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design FOR THE ENVIRONMENT

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LITHOGRAPHY PROJECT BULLETIN 4

BULLETIN HIGHLIGHTS

This Bulletin highlights How to Find a Better Blanket Wash for Your Company

- The Blanket Wash Comparison Worksheet
- A Description of Nine Different Cost Categories

ALSO IN THIS BULLETIN

- Hidden Costs of Your Blanket Wash
- Questions to Ask When You Call Your Blanket Wash Supplier
- What You Can Do to Compare Blanket Washes: A Checklist
- Use the Worksheet to Choose Other Chemicals for Your Shop

A Worksheet to Help You Choose a Better Wash

There are many factors to consider when choosing a blanket wash or other press chemical that is best for your shop. Perhaps the most obvious are purchase price and performance. But there are other, less obvious factors that are just as important. How flammable is the wash? Is it a regulated material? How hazardous is it to worker health or to the environment? Even if it is cheaper to buy, a wash that is more hazardous, or one that is regulated, may have large hidden costs that make it more expensive in the end.

The worksheet contained in this bulletin identifies many of these costs, both obvious and not so obvious. Use it to compare your blanket wash options - it may help you find a blanket wash that is better for your shop.

The Worksheet: How Does it Work?

The worksheet can help you compare test blanket washes to your normal wash. Complete the worksheet after you (or your press operators) know how well the test wash works (this may take a week or two of use). When you answer the questions and add up the scores, the worksheet will tell you if the test wash may be a better choice for your shop.

All information needed for the worksheet is available from:

- **the press operators in your shop who have been using the test wash**
- **the Material Safety Data Sheet (MSDS) that comes with the blanket wash**
- **your blanket wash supplier**

If the Final Worksheet Score Is...	Then...
Greater than zero	➢ The test wash may be a better choice than your normal blanket wash
Less than zero	➢ The test wash may not be a better choice for your facility than your normal blanket wash
Equal to zero*	➢ The test wash is approximately the same as your normal wash

* If the test wash appears to be approximately the same as your normal wash overall, look at each individual category. Which is most important to you? Different scores in that category may still help you decide which blanket wash is best for your shop.

The Worksheet

Could a substitute blanket wash be a better choice for your facility?

Use the scorecard below to figure out whether a substitute blanket wash may be a better choice for your facility. Add the scores to see if the substitute wash is better, worse, or the same as your current wash.

Test Wash: _____

Supplier Name and Phone: _____

Compare the test wash to the blanket wash you normally use for the following questions and enter the score of your answer in the column on the right:

Compared to your normal blanket wash,	Scores -2	-1	0	1	2	Enter Score Below
1 Is the price per gallon of the test blanket wash:	Much more	More	Same	Less	Much less	
2 Is the amount of test wash used to clean each blanket:	Much more	More	Same	Less	Much less	
3 Is the time required to clean a blanket with the test wash:	Much more	More	Same	Less	Much less	
4 What does the press operator think of the test blanket wash? Is it	Much worse	Worse	Same	Better	Much better	

Consult MSDS forms and contact the blanket wash supplier to answer questions 5-9:

5 Does the test wash contain hazardous chemicals as defined by Federal/State environmental regulations or OSHA? Yes = -2 No = 2						

Compared to your normal blanket wash,	Scores -2	-1	0	1	2	
6 Is the vapor pressure of the test wash:	Much higher	Higher	Same	Lower	Much Lower	
7 Is the percentage VOCs of the test wash:	Much higher	Higher	Same	Lower	Much lower	
8 Is the flash point of the test wash:	Much lower	Lower	Same	Higher	Much higher	
9 How does the test wash compare on any other factors:	Much worse	Worse	Same	Better	Much better	

Add all nine scores on this worksheet to get the total score for this test blanket wash. Remember, when adding negative numbers -2 + 2 = 0.

Total

What does the score mean?

A score greater than zero means the test wash may be a better choice than your facility's regular wash, a score of zero indicates that the test wash is approximately the same, and a score of less than zero indicates that the test wash may not be a better choice for your facility.

What Do They Mean?

1 **Purchase price:** **Compared to your normal blanket wash, Is the price per gallon of the test blanket wash much more, more, the same, less, or much less?**

The most obvious difference between two blanket washes is the cost to buy them. Compare the cost per gallon of your normal wash to the test wash. Answer "much more" if the test wash costs twice as much as your normal wash or "much less" if it is half the price or less. Factor in dilution ratios for those washes that are shipped as concentrates.

2 **Amount used per cleaning:** **Compared to your normal blanket wash, Is the amount of test wash used to clean each blanket much more, more, the same, less, or much less?**

The more wash you use each time you clean a blanket, the more it costs you. Ask press operators how much of the test wash is needed to clean the blanket compared to the amount of normal wash. Answer "much more" if it takes twice as much test wash or "much less" if it takes less than half as much to clean the blanket.

