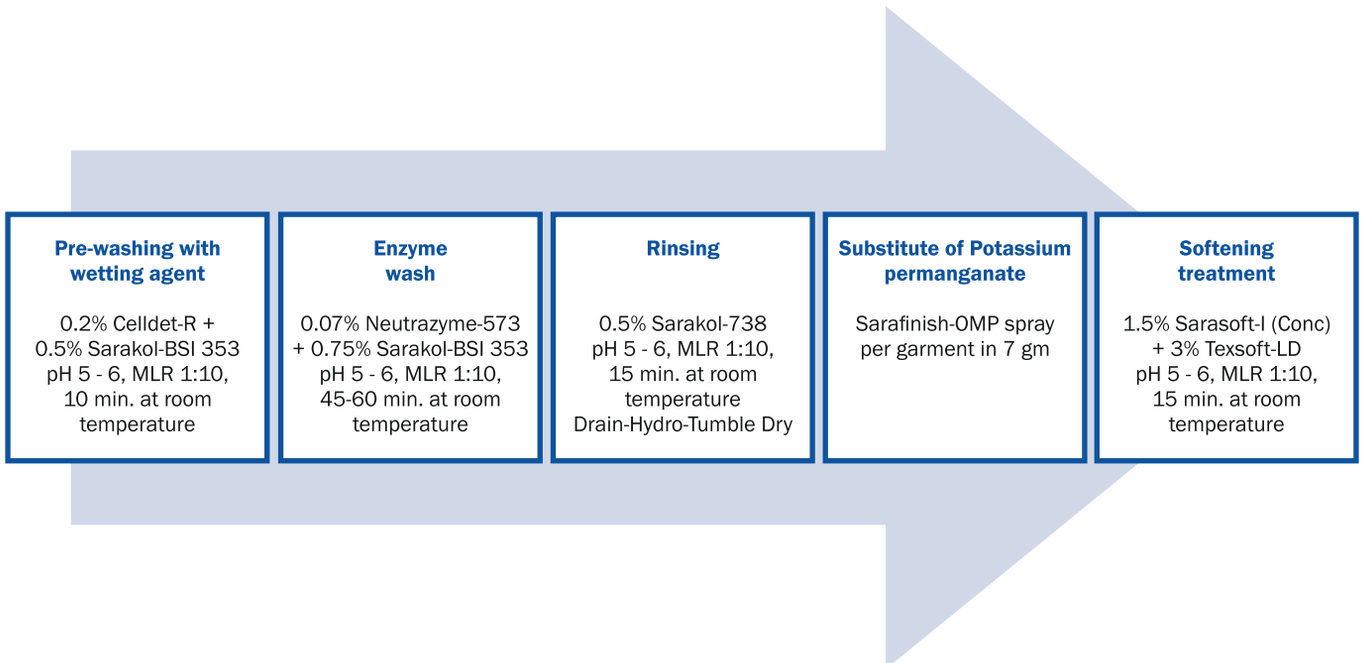
1. Trial taken with Neutrazyme-573 to obtain puckering effect:

Dosage	: 0.006 - 0.03% o.w.g
Time	: 45-70 min
Liquor ratio	: 1:10 - 1:30
Bath pH	: 5.5-7.0
Temperature	: 40-55°C

2. Trial taken with Sarex products on denim garment:

As jeans are made up of cellulosic fibres, the use of Neutrazyme-573, a neutral cellulase enzyme is successful in giving the stone wash look. It breaks down the surface cellulose fibres and removes them without causing harm to the jeans. When the jeans get the preferred colour, enzymatic reaction is stopped by changing the alkalinity of the bath or else the water is heated. Thereafter, the fabric undergoes rinsing and softening process. The number of rinsing process after enzymes treatment is less than pumice stone-washing. There is reduced amount of waste produced and overall costs for stone-washing is also less.

Following mentioned is the step by step recipe taken in bulk:



Neutrazyme-573 is a highly effective neutral cellulase enzyme for abrasion of denim for achieving distinct puckering effect and stone wash effect.

