



## TECHNICAL BULLETIN

### STABILIZER AND BACKING GUIDE FOR MACHINE EMBROIDERY

In machine embroidery, sewing machines are used to create designs and patterns on the fabric. Stabilizers are used to prevent the fabric from puckering or stretching during the stitching process. Often referred to as backings in the industry, stabilizers are an essential part of the machine embroidery process because they can make or break the embroidery design.

Puckering is mostly common in knits and tightly-woven fabrics. When the fabric is too light, or the embroidery thread has more strength, the fabric underneath the design contracts due to the weight of stitches and wrinkles. This can be prevented by using stabilizers underneath the embroidery design. They provide temporary strength to the fabric, allowing it to resist the pull caused by the weight of stitches, and therefore prevent the puckering. The backings can later be removed by cutting, washing, or tearing of the excess stabilizer once the process has been completed.

Choosing the correct stabilizer for the design is an important decision. To create an excellent embroidery design, it is necessary that the fabric is not over or under stabilized. Typically, the backings used are made of wet-laid non-woven fabrics. This means that they are constructed with random fibers bonded together to form a fabric sheet. This bonding gives the backing a non-directional nature, making it strong and stable.

### ESSENTIAL FACTORS TO CONSIDER WHEN BUYING A STABILIZER

There are many varieties of stabilizers available in the market so it is important that you make an informed decision. Here are some factors to consider when making the choice, depending upon the type of machine embroidery that is being created.

#### EMBROIDERY DESIGN

Embroidery design is one of the key factors that impact the decision of choosing the backing. Designs that have a higher number of stitches need more support to keep the fabric intact, and therefore, a heavier stabilizer. More intricate or complex designs also need heavy backing. For larger designs, especially those that with a complex digitized design, heavy stability will be required. A medium weight cutaway stabilizer would be ideal for embroidery designs that are filled with solid stitches. A sheer mesh cutaway stabilizer, on the other hand, would be ideal for embroidery designs that have light running stitches. The design should be well-digitized so it has enough underlay to provide a proper base to support the stitches.

#### TYPE OF FABRIC

The type of fabric is the most important factor to consider when choosing a stabilizer. The right stabilizer should have a weight that is compatible with the weight of the fabric. If the fabric is heavy, the stabilizer should be heavy too. If the fabric is lightweight or soft the weight of the stabilizer should be light too. Knits and stretchy fabrics typically have better design stability with a



cutaway stabilizer. The cutaway stabilizer would not only support the fabric during stitching, but also during the usage of garment preventing the stitches from rupturing when garment is stretched.

If a sheer fabric is being used for the embroidery, a water-soluble stabilizer is recommended so that no remaining bits are visible from the other side. Compatibility between the embroidery design and fabric is also something that should be considered. A light weight fabric cannot sustain a complex design with high number of stitches whereas on a heavy fabric an open design with less stitches would be lost.

## FABRIC'S APPEARANCE FROM THE BACK

The choice also depends on how the fabric should look from the backside. Water soluble stabilizers are used if a clean appearance is required. Tearaway stabilizers can be used if partial removal is required. When cutaway stabilizer is used, a circle piece of stabilizer is still left behind at the back of the fabric. This

## FABRIC FEEL

The type and weight of the stabilizer being used will have an impact on the drape of the fabric. A heavier stabilizer will add to the weight especially if there is residue, as in the case of a cutaway stabilizer. Using tearaway stabilizers adds to the weight as well because some part of the stabilizer will still be left behind the stitches. Washaway stabilizer is water-soluble and leaves no residue after washing so it does not add to the weight. The drape of the fabric is inversely proportional to the weight of the fabric. The greater the weight of the fabric, the less drape it has, and vice versa.

## TYPES OF STABILIZERS

Technological advancements have brought a wide variety of stabilizers to the market. The plethora of options can be daunting when a choice has to be made regarding the correct stabilizer for the embroidery project. There are, however, a few basic types of stabilizers which are widely used.

In today's market, most stabilizers will be available in different weights, usually measured in ounces per square yard. The heavier the stabilizer, the more stability it will provide. Many different weights, types and sizes of stabilizers, in both pre-cut sheet and on rolls, can be found. When choosing the stabilizer, it is important to consider the type of embroidery, the intensity and density of stitches, the type of fabric, the type of thread and the feel of the fabric. Here's a comprehensive guide to help you make an informed decision.