Use the Worksheet to Choose a Better Roller Wash Too!

3 **Time to clean a blanket:** **Compared to your normal blanket wash, Is the time required to clean a blanket with the test wash much more, more, the same, less, or much less?**

Press downtime costs money. If the test wash takes twice as long to clean the blanket, answer "much more". Answer "much less" if the test wash takes only half as long as your normal wash.

4 **Press operator opinion:** **Compared to your normal blanket wash, What does the press operator think of the test wash? Is it much worse, worse, the same, better, or much better?**

Ask press operators to compare the test wash to the normal wash on odor, blanket swell, the time required for the press to come back to color, the effort required to use the washes, and any other factors they think are important. Combine these into an overall score for this question.

5 **Hazardous chemicals:** **Does the test wash contain hazardous chemicals as defined by environmental laws or the Occupational Safety and Health Act (OSHA)?**

Contact the supplier or manufacturer for this information. A variety of environmental regulations apply to hazardous materials because of their potential dangers to people and the environment. Violations may result in large fines. At the very least, using a regulated hazardous chemical may increase compliance costs. Ask your blanket wash supplier if the blanket wash, or its waste, is considered hazardous under any environmental law (such as RCRA, CAA, CERCLA, or EPCRA - Section 2, etc.) or under OSHA. Never mix hazardous and non-hazardous wastes. The hazardous chemicals in a blanket wash, as defined by OSHA, are usually listed in Section 2 of the MSDS form. If this section says "none", your test wash probably does not contain OSHA hazardous chemicals. But beware. The MSDS lists OSHA hazardous chemicals only. The blanket wash may still contain chemicals defined as hazardous by other environmental regulations. If this section is blank, ask your supplier. See **Questions to Ask When You Call Your Blanket Wash Supplier** for more information.

6 Evaporation: Compared to your normal blanket wash, Is the vapor pressure of the test wash much higher, higher, the same, lower, or much lower?

If the test wash vapor pressure (in mmHg) is	Score
More than ten times higher	Much higher
Between ten times and 1.5 times higher	Higher
Between 1.5 times higher and 1.5 times lower	Same
Between 1.5 times and ten times lower	Lower
More than ten times lower	Much lower

See MSDS Section 3 - Physical and Chemical Characteristics - for vapor pressure information. Vapor pressure is a measurement of how quickly a chemical evaporates. The higher the vapor pressure of a blanket wash, the quicker it evaporates. If a blanket wash has hazardous ingredients, they can evaporate into the air in your shop, enter the lungs of your workers, and pollute the surrounding environment. If the vapor pressure of your test wash is less than the wash you are currently using, it may evaporate less in your shop. Vapor pressure is usually expressed in mmHg. Call your supplier if the vapor pressures of the washes are expressed in different units. 10 mmHg is usually a regulatory cut-off, but the lower the vapor pressure the better.

7 Environmental Regulations and Worker Health: Compared to your normal blanket wash, Is the percentage VOCs of the test wash much higher, higher, the same, lower, or much lower?

Contact supplier or manufacturer for this information. The amount of Volatile Organic Compounds (VOCs) in your blanket wash can affect your costs of complying with environmental regulations, especially Clean Air Act regulations on emissions from your shop. VOCs contribute to lower level smog and may have health concerns. If the test blanket wash has low or no VOC content, your environmental compliance responsibilities (and costs) may be lowered and the health and safety of your employees may be improved. You might need to contact your blanket wash manufacturer for this item (see **Questions to Ask When You Call Your Blanket Wash Supplier** for more information). Score "much higher" if the percentage VOC content of the test wash is two times or more that of the normal wash or "much lower" if the percentage VOC content of the test wash is two times or more lower. Score "same" if within 10%.

8 Flammability: Compared to your normal blanket wash, Is the flash point of the test wash much higher, higher, the same, lower, or much lower?

See MSDS Section 4 - Fire and Explosion Data - for flash point information. The flash point is one measurement of the temperature at which a chemical will ignite. In general, as flash point increases, so does safety. Even though the minimum flash point for flammability is 100° F and for hazardous wastes is 140°F, the higher the flash point the better. A less flammable chemical may save you money on your property insurance as well as exempt you from costly storage and record keeping requirements of environmental and safety regulations such as RCRA and OSHA. Contact your insurance underwriter for a reappraisal to determine the cost savings from using a less flammable blanket wash at your shop. If the flash point of the test wash is two times lower than the normal wash, mark "much lower" on the worksheet. If the flash point of the test wash is more than two times higher, mark "much higher" on the worksheet. Score "same" if within 15°F .

