

Industrial Wipers: How They Impact Product Quality, Productivity, Worker Health & the Environment

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Introduction

Shipyards, auto-mechanic shops, industrial operations, paint shops and printing press businesses all have one thing in common: *They all use some type of wiper*, whether to clean a surface of debris or to apply a solvent onto a surface.

There is a variety of materials to choose from when looking at wiper options, including wood pulp, cotton, polyester or a blend of materials.

However, most of these options are generic in terms of usage, so they are not ideally designed for a specific application or industrial process. The result is that the cleaning or applying of a particular solvent suffers as far as quality. In addition, when a wiper is not designated for a specified purpose and is used for a variety of tasks, end-users become confused.

At the corporate level, initiatives on eliminating certain costs, increasing sustainability and reducing inefficiencies have affected facility managers' wiper choices. They are motivated to purchase products that are cost-effective and environmentally friendly in order to please company stakeholders. But satisfying these business objectives means making trade-offs that can actually be doing more harm than good.

To a significant extent, the consequences of poor wiper choices can be traced to facility managers not understanding the importance of different materials. Wipers are often overlooked as being an accessory to certain processes instead of a vital necessity. Managers and executives alike can benefit from learning more about the seemingly insignificant wiper and how their choices bear on company operations.

Therefore, this white paper discusses the three most common types of industrial wipers, namely, rags, laundered shop towels and disposable wipers. They each possess unique qualities and have a distinct effect on industrial operations.

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Rags

Selection: Industrial facilities buy thousands of pounds of rags each year, yet those in charge of purchasing them have a very general idea of what to expect. This is mainly due to cost and convenience. These rags are usually nothing more than neatly packaged, cut-up – sometimes used – consumer goods. They are often remnants or castoffs of cloth materials such as t-shirts, socks, discarded towels or hotel bed linens. Some companies purchase their rags as scraps from textile mills.

The main drawback to rags as a choice of industrial wiper is that the packaging does not specify the quantity of rags or their size, shape and material. In the case of used clothing and other cloth, there's typically no indication of whether the rags have even been laundered before being packaged. Not only do dirty rags have an effect on proper cleanup or application of industrial solvents, but there may also be debris that remains. There have been many cases where pins, buttons and metal shavings are found on the rags, which can lead to scratches and other imperfections on surfaces.

Storage: Like all pieces of clothing, rags occupy a significant amount of volume in an industrial setting where space is at a premium. A typical facility buys a certain number of boxes of rags each month in boxes that tend to be massive. Valuable shelf space at an industrial warehouse is being used for rag storage instead of other, more critical facility supplies.

Dispense: Workers tend to stow boxes of rags close to their work area so they are easy to grab when the need arises. However, as mentioned, boxes of rags are not labeled in terms of size, shape or material. Employees are often forced to sift through rags to find one that's suitable for their application. Sorting through a 25-pound box to locate a rag that will serve their purpose wastes workers' time.

Over time, this unnecessary task adds up to a significant productivity loss that eats into corporate profits. Plus, those rags that remain and are considered unusable are simply thrown away, another factor that affects a company's bottom line.

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Rags - *continued*

Use: Inconsistencies in rag size, shape and material also create irregularities in the process to which they are applied. Several industrial coating and painting applications require low-lint, spotlessly clean wipers that are used in conjunction with solvents. The presence of sweat, dissolved salts, consumer soaps, lotions and other contaminants on a generic rag can become dissolved into the solvent. These substances are then wiped onto the subject surface, affecting the quality and integrity of the process. Coating defects such as chips and flaking result when solvents become contaminated during the application process.

However, rags are appropriately suited for less critical uses, such as wiping oils and cleaning up grease spills off industrial equipment. The cost of failure is quite low in these applications, so rags are an affordable option.

Disposal: When discarding used rags, special considerations must be implemented, especially for those that contain solvents, oils, grease or a variety of hazardous chemicals. Government regulations may require certain handling and disposal of rags used in connection with these substances.

As such, industrial facilities subject to these regulations must invest in waste-hauling services that provide proper disposal. Typically, these services are offered at a higher cost when compared to other refuse because of the special handling requirements. In addition, hauling fees are generally based upon the volume and weight of industrial waste: Rags tend to be heavy and voluminous, which leads to higher disposal costs and industrial overheads.