CROSSPRINT-ECO (CONC)

Cross linking Agent For Pigment Printing

Textile printing is the branch of textile wet processing industry and is becoming increasingly popular for all fibres and varieties of fabrics as well as garments. Printing of cellulosic fibres are considered to account for more than 70% of all printed substrates and pigment printing is a major method. The use of pigments for printing of textile products has dramatically increased over the last 50 years. Pigments are used to produce printed products for a number of end use including apparels, home furnishing, crafts and nonwoven articles. Over 18 billion liners yards of printed fabric produced worldwide each year, about 50% of this yardage is pigment printed.

Pigments are substance in particular forms. They are essentially insoluble in the media into which they are incorporated and are mechanically dispersed in order to modify the colour and light scattering properties of such media. Ancient Chinese used pigments for colouring textile by the block pigment printing method. Pigment printing was on rise in the 18th century however it met with limited success due to inadequacy of the binder as a fixing agent for pigment on the fabric and relatively poor pigment dispersion available at that time.

Pigment printing dominates the textile printing industry due to its many good qualities. Pigment printed fabrics have high fastness to light. Pigments can be printed on any fibres and blends and they are less expensive than dyestuffs. Textile pigments are defined as coloured organic substances which do not solubilize in water or other solvents easily and require a binding agent to hold them on the textile fibre. Pigments have no affinity to cotton and no mechanism to bond with this fibre. Organic pigments can be dispersed with a surfactant in water and this dispersion is then blended with a water-soluble or a water based emulsion of a polymerizable resin. The water is removed by drying and the polymerization is produced by heat. A disadvantage of pigment printing is that the polymer layers that enclose the pigments on the surface of fabric can break easily and so its rubbing fastness rating is poor.

For printing, pigment is always mixed with printing paste. Pigment printing system requires a binder as a fixing agent, which helps the pigment to bind with the textile substrates. The binder selected must perform several functions in order to produce a low cost, desirable, and sellable textile. We know that pigment has no affinity to cotton fabric for this reason binder is required during printing. The binder is a film forming substance made-up of long macromolecules which when applied to the textile materials together with the pigment, produce a 3-dimensional network. The 3 dimensional links are formed during some suitable fixing process, which usually consist of dry heat and change in pH value (<5), bringing about self cross linking or reaction with suitable cross linking agent. This cross linking improves the elasticity and adhesion of the film to the substrate.

Cross linking agent, which is a resin, cross links with the binder polymer to increase its durability and enhance fastness.

Cross linking agent further improves its wet fastness and rubbing fastness properties. Crossprint-ECO (Conc) is a cross linking agent developed by Sarex which when added in the pigment printing recipe, gives improved wet fastness and rubbing fastness properties. Following mentioned are the unique features of the product.

Unique Features:

- Improves the dry, wet rubbing fastness of pigment prints.
- Eco-friendly, Formaldehyde free and Methylethyl ketone oxime (MEKO) or Butanone Oxime free.

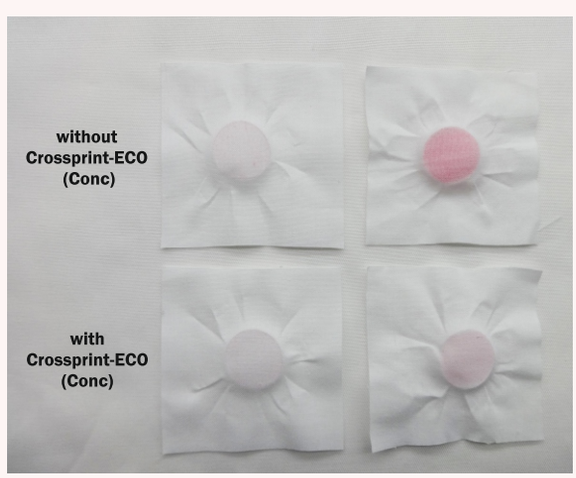
Application:
Pigment printing was carried out with and without Crossprint-ECO (Conc) with three different pigments.