9 Other: Compared to your normal blanket wash, How does the test wash compare on any other factors? Much worse, worse, same, better, or much better?

Compare the performance of the test wash to your normal wash on any other factors important to your shop. Some examples include acceptability of wash to commercial laundry, corrison of press parts, wash availability, dilution, and availability of recycled containers.

Why a Worksheet?

The worksheet provided with this bulletin gives you a place to keep information about the washes you try out at your shop. Make extra copies of the blank worksheet and record information about each blanket wash you test. After trying a variety of washes, you can use the completed worksheets to compare them and find the one that is best for your shop.

The worksheet is not a scientific evaluation and may not cover every potential cost. If a test wash scores significantly better than your normal wash, this means the test wash might be a better choice, but does not guarantee it.

The Hidden Costs of Your Blanket Wash

The environmental, health, and safety costs of blanket washes are often hidden. If your test wash is less harmful to your workers or the environment, or is less flammable than your current blanket wash, you may save money by using it even if it costs more per gallon. Potential savings include:

- Decreased regulatory costs (such as disposal costs, pollution control equipment, permitting, permitting fees, training, fines)
- Improved worker health and safety
- Decreased insurance costs (such as workers compensation, fire, and liability)
- Other decreased costs (such as energy)

Choosing a Better Wash — An Example

By testing a variety of washes you may be able to find one that is cheaper to use and better for the environment. During the DfE Lithography Project (see page 6 for more information), a vegetable ester wash was found that worked well and cost less than a petroleum-based wash. Cost per wash was calculated based on price per gallon, time required to wash a blanket, number of towels, and amount used. Results showed the vegetable ester wash was cheaper to use per blanket than the petroleum-based wash at one facility, but was more expensive at another facility. While savings may be even greater when factors such as those on the worksheet are also considered, these mixed results show how important it is to evaluate products in your own facility.

Use the Worksheet to Choose Other Chemicals for Your Shop

The nine worksheet questions can be easily adapted to compare other chemicals, such as roller washes, you test in your shop. These nine questions are important to consider when making any chemical decisions for your facility.

What You Can Do To Compare Blanket Washes

Follow the checklist below when testing different blanket washes:

Test Blanket Wash for a Set Amount of Time:

- ❒ **Discuss blanket wash tests with press operators**
- ❒ **Set a trial period of one or two weeks with press operators**
- ❒ **Record major observations during test period**

Collect Information from:

- ❒ **Press Operators**
- ❒ **Material Safety Data Sheets**
  - ➢ **Vapor pressure information from MSDS Section 3**
  - ➢ **Flash point information from MSDS Section 4**
- ❒ **Blanket Wash Supplier**
  - ➢ **Percentage VOC content**
  - ➢ **Is blanket wash considered hazardous under environmental regulations or OSHA?**

Complete Worksheet:

- ❒ **Enter each score in worksheet column**
- ❒ **Add scores for final result**

Complete Evaluation:

- ❒ **Does the final result indicate potential improvement?**
- ❒ **Are there other benefits or costs of the test wash that are not on the worksheet?**

Don't Give Up

Keep in mind that the process of choosing a better blanket wash will require some experimentation and an open mind. Not every blanket wash will work well at your shop right away, but some may work better as press operators become more comfortable with them. For this reason, allow a set period of time for trying a blanket wash, and stick to it. For more ideas on cost saving ways to reduce pollution and waste at your facility, see other Design for the Environment (DfE) Bulletins for the Lithographic Industry.

Questions to Ask When You Call Your Blanket Wash Supplier

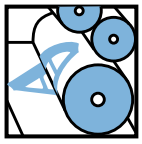
To complete the worksheet you will need to ask your supplier some important questions: (**Some blanket wash manufacturers may supply this information on the MSDS, but they are not required to do so.)**

1. **Does the blanket wash contain chemicals deemed hazardous under any environmental statute or OSHA?**
2. **What is the percent Volatile Organic Compound (VOC) content of the blanket wash?**
3. **What is the Vapor Pressure of the wash in mmHg?**

About the Design for the Environment Lithography Project

The goal of the Design for the Environment (DfE) Lithography Project is to provide lithographers with information that can help them design an operation which is more environmentally sound, safer for workers, and more cost effective.

Concentrating on the process of blanket washes, the partners of the DfE Lithography Project, in a voluntary cooperative effort, evaluated 37 different blanket wash products. Information was gathered on the performance, cost, and health and environmental risk trade-offs of the different types of substitute blanket wash. For more details on the evaluations, please refer to the booklet, *Evaluating Blanket Washes: A Guide For Printers*.



In addition to the Lithography Project, similar DfE projects are currently underway with both the screen printing and flexography industries.

To obtain additional copies of this or other bulletins and case studies, or for more information about EPA's Design for the Environment Program contact:

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