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Laundered Shop Towels

While generally the most inexpensive wipers available in the industrial wipes market, laundered shop towels are also among the lowest in terms of quality. These towels and the accompanying services are usually provided by a uniform supply company which charges a fee for the process:

- The uniform company picks up dirty shop towels from multiple industrial facilities in a particular service area;
- The company washes the towels at an off-site laundry; and then,
- The 'clean' towels are delivered back to the facilities on a weekly or bi-monthly basis.

The service, while convenient, increases the risk exposure of the industrial facility. Researchers discovered that 100% of the laundered shop towels they tested contained lead, a toxic heavy metal. Materials containing lead are so hazardous that U.S. Congress and the legislatures in a number of states have enacted various laws related to the presence of lead in paint, gasoline, drinking water, toys and other consumer goods. As a result, manufacturers of these items have eliminated lead from their products.

However, not all of the laundered shop towel service providers have followed suit. Most industrial facilities that contract for laundered shop towel services do not realize that the towels may contain lead; more importantly, the workers who use them and are exposed to toxic lead are unaware of the safety risk.

Research suggests that workers using just three shop towels per day may be exposed to lead levels that exceed the U.S. EPA's drinking water limit. The effect is significant over time, as the individuals that come into frequent contact with laundered shop towels may suffer from elevated blood lead levels (BLL). This condition can cause severe, long-term health effects, such as seizures, anemia and hypertension.

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Laundered Shop Towels - *continued*

The impact of high lead levels in laundered shop towels impacts industrial employers as well. BLL and related conditions may result in higher than normal sick days and absences for their workforce. Loss of productivity, higher health insurance premiums and the risk of potential lawsuits are costs that make laundered shop towels an expensive choice in wipers.

Selection: Like rags, laundered shop towels are not made or supplied for a particular application. Industrial facilities use them for a variety of tasks, such as wiping oil and grease off machine parts, cleaning equipment and washing hands. Cost and convenience are the two primary factors that drive facilities to select laundered shop towels.

However, the suppliers of laundered shop towels and services often levy additional fees in addition to the laundering process. Some must comply with government regulations that require special handling due to environmental factors. Other companies add fuel surcharges and replacement fees which negate the otherwise cost-beneficial advantage that laundered shop towels provide over other industrial wipers.

Storage: Laundered shop towels are generally supplied in bales on a weekly or bi-monthly basis. Clean towels are delivered, while the used, dirty wipers are taken away for laundering. Therefore, no significant on-site storage is necessary.

Dispense: Workers generally keep a stack of shop towels close to their workspace. Unlike rags, however, industrial employees aren't forced to sort through boxes to find towels that are the right size and shape they need for particular applications.

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Laundered Shop Towels - *continued*

Use: Though the process isn't handled in-house by the industrial facilities that use laundered shop towels, cleaning them is quite inefficient and risky. As mentioned, shop towels have been found to contain lead and other contaminants – even after laundering.

There are multiple scenarios that may lead to the presence of dangerous or foreign substances on the towels, but the most likely cause is that the uniform companies service multiple clients. Picking up dirty towels and dropping off clean ones can result in cross-contamination from one facility to another that's lead-free.

Besides the safety risks, towels that are used in conjunction with certain solvents can affect the application for which they are being used. Substances on a shop towel that aren't removed during the laundering process may be dissolved into the solvent and be transferred onto the surface. Whether the surface is one that's being cleaned or is receiving a solvent application, foreign substances can create quality defects. This is especially true as it pertains to jobs that require a premium-quality or high-sheen finish, such as metal plating, coating and painting applications.

Disposal: The uniform company providing the laundered shop towels owns them and is hence responsible for their disposal. Industrial facilities that contract for laundered shop towel service view the associated cost as an environmentally friendly alternative to waste disposal: They claim that shop towels help them reduce landfill waste. The truth, however, is that all shop towels end up in a landfill after a certain number of wash cycles. Moreover, thousands of pounds of laundry sludge in the form of cleaning chemicals and semi-solids find their way to a landfill every year.

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Disposable Wipers

Selection: Unlike rags or laundered shop towels, disposable wipers are manufactured at an industrial facility and are designed for a specific application or industrial process. Though comprised of paper, their advanced engineering distinguishes them from consumer or commercial-grade paper towels: They provide strength and durability for repeated use.

In addition, as they are directly supplied by an industrial manufacturing facility that implements proper quality-control mechanisms, disposable wipers are clean and lead-free. They also maintain consistency in terms of size, shape and material.

Storage: Disposable wipers weigh less than shop rags or towels of the same size. They also occupy less volume and consume less space as compared to the other alternatives. As such, a box of disposable wipers occupies almost 70% less space than a box of rags or laundered shop towels containing the same number of units. This is a particular advantage to an industrial facility where space is a premium. They are able to put the extra space to better use, such as stowing more mission-critical industrial components and supplies.

