

Green **The Original Industry: Rags**

Ever since the industrial revolution, businesses have been using textile wiping rags as part of their day-to-day work, and reclaiming textiles has been an important part of that process. It's good for the environment and it's good for business!

It's also big business. Every year the United States generates over 23 billion pounds of textile/fabric waste, and over 3.8 billion pounds of that waste are reclaimed or recycled.¹ That's a lot of waste and a fair amount of recycling. From a usage perspective, over 3 billion solvent-related industrial wipers are used annually in various industry sectors.²

Textile/fabric usage and waste is a big deal and – as you will see – can have a significant impact on the environment. Reclaiming used textiles of all kinds and converting them to wiping rags is one way that we can reduce the environmental impact and how a wiping rag is produced is a fascinating story.

How rags are produced

Our story begins with a consumer deciding that old clothes or towels/linens are no longer needed. Hopefully, they give those clothes to a charitable organization, sell them through a used clothing store, or give them to family as “hand-me-downs”. If they just throw the old clothes away, that's the end of our story because the old clothes go in the landfill. That's something we want to avoid for a host of reasons which you'll see as we proceed through our story.

If given to a charitable organization, they're on their way. The first stopover along the road to rags is preliminary sorting and grading, as not every piece of old clothing winds up as a wiping rag. Some of the clothes are old or special in some way and end up in vintage clothing stores where they are sold for a premium. These garments must be in excellent condition and are clothes with cachet.

Once the vintage clothes have been sorted out, the next grade is the serviceable clothing that can be sold for normal, everyday use. Some winds up in thrift stores, and some is collected and shipped overseas to be sold in the foreign marketplace – usually in lesser-developed countries. Even with the cost of shipping, these clothes can be sold cheaply enough that people living on approximately \$1500/year³ can afford them: even with the cost of shipping, a pair of pants or shirt will be quite affordable once it reaches its destination in Africa or Asia. Finally, the remainders are one source of the materials that wind up as wiping rags.

However, this is not the only source. Hospitals and hotels, for example, are a great source of raw materials for the rag business. Once an establishment decides that the towels or linens are no longer usable in their organization, they are handed off to a processor who goes through a similar sorting/grading process as done for used clothing. They can be sold or exported as is and the remainders become fodder for creating wiping rags.

At this point, we have piles of textiles waiting to be processed into wiping rags. There is yet another grading/sorting process that occurs by the rag manufacturer. There are many different kinds of fabric to be processed: it may be white or colored; very absorbent or not so much; soft or rough. There's linen,

¹ EPA Report *EPA530-F-07-030*, Nov 2007, <http://www.epa.gov/epawaste/nonhaz/municipal/pubs/msw07-fs.pdf>. This is for 'municipal solid waste' which does not include industrial, hazardous, or construction usage.

² EPA Report *EPA530-F-03-038*, Nov 2003, <http://www.epa.gov/epawaste/hazard/wastetypes/wasteid/solvents/wipes-fs.pdf>

³ *Demographics of South Africa*, Jan 2008, http://en.wikipedia.org/wiki/Demographics_of_South_Africa

t-shirts, toweling, flannel, plain cotton, and many other varieties of material, all of which have to be sorted, packaged, and directed to the task they are best suited for.

Finally, the various raw materials (towels, clothing, linens) are cut into wiper-sized pieces and unwanted items (such as buttons, zippers, pockets) are removed. The result is a simple piece of cloth, graded by material quality and color, ready to be packaged and sent to its destination.

Packaging rags

Packaging for shipment is also interesting. Cloth is by its very nature quite bulky – a 50 pound box of rags is fairly large and unwieldy. American Textile & Peerless Materials pioneered the West Coast introduction of special machinery and processes to compress the rags into a much smaller size. This process reduces cardboard waste (which saves about 4 pounds), provides for easier & safer handling, and requires less storage space.

Once packaged and labeled, the rags are shipped to wholesale, retail, or industrial locations through a variety of distribution channels. The end result is that janitors, mechanics, painters, tradespeople, manufacturers, and a host of other businesses have a cost-effective and environmentally sound solution for their wiping needs.

Rags are good for the environment

“So what?!” you might say; “It’s an interesting story, but why should I care?” The reason is that it’s more than just a pretty story – there are solid environmental benefits when using wiping rags made from recycled textiles. For this part of the story, we have to differentiate between a few basic differences in wiping rags. The industry recognizes three fundamental types of wiping cloths.

1. Reclaimed wiping rags – the ones made from reclaimed textile materials and the story that we are talking about here.
2. Non-woven and paper wiping rags – purpose-made, either wholly or in part, from paper and non-textile materials such as polypropylene or other synthetic materials
3. Rental wiping rags – purpose-made towels that are rented to the end user and washed and reused until they must be discarded.

There have been a few studies done in the past, one commissioned by the US Environmental Protection Agency⁴ and one commissioned by SMART (Secondary Materials and Recycled Textiles Association)⁵. The net results show a significant difference in the environmental impact of the three wiping products listed above.

The SMART study investigated the environmental impact in 3 areas: water use, energy use, and waste generated.

- Reclaimed wiping rags have the least overall impact on the environment of all three wiping cloths. They use less energy and less water than the other two categories, and generate significantly less waste than laundered (rental) wiping rags.
- Non-woven/paper wiping rags generate the least waste of the three categories, but have the highest energy usage of the other two categories and the 2nd highest water usage, using only slightly less than the rental wiping rags.

⁴ EPA Report EPA/600/R-96/150, Feb 1997, *Environmental Assessment of Shop Towel usage in the Automotive and Printing Industries*, Lockheed-Martin for the National Risk Management Laboratory

⁵ *Environmental Life Cycle Analysis of Disposable Wipers and Laundered Shop Towels*, Sept 7, 1999

- Reusable wipers (rental wiping rags) have the greatest impact on the environment, in large part due to the large amount of 'sludge' containing hazardous chemicals and other compounds that are discarded with the wash water. They also have the highest water usage of the three categories.

The Lockheed-Martin study also measured the environmental impact in terms of water use, energy use, and waste generated. It shows similar but slightly different results. This is graphically illustrated below, using the data from that study (Red indicates the greatest environmental impact and Green the least).



Environmental Impact Comparison

	<i>Woven (Laundered) Wipers</i>	<i>Non- Woven Wipers</i>	<i>Paper Wipers</i>	<i>Reclaimed Rags</i>
<i>Water</i> ¹	17,060	3,160	13,770	~0
<i>Energy</i> ²	66,820	761,500	947,800	~0
<i>Waste</i> ³	88.4	67.8	74	110.5

1 - Water in pounds per 1000 towels

2 - Energy in BTU per 1000 towels

3 - Waste in pounds of solid waste per 1000 towels

Comparison based on data from the Lockheed-Martin study

Rags have many different applications

With regard to the reclaimed textile wiping rags, it is useful to understand that they are applicable to a wide range of activities since they are based on different textile materials with different characteristics. If you want a soft, lint-free wiping rag for polishing, or a super-absorbent wiping rag for cleanup, these and many other characteristics are available.

You can find reclaimed textile wiping rags with a wide array of characteristics, such as: softness; absorbency; lint-free; colorfastness; durability. Just think of all the different kinds of textile materials and you can see how each of those can be just the right material for almost any kind of wiping application.

Reclaimed rags are the *Original Green Industry*

By now, you have a better idea of what a reclaimed textile wiping rag is all about: how it's created, what it's used for, and why it has significant environmental benefits. It's really one of the greatest untold environmental success stories.