

Some answers to the Wrinkle Free Process of Cotton Shirts

I guess the idea of a shirt which has not to be ironed anymore is as old as the cotton shirt itself. Apart from all attempts which has started decades ago to establish a shirt of Polyester or any other artificial fibre failed, as the consumer understood from the beginning the positive attributes of the cotton fibre. By its ability to hold moisture and to release it controlled, cotton is one of the most ideal fibres among all. It is breathable and remains a good feeling for the garment bearer. This may has changed by today's new developments of artificial fibres, which have nothing to do with those from the sixties of the last century. But still the cotton fibre is number one in peoples mind when they think of comfort. In the last decade new technologies have been established to prepare the cotton fabric by chemicals, to make them almost wrinkle free or, as some manufacturer call it wrinkle resistant (WR). Basically four different technologies are known today to do so.

- Pre- Curing
- Post- Curing
- Dip- Spin
- Vapor – Phase

But, what basically happens during or after this process ?

All four systems have one issue in common, the cotton fibre is swelled artificially and by this process it is loosing its memory. Instead of being curled as it naturally is, it becomes straight. And as it has increased its diameter, it is almost impossible to crease. The negative aspect is, that by this process it loses a part of its tensile strength and habit to absorb moisture.

Pre- Cured fabric

Fabric can be a 100 % cotton fabric or cotton blend.

Contrary to all the other WR processes, by this system the fabric does not need any further heat treatment as the curing process has been done already before the shirt is manufactured. The already finished fabric is resistant to wrinkles already. Unfortunately no crisp and sharp creases can be realist for collars, cuffs and front placket edges. As the fabric does not accept any final pressing.

Only a shirt finisher with steam and air is required.

Post- Cured fabric

In this case the fabric can be a 100 % cotton fabric or a cotton blend. The fabric will be delivered with the curing chemical inside. The roll of fabric is sealed in a polyester bag . Once the bag is opened the fabric has to be manufactured entirely, as it cannot be stored for a long time. After the shirt is manufactured, it has to be pressed entirely. After it has been put on a hanger it will be cured in a hanging position on a cloth rack inside an oven for 3- 5 min. by about 130°C to 150°C (depends on the chemical used). Now the shirt is ready for folding and bagging.

Dip- Spin system

This one belongs to the most popular process for wrinkle free shirts and can be used for 100 % cotton fabrics or cotton blends. After the shirt is manufactured as usually, it will be dipped into a mixture of chemicals, which will be absorbed by the cotton fibres. After the treatment in a tumbler the shirt is still moisturized and has to be pressed entirely. Important is, that during the pressing operation on the various Veit- Kannegiesser Collar-, Cuff- and Body- Presses, the curing process will start already. After pressing the shirt will be put on a hanger and can be cured in a curing oven by about 140°C for about 3 -5 min. One of the key factors for a perfect appearance is the pressing quality, as after the curing operation in an oven, all wrinkles will stay for life. A re-touching by an iron is impossible.



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Vapor – Phase

This curing system can be used in some countries only as very aggressive chemicals are used. Similar to the DIP SPIN system the shirt is manufactured as usually. After the final pressing, a special curing oven is used as instead of liquid chemicals, gas is used to make the shirt resistant to wrinkles. The gas is circulating through the oven and penetrates into the cotton fibre. After a while the gas has to be evacuated from the oven. Before the shirt is folded and bagged, it needs to be washed in order to remove left chemicals inside.

Parameters	Pre- Cured	Post- Cured	Dip- Spin	Vapor – Phase
Whether cotton blend can be treated	Yes, cotton blend as well as 100 % cotton	Yes, cotton blend as well as 100 % cotton	Yes, cotton blend as well as 100 % cotton	Yes, cotton blend as well as 100 % cotton
Crease retention or lasting	No creases at all	Long lasting	Long lasting	Long lasting
Cost of treatment	Expensive because of fabric which has been finished already	Expensive because of oven treatment	Expensive because of oven treatment	Expensive because of oven treatment and environmental protection
Problem faced during garment making (cut+sew+finish)	No crisp edges on collar, cuffs and pockets	Shell life of fabric is very limited, once sealing is open Difficult to find the right curing time in the oven Risk of yellowing effect, due to high temperature in the curing oven	Washing process is done by the shirt manufacturer, difficult to find the right curing time in the oven Risk of yellowing effect, due to high temperature in the curing oven	Extremely aggressive chemicals which can harm health Not allowed to use in a number of countries Risk of yellowing effect, due to high temperature in the curing oven
- Thread - Interlining	No special thread or interlining required,	Special thread and interlining required, because of heat treatment in the oven	Special thread and interlining required, because of heat treatment in the oven	Special thread and interlining required, because of heat treatment in the oven

Anyway, important is the proper pressing of the shirt and that all parts will be pressed before curing. Nearly all chemical suppliers insist on accurate pressing and curing temperatures. Pressure and timing also matters a lot. As the cotton fabric starts to cure by the pressing operation already, the evenness of pressing temperature and dwell time is important. The advantage of a reliable pressing equipment like the Veit-Kannegiesser system lays in it accuracy of temperature and pressure.



Veit- Kannegiesser H-PV2, for pressing the entire body of the shirt in one operation. Equipped with an automatic unloader.

The longer the pressing time, the shorter the time in the oven for curing later. After pressing the shirt should be not touched any more to avoid finger prints and impressions. Usually by a hanger on a cloth rail the shirts are cured in the oven. The curing time and temperature is specified by the chemical suppliers and have to be fulfilled by all circumstances.

It is important to talk to the interlining and thread suppliers before the WR shirt is manufactured to maintain the quality after curing and to avoid bubbles for the interlining and puckering for the seams.