Following mentioned is the pigment printing recipe which has been followed.
Pigment printing recipe:

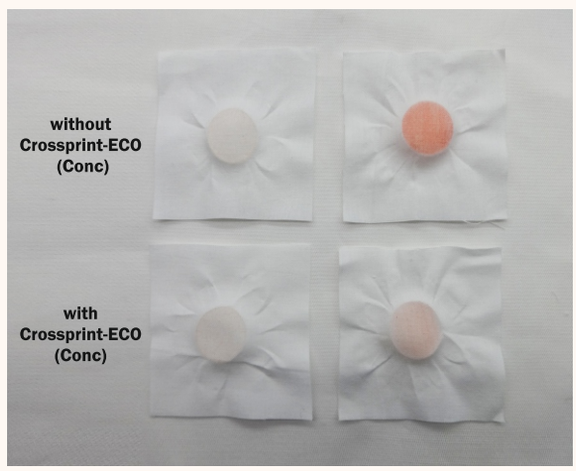
Pigment	: 3%
Synthick P-328	: 2%
Liquor Ammonia	: 0.5%
Cellbind-213	: 10%
Urea	: 5%
Crossprint-ECO (Conc)	: 3% & without

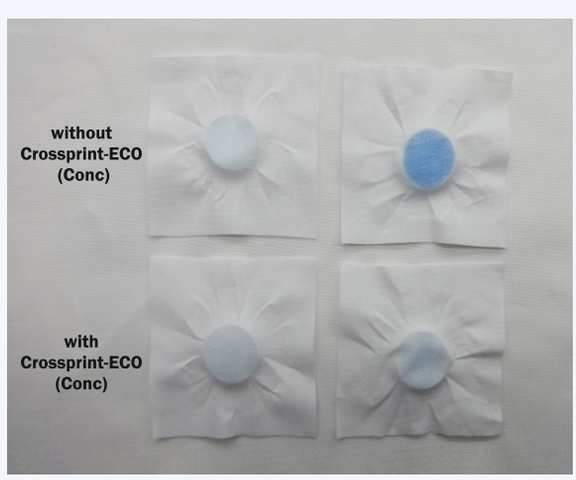
(Synthick-P328 : Synthetic thickener; Cellbind-213 : Binder)

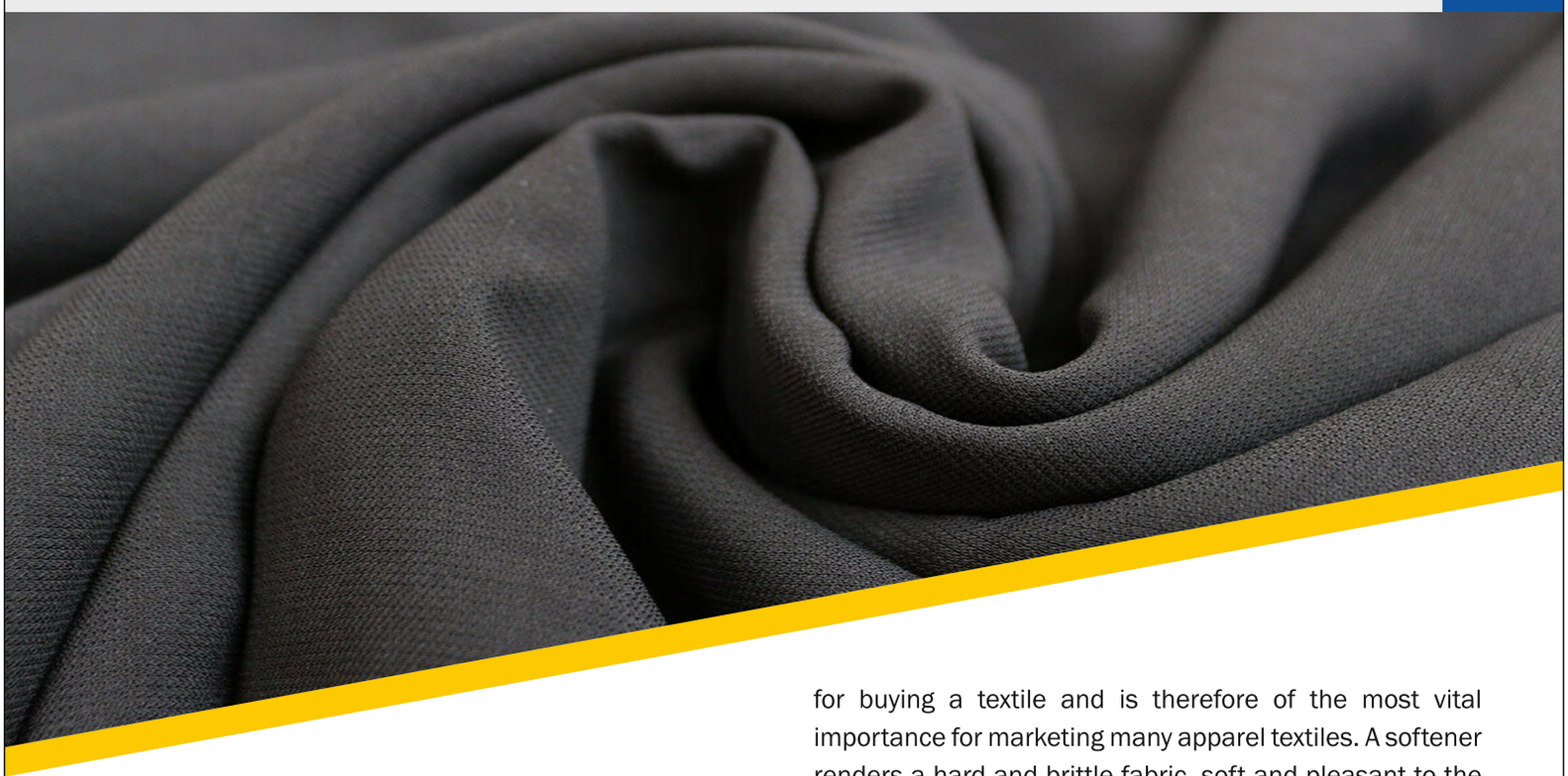
Following are the photographs of the fabric printed with and without Crossprint-ECO (Conc) with their rubbing fastness results. The improvement in rubbing fastness properties of the printed fabric explains the efficiency of Crossprint-ECO (Conc).

