Non-Woven Totes:
What You Need To Know

In recent years, non-woven polypropylene totes have grown to become one of the industry's fastest selling product lines. Indeed, as one of the hottest products available, you can find many different types of totes and silhouettes using this material.

In finding the best tote options for your customers, there is actually quite a lot to know about polypropylene – how it's made, its physical characteristics, imprinting capabilities and eco-characteristics – just to name a few. And indeed there can be vast differences in the many polypropylene totes available to you.

So how do you make sense of it all? We offer this white paper as a closer look at the key dynamics of non-woven totes, plus we provide some helpful hints in sourcing, comparing and selling non-woven totes to your customers. We close with a synopsis of our own strategic approach regarding each of the topics discussed here.

What Is Polypropylene?

Simply put, polypropylene is a form of plastic. It's available in a wide variety of forms but is essentially a flexible resin polymer. While the formal chemical name for the material is polypropylene, the generic layman's term is "non-woven" simply because it's really a large sheet of plastic and not a woven fabric. The material has been debossed to give it the appearance of woven cloth, yet it is really a non-woven material.

How It's Made

Making polypropylene involves a process called "extrusion". Small polypropylene pellets are injected into an extrusion machine and mixed with color concentrate. As the material moves through the extruder, it goes through several chemical and heat processes. At the end, the result is a wide, flat material which gets debossed to give it a cloth look. The material is then spooled onto large rolls.

Measuring Its Weight – What is GSM?

The primary market measurement for non-woven totes is GSM, or grams per square meter. GSM measures the weight and density of the polypropylene material. The higher the GSM, the higher the density and the stronger and more durable the material.

Most totes in our industry measure between 70 and 100GSM. The weight chosen is determined by the size and intended use of the tote. There is a marked quality difference between these two ends of the weight spectrum and you would easily be able to feel the difference between the two. It's important to note that the density of material is directly related to the quality and durability of the tote. In general, an 80 GSM tote will not be considered as strong or as durable as a tote constructed of 100GSM.

Material Quality

While GSM is a measure of density, it is not a measure of the quality of the polypropylene itself. The actual quality of the material is determined by the quality and content of the raw polypropylene resin used.

For example, imagine that you offer your customer 3 different cotton t-shirts, each with an identical weight of 6.2 ounces per square yard. While the weight of each t-shirt is identical, does that mean the quality of the cotton is identical? Certainly not. The quality of the cotton fibers used could be different between each shirt.

And just as some shirts come with a blend of cotton and polyester, some polypropylene totes may also come with a blend of chemicals. For example, some polypropylene tote materials might contain a certain percentage of calcium carbonate, an inert "filler" material that reduces the required amount of virgin polypropylene. This brings down the cost of producing the material but also impacts its strength and quality characteristics.

There is also one more important issue to consider here – the type of "extruder" used to manufacture the polypropylene. The machinery used for extruding non-woven material is generally manufactured either in China or in select European countries. European extruders are widely considered to produce the best quality polypropylene. Be sure to ask your supplier the manufacturing origin of their extrusion machines.

Color Consistency

One additional quality dynamic of polypropylene is its consistency of color across the surface. Sometimes it's a matter of color concentrate used and sometimes it's a reflection of how evenly "flat" the material is made.

Shade variances can occur, however, prominent shade differences should not. The color consistency of any non-woven tote should be even and provide the best possible background for your customer's design. To get a sense of "evenness" of the material, perform a quick test by holding the tote up to the light. Is there a consistent color shade and density across the surface of the tote, with no fading or overly dark areas?

Stitch Count

Since many non-woven totes are sewn together, the pattern and density of the stitches used to construct the tote are very important quality considerations. How well the tote is sewn is directly related to its strength and durability.

Think about it this way: if non-woven material is simply a large sheet of plastic, each time a sewing needle enters, it makes a hole in the material. If the sewing machine puts too many stitches too close together, what you may have is a "shearing" affect in which the material is being sliced as it's being sewn. Therefore, look for a balance of stitches-to-GSM ratio of about 6 stitches per linear inch. Any stitch count higher or lower will compromise the integrity of the tote.

Imprinting

Imprinting on polypropylene poses unique challenges to suppliers. Most suppliers screen print on their non-woven totes. It's is a low-cost, high-speed solution that offers suitable results.

However, screen printing on non-woven totes requires an attained set of production skills and there are definitive techniques to achieving excellent results. These techniques focus on 3 core areas: ink coverage, multi-color designs, and curing the ink.

Achieving the best ink coverage on a textured material like polypropylene is an acquired skill set. And it all starts with the ink itself. The same screen print inks used on t-shirts are not the same inks used on non-woven totes. The differences between the materials (woven vs. non-woven; porous vs. solid) are sufficient enough that the ink chemical compositions must be different, and thus their adhesion

properties as well. So look for a supplier who can give you great ink coverage, particularly white ink on dark colors such as red, black, hunter, and royal. There is great skill involved when a supplier can provide excellent coverage without the material color showing through.