STABILIZER TYPE	USE	APPLICATION	DESCRIPTION
CUTAWAY	Provides permanent support to the fabric	Knits and loosely woven fabrics	<ul style="list-style-type: none"><li>• Only excess is removed, rest remains with the fabric;</li><li>• Widely used in industrial sector</li><li>• Washes well;</li></ul>



			<ul style="list-style-type: none"> <li>• Available in different weights.</li> </ul>
<b>POLY-MESH CUTAWAY</b>	Provides permanent support to the fabric	Lightweight and knit fabrics	<ul style="list-style-type: none"> <li>• Woven, semi-transparent;</li> <li>• Does not show through sheer garments.</li> </ul>
<b>TEARAWAY</b>	Provides temporary support to the fabric	Firm and evenly-woven fabrics made of natural fibers	<ul style="list-style-type: none"> <li>• Can be used in single or double layers;</li> <li>• Recommended for dense embroidery designs on medium to heavy fabric;</li> <li>• Not suitable for lightweight fabric and sweaters;</li> <li>• Available in different weights, and in fusible and non-fusible forms.</li> </ul>
<b>HEATAWAY</b>	Provides temporary support to the fabric	Delicate, non-washable fabrics that can tolerate heat of upto 430° F	<ul style="list-style-type: none"> <li>• Fully removable through use of iron;</li> <li>• Suitable for less dense embroidery designs;</li> <li>• Recommended for fabrics such as lace, satin or velvet.</li> </ul>
<b>WASHAWAY</b>	Provides temporary support to the fabric	Delicate, washable fabrics or fabrics with pile such as terry and velvet.	<ul style="list-style-type: none"> <li>• Available in various forms such as plastic films, liquid or paper sheets;</li> <li>• Can dissolve completely in warm water.</li> </ul>

The three major types of stabilizers used for machine embroidery are cutaway stabilizers, tear away stabilizers and wash away stabilizers. They are categorized by manner in which they can be removed from the fabric. There are other ways to categorize them such as their weight, colors or application. In some categories, different colors are also available to prevent shadowing on the fabric.

### CUTAWAY STABILIZERS

The cutaway stabilizers provide The most amount of stability out of all three kinds. They can be used for all kinds of fabrics but they are mainly preferred for knits and stretchy fabrics. Some examples include polo shirts, t-shirts, and golf shirts. It provides the foundation for the design and keeps the



stitches from breaking or distorting after being on. It provides the best quality stitch while ensuring good alignment of the design. These are highly recommended for designs with high stitch counts.

Cutaway stabilizers are further classified into three categories by weight: heavy weight, medium weight and poly-mesh cutaway. The heavy weight cutaway is suitable for heavy fabrics and designs with a high number of stitches. It is available in black and white. Medium weight cutaway is suitable for medium weight fabrics such as knits, lightweight denims. It is only available in white. Poly-mesh cutaway has a very soft and gentle feel against the skin. It is available in white, black and beige. It is suitable for lightweight and thin fabrics so that the shadowing effects can be avoided.

### **TEARAWAY STABILIZERS**

Tearaway stabilizers are used when there is a need for removing the excess stabilizer from the back of the fabric after it has been embroidered on. They are ideal for many fabrics except stretchy knits and extremely sheer fabrics. Some examples include quilted fabrics, polycotton fabrics, vinyl, linen, towels, leather, and 100% cotton fabrics. They are suitable for women's clothing that has less stretch because it provides the back of the embroider a cleaner look. While removing the tearaway stabilizer, one hand should support the stitches while the other one tears it away from the outside of the design.

The tearaway stabilizers are also classified into by weight: light, medium and heavy. The heavy weight tearaway is suitable for designs that are high stitch intensive. They are only available in white, and have a stiff, crisp texture which makes them easier to grasp, and tear. The medium tearaway has a firm texture but is easy to remove. It is only available in black and is thus suitable for dark, woven fabrics and in designs with high to medium stitch count. The lightweight tearaway is suitable for thin fabrics and in designs featuring a low stitch count. They are easy to tear away and provide clean edges to the design. They are only available in white.

### **WASHAWAY STABILIZERS**

The washaway stabilizers dissolve in warm water. They are used when a complete removal of the stabilizer is required from the fabric. They are recommended for sheer fabrics such as organza, tulle, or batiste, or for fabrics on which the embroidered design will be seen from the back as well as the front. They are available in both plastic and mesh-like form. Once the fabric is washed, the washaway stabilizer will rinse off and stitches will lose their stability. They are also highly recommended for fabrics that have pile such as terry, velvet, corduroy etc. It provides a smooth surface for the embroidery on top of the fabric and therefore a seamless stitching. Washaway stabilizer cannot support a high amount of stitches Like the tearaway or cutaway stabilizers

The washaway stabilizers can further be classified into three categories; Aquafilm, AquaMesh and BadgeMaster. AquaFilm is a clear backing film which is Lightweight and can be washed away quickly. If the quilt itself cannot be hooped, the washaway stabilizer can be used for quilting the hoops. However, it is not strong enough to support the formation of stand-alone laces. AquaMesh is a strong opaque stabilizer that can Support a relatively high number of stitches. Excess fabric is



cut first and then rinsed so that it can be removed. AquaMesh is strong enough to create stand-alone laces and can sustain perforation during the embroidery process. It is suitable for embroidering on fine, sheer or lightweight fabrics, such as chiffon and organza. BadgeMaster is a clear stabilizer that is heavier in comparison to AquaFilm. It has the strength to be used for stand-alone laces or freestanding appliqués. It is highly recommended for fine, sheer or lightweight fabrics.