Printed fabric		Rubbing fastness results	
Fabric printed with Red pigment			
without Crossprint-ECO (Conc)	with Crossprint-ECO (Conc)	Dry	Wet
			

CROSSPRINT-ECO (CONC) - *Cross linking Agent For Pigment Printing*

Printed fabric		Rubbing fastness results	
Fabric printed with Orange pigment			
without Crossprint-ECO (Conc)	with Crossprint-ECO (Conc)	Dry	Wet
			

Printed fabric		Rubbing fastness results	
Fabric printed with Blue pigment			
without Crossprint-ECO (Conc)	with Crossprint-ECO (Conc)	Dry	Wet
			



CARESOFT-741 & CARESOFT-1000

Silicone Softeners

Softeners have gained great importance in textile finishing. No piece of textile leaves the production house without being treated with a softener. The softener's main purpose is to improve the aesthetic properties of textiles. The growth of silicone softener particularly in textiles has been enormous over the last few decades because they impart the desired soft handle. Softness is the subjective handle sensation felt by the skin such as soft, full, super soft, smooth, elastic etc. when a textile fabric is touched with the finger tips and gently compressed. The perceived softness of a textile is the combination of several measurable physical phenomena, such as elasticity, compressibility and smoothness.

During the fabric pre-treatment processes, the natural waxes present in natural fibres and spin finishes on manufactured fibres are removed giving a harsh and brittle feel to the fabric. A softening treatment can overcome this deficiency by imparting the desired handle, making further processing easier by improving the handling properties. Other properties such as antistatic and hydrophilic properties, elasticity, sewability, abrasion resistance properties etc. are also improved by application of softener finishes. A nice, soft handle is often the decisive criterion for buying a textile and is therefore of the most vital importance for marketing many apparel textiles. A softener renders a hard and brittle fabric, soft and pleasant to the touch so that the buyer can perceive a high degree of wearing comfort.