Difficulties also arise when trying to imprint multi-color designs. Since the material is really plastic, and a screen printer is required to heat flash between colors, the end result is that the tote actually shrinks in size a bit. And since no two totes shrink the same amount from the heat, color registration becomes a real challenge and significant shifting can occur. This can result in a large percentage of damages.

The final print dynamic involves curing the ink after imprinting. In general, large gas ovens are used to cure the ink as totes travel on a belt through the oven. As you can imagine, the oven temperature and the speed of the belt directly impact the imprint quality. This is another area in which local screen printers accustomed to printing apparel have run into difficulties. As a plastic product, the totes have far lower heat tolerances than apparel.

However, it can be said that transfer printing has proven to be a very successful alternative. Transfers offer close registration, vivid colors, better coverage, and even 4-color process (photo image) capabilities. However, the same heat dynamics exist when applying the transfers so look for a supplier who has clearly mastered this imprint technique.

Eco-Friendly

A large part of polypropylene's appeal involves its eco-friendly characteristics. Many such totes contain recycled content, are reusable so they eliminate the use of other plastic bags, and can generally be recycled at the end of their life span.

During the manufacturing process, some suppliers reclaim their production waste because it can be reused in the next production run. Some suppliers have chosen not to do this. All polypropylene is generally 100% recyclable when the user is through with it. Polypropylene is rated a "5" on the Society of Plastics Industry's (SPI) spectrum of recycled codes.

A note about "recycled content" claims: All polypropylene totes that claim to have 100% recycled content can only be black. The claim can not be made for colors. That's because the reclaimed material being recycled consists of all shades and tints and is not separated by color. The resulting color when extruded is a very unattractive mesh of darkened gray, brown, and black. Therefore, an amount of black color concentrate is added to give the material a consistent, even color tone.

Product Safety & Compliance

Like all products in our industry, non-woven polypropylene totes are subject to the local, state, and federal laws that govern product safety. To date, the most prevalent laws are California's Proposition 65 and the recently enacted Consumer Product Safety Improvement Act (CPSIA).

When it comes to product safety for polypropylene, compliance with these laws generally focuses on acceptable levels of 4 substances: mercury, chromium, cadmium, and lead. As you source these totes for your customers, be sure to ask your supplier if their bags are compliant with these regulations. And, as required by some of your customers, be prepared to ask your supplier if they're willing to provide certification to support this.

BAG MAKERS' NON-WOVEN TOTES

In creating this educational tool for you and your customers, we want you to be fully informed about the research and development we've undertaken to make sure our totes are not only the best quality we can offer, but that they also exceed market expectations.

Material Weight –Our GSM Measures

All of our non-woven products are either 80 or 100 GSM polypropylene. We assign the GSM during the product development process based on the size and use of the tote. Each of these GSM materials are weight-tested for tensile strength and durability. Those bags engineered for more intense use – such as our Big Thunder, Ultimate, and Thunderbolt totes – are all constructed with 100GSM material.

Material Quality

Our polypropylene is made on German-engineered and manufactured extruders. These machines are world-renowned for their quality and consistency. In addition, we use only the highest quality polypropylene resin and our extrusion process includes no filler materials to "water down" its quality.

Color Consistency

All of our extruded polypropylene is subjected to quality control testing for both "evenness" of color across the material as well as consistent material density.

Stitch Count

Bag Makers' non-woven totes are engineered for the best stitch ratio-to-GSM of about 6 stitches per linear inch. This provides the most advantageous strength balance given the polypropylene's weight and density. Too many stitches will simply weaken the material's tensile strength.

Imprinting

Bag Makers spends considerable effort ensuring the quality of our imprinting capabilities. Our inks are specially formulated by us to provide the best coverage and design presentation, and we excel at printing light inks on dark color totes. Since we are solely a bag company, all of our presses are calibrated for screen printing on bags. We never have to recalibrate a press for a different product.

Once imprinted, our totes go through a careful ink curing process, one that employs a careful balance of gas heat and time exposure that also maintains the quality and integrity of the tote. For two-color screen printing, new investments in technology have allowed us to improve our registration results while keeping your costs down. For more intricate designs, the introduction of our ColorVista transfer process offers the perfect solution without the screen, set up, or multi-color run charges associated with screen printing.

Eco-Friendly

In constructing our non-woven totes, we reclaim our production excess to limit our waste. As a result, our non-woven totes contain 20% post-industrial recycled content. Other suppliers don't incorporate this reclamation process and therefore reduce the eco-characteristics of their totes.

Product Safety & Compliance

All of Bag Makers non-woven totes fall well below the current thresholds set by both California Proposition 65 and CPSIA and certification documents are available upon request.