Dispense: As opposed to the boxes storing laundered shop towels or rags, disposable wipers come in a variety of options for dispensing. Industrial facilities can choose from several formats, including pop-up boxes, rolls or other easy-to-dispense methods. Instead of wasting time by looking for a clean rag or shop towel – and thereby reducing productivity – workers have quick and easy access to a box of disposable wipers close to their workspace. They can pull out a clean wiper, which is consistent in size, shape and material, as needed.

Use: Disposable wipers are engineered for specific applications, which makes them ideally suited and customizable for a variety of industrial uses. Their manufacturing takes into account the specific purposes they serve in different settings. For example, disposable towels used in airport washrooms are developed quite differently than those used at industrial facilities for cleaning or applying solvents.

Although disposable industrial wipers look and feel similar to household paper towels, the paper components are blended with

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Disposable Wipers - *continued*

specially designed synthetic materials. The result is that they remain strong and intact, even when used with solvents.

Furthermore, prudent industrial facilities that demand consistency and quality in wiper performance select task-specific disposable wipers. In response to the needs of their distinctive customers, responsible companies refuse to use generic wipes for every task involved in their processes. As an example, anti-static wipes are used in electronic facilities to protect against damage to highly sensitive equipment. On the contrary, low-lint, low-extractable wipes are preferred in the aviation industry.

Although the disposable wipers are more expensive than rags or shop towels, industrial facilities realize long-term gains associated with their investment. Best practices result in consistent performance, better quality and improved worker productivity.

Disposal: As the name suggests, disposable wipers are intended to be discarded at the end of their useful life. Still, disposable wipers maintain the strength and structural integrity to be used repeatedly, so long as they remain durable and are delivering the desired performance.

For instance, a solvent-soaked wiper used for surface preparation at a paint shop can be used over and over until it sheds debris or becomes too dirty. In contrast, rags and laundered shop towels cannot deliver that level of performance. The main reason is that special factors must be considered for such an application, particularly if the wipers contain solvents, oils, greases or certain hazardous chemicals.

Moreover, the usage of disposable wipers in industrial settings is a wise choice for environmentally conscious industrial facilities. Those companies that invest in disposable wipes as part of an initiative to reduce their landfill waste have options once the units have exceeded their useful life. In some cases, the disposable wipers can be sold or used as boiler fuel. Plus, if sending them to a landfill is the only alternative, disposable wipers still have an edge over rags or laundered shop towels: They are lighter and less voluminous than the other two choices, thereby reducing the waste management costs and occupying significantly less space in a landfill.

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Conclusion

Industrial facilities have a wide array of wiper solutions to choose from, the most common being rags, laundered shop towels and disposable wipers. This white paper has explored the various factors involved with deciding which alternative is suitable, including primary characteristics, storage, use, dispense and disposal when no longer usable.

By learning more about the path wipers take through their journey of arrival at, use in and removal from their respective facilities, managers have a better understanding of how their choices impact company operations. Their decision has consequences across a range of initiatives, including final product quality, worker productivity, employee health and even the environment. Moreover, the choice of wiper has an effect on a company's bottom line.

The choice of wiper has an effect on the bottom line.



Summary: Factors to consider along wiper lifecycle

	Selection	Storage	Dispense	Use	Disposal
Rags	Inconsistent—Rag boxes do not specify the quantity of wipers, the size, shape or material of the rag.	Occupy a lot of storage space in industrial warehouses.	Valuable time is wasted as workers sift through a box of rags to find suitable rags.	Not engineered for specific applications.	Being heavy and voluminous adds to disposal costs.
Laundered Shop Towels	Have been found to contain lead, oils & grease.	Do not require much storage.	Shop towels are not packaged. Shop towels are kept in the open and are exposed to elements such as dust, chemicals and oil.	Not engineered for specific applications. Chronic exposure to lead could cause long-term health effects.	As generators of dirty shop towels, industrial facilities indirectly contribute to landfill waste. Disposal costs incurred by uniform companies are passed over to industrial facilities in some form of fees.
Disposable Wipers	Engineered and manufactured for specific applications. Clean, lead-free, and consistent in size, shape and material.	Require significantly less storage than equivalent number of rags and shop towels.	Come in several different easy-to-dispense formats such as pop-up boxes and rolls.	Engineered for specific applications.	Being lighter and less voluminous significantly reduces disposal costs.

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