The softener molecules typically contain a long alkyl group, sometimes branched, of more than 16 and upto 22 carbon atoms, but most have 18, corresponding to the stearyl residue. Exceptions to this molecular structure are the special categories of silicones, paraffin's and polyethylene softeners. About one-third of the softeners used in the textile industry are silicone-based.

Silicone Softeners

These are the latest type of softeners developed and are used for bulky effects in high quality cotton towels. Silicone softeners include both polydimethylsiloxane polymers as well as a wide range of organo-modified polydimethylsiloxanes. Polydimethylsiloxanes, polymethylhydrogen siloxanes or blend of these two fluids are generally used as softeners. Silicone softeners provide very high softness, special unique handle, high lubricity, good sewability, and confer good elastic resilience, crease recovery, abrasion resistance and tear strength. They show good temperature stability and durability with a high degree of permanence for those products that form cross-linked films and can provide a range of properties from hydrophobic to hydrophilic. Silicones have been responsible for imparting super softness to fabrics over the years, and the quest to produce an optimum handle for apparel fabrics with suitable comfort properties has presented an interesting challenge.

The chemistry of silicones for textile treatment is very extensive and the commonly used silicones in textiles are based on amino-, amido-, organo- and epoxy-functionalities. Depending upon the functionality in the polymer chain, they offer a wide range of performance properties such as durable softness, sewability, lubricity, elasticity, hydrophobicity, hydrophilicity, wrinkle and stretch recovery.

Amino-modified silicones are mostly used in the textile industry because amino groups provide better affinity for textile fibres. For further fibre reactivity, the end group of amino-silicone polymer needs to be hydroxyl, methoxy, or ethoxy but if the end group is a methyl group then the polymer is termed as a non-reactive or terminated polymer. The high bonding affinity of the amine polymers makes them more substantive to fabrics than the other silicone polymers. In general the amino-functional silicones attain their best performance after 2-3 washes. Amido-functional silicones have a limited range of viscosities and nitrogen content. The benefits of amido-silicones are highly effective softening, ease of ironing, good water absorbency and low yellowing. They are more substantive to fabrics than polydimethylsiloxanes. Yellowing may result when amino-silicones are used on white garments due to the oxidation of amino radicals in the presence of air, heat and light energy which results in the formation of azoxy compounds.

In the textile industries, silicones are used in all stages of the process, on the fibre during production, on the fabric and/or directly on the finished goods. They are used as process aids for raising, sanforizing, sewing or re-winding yarns, as hydrophobic agents and also as fabric coatings.

Following are the newly developed silicone softeners in Sarex range. Unique features are mentioned as below:

Unique Features of Caresoft-741:

- Highly concentrated; shear stable silicone softener based on new technology blocked amino oil.
- Imparts outstanding softness on all types of textile substrates.
- Imparts superior softness than the conventional silicone softeners on woven/knitted fabrics.
- It provides silk like soft, supple and smooth handle to woven and knits.
- Does not affect the hydrophilicity of the finished substrate.
- Since it is shear stable it can be applied on fabric using high turbulence machine such as soft flow.
- Applicable by exhaust as well as by padding method.

Unique Features of Caresoft-1000:

- A self dispersible non-hydrophobic silicone softener.
- Imparts very good softness on cotton, polyester and blends.
- Applicable on woven, non-woven and knit fabrics.
- Imparts surface smoothness on the treated fabrics.
- Applicable by exhaust and padding technique.
- Shear stable and hence can be used on soft flow machines and garment washing machines.
- Concentration and economical.

Application:

Following is the recommended application procedure:

Padding Process	Exhaust Process
Caresoft-741	
Dosage : 10-30 g/l Pick-up : 65-70% Bath pH : 5.0-6.0 Drying : 130-160°C	Dosage : 0.3-0.8% Bath pH : 5.0-6.0 Bath Temp : 30-40°C Time : 20-30 min
Caresoft-1000	
*Dosage : 20-60 g/l Pick-up : 65-70% Bath pH : 5.0-6.0 Drying : 140-160°C	* Dosage : 2-4% Bath pH : 5.0-6.0 Bath Temp : 30-40°C Time : 15-20 min

**Dosages are based on 20% dilution of Caresoft-1000*

Sarex

Sarex stands for quality products!

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