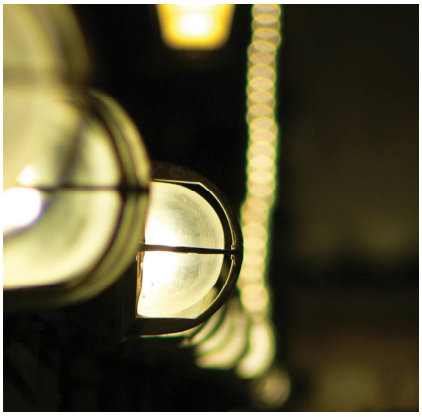
University of Saskatchewan

Smart Purchases Big Impact

Sustainable Purchasing Guide

Paints

Sustainability... your university, your world



UNIVERSITY OF SASKATCHEWAN

Paints

Introduction

This section provides information on currently available options for ***paints*** that can help to move the University of Saskatchewan toward its sustainability goals. Living within the boundaries of our sustainability goals requires us to apply two main strategies:

Dematerialization requires that we reduce the amount of materials as much as possible; and that we continually move toward the use of 100% recycled content.

Substitution requires that we find less harmful materials to replace those that currently damage and are not recyclable.

Sustainable purchasing is about including social, environmental, financial and performance factors in a systematic way. It involves thinking about the reasons for using the product (the service) and assessing how these services could be best met. If a product is needed, sustainable purchasing involves considering how products are made, what they are made of, where they come from and how they will be used and disposed.

Finally, remember that this is an evolving document – it will change with new information as our understanding of sustainability impacts and potential solutions improves.

Purchasing Services

Tel: (306) 966-6704
Email: purchasing.services@usask.ca

Office of Sustainability

Tel: (306) 966-1236
Email: fmd.sustainability@usask.ca

Smart Purchases Big Impact

Wherever possible **CHOOSE** products that employ a combination of characteristics listed in the left hand column, and **AVOID** products that demonstrate characteristic in the right-hand column.

CHOOSE	AVOID
• EcoLogo certified • Recycled products • Water-based solvents ("latex")	• Volatile Organic Compounds • Petrochemical-based components

Option: Use EcoLogo Certified Products

Strategy: Dematerialization and substitution – less waste; nature-like (SO 1, 2, 3)

EcoLogo certified paints are assessed based on their production methods and product contents, and are generally more sustainable than other alternatives. As an example, EcoLogo certified paints must adhere to strict requirements for volatile organic compounds (VOCs) to address human health and smog formation issues.

Option: Use Recycled Paints

Strategy: Dematerialization – less waste (SO 1, 2, 3, 4)

Recycled paint generates less waste and requires less virgin material than newly produced product. Recycled paint is made from old paint collected through special programs.

There are two types of recycled-content paint: reprocessed and re-blended. Reprocessed paint, also called remanufactured paint, is mixed with virgin materials such as resins and colorants. Re-blended paint, also called consolidated paint, is re-mixed, screened, and packaged for distribution. Virgin raw materials such as resins and colorants may be added in small quantities.

Option: Use Latex Paints

Strategy: Substitution – nature-like (SO 2)

Paint is made through combining chemical products. These chemicals include solvents, binders, additives and pigments. The major liquid ingredient in latex paint is water, and thus paint can be cleaned up with water. Oil paints use oil or an alkyd resin as the medium and must be thinned or cleaned with organic solvents like paint thinner or Varsol. All organic solvents are liquid chemicals that may evaporate and give off volatile organic compounds that contribute to indoor and outdoor air pollution. According to a 2002 US Environmental Protection Agency (EPA) study, oil-based paint has 32 to 42 percent VOC content in oil-based paints versus 2 to 5 percent VOC content in latex paints. In addition, solvents may build up in fatty tissue and some are known to negatively affect health.

Option: Use Paints with Lower Amounts of VOCs

Strategy: Dematerialization – resource efficiency (SO 2, 4)

Choosing paints with lower amounts of petrochemical-based solvent can achieve the same service, while being more resource efficient. Reducing VOCs may also reduce negative downstream health and environmental effects.

Option: Use Paints with Natural Solvents, Pigments, Resins and Additives

Strategy: Substitution – natural substances (SO 2)

Biospheric concentrations of substances made by society and extracted from the Earth's crust can be reduced by using more nature-like alternatives as solvents, pigments and additives. For instance, casein or milk protein is used as a binder in some paints in place of petrochemical products.

Arriving
at the currently preferred options

1. Identify the service

As a protective covering, paints help to maintain and protect surfaces from ongoing wear and tear. These services are critical for building and infrastructure maintenance programs. As a decorative enhancement, the color of paint can also be used to convey an image and stimulate energy.

2. Assess the need

TThe University of Saskatchewan requires infrastructure that is aesthetically pleasing and long-lasting. (e.g. covering the infrastructure with a surface coating to prolong its life). Paint and other surface coatings are only necessary for meeting University of Saskatchewan's objectives as long as the infrastructure and built form requires the supplemental preservation and beautification provided by paint.

3. Identify the contents

Paints consist primarily of four components:

- Solvents – the substance that maintains the proper consistency of the paint. After application, it evaporates. There are two main types of solvents: petrochemical based (alkyd) and water based (latex).
- Pigments – these are compounds that lend both color and opacity to the paint.
- Binders/Resins – these are base components that enable the product to adhere to the paint surface and form a film.
- Additives – these contribute specific qualities to the paint (e.g. antifreezes and fungicides).

4. Identify sustainability impacts

i. ...systematically increasing concentrations of substances from the earth's crust?

- Heavy metals may be used in paints as pigments and additives. For example, cadmium (Cd) may be used to give color to paints, and mercury (Hg) compounds may be added as an element in a pigment or as a fungicide to prevent mildew.
- The energy consumed in the process of manufacturing pigments, such as titanium dioxide (TiO2) in white paints, is one of the most significant environmental impacts associated with paint.
- The feedstocks for oil-based solvents are derived from non-renewable petroleum resources, which are extracted from the earth at a rate much greater than their redeposit back into the earth's crust.

ii. ...systematically increasing concentrations of substances produced by society?

- In many paints the solvent is petrochemical-based. These solvents are designed to evaporate quickly to allow the paint to dry rapidly. Since they evaporate quickly, they are often referred to as volatile organic compounds (VOCs). When paints are used indoors, VOCs are a problem for indoor air quality. When paints are used outside, they contribute to problems such as the development of ground-level ozone, more commonly referred to as "smog". VOCs also contribute to water contamination if the paints are not disposed of properly.

iii. ...systematically degrading nature by physical means?

- Sometimes it is suggested that leftover paint should be left to dry in a bag and then disposed of in landfills. Adding solid paint waste to landfills contributes to the use of physical space.

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- Depending on how the petrochemicals are derived, the production and transportation processes may systematically degrade nature in developments where land is not properly reclaimed.

iv. …systematically undermining people's ability to meet their basic human needs?

- Prolonged exposure to a number of VOCs can be harmful to humans. For example, toluene (methyl benzene) can negatively affect the nervous system, kidneys, liver and heart. Formaldehyde, a suspected carcinogen (substance that causes or promotes the development of cancer), can irritate the eyes, nose and throat during short exposures.
- Heavy metals found in paints may leach into soil and water upon disposal or at other stages of the paint life-cycle. Some, such as mercury and cadmium, are neurotoxins and can damage the liver and kidneys.

5. Envision sustainable paints

Ideally, surfaces of buildings and infrastructure would be designed in a way that does not require a paint coating. Where this is not yet possible, sustainable paint would not have a petrochemical based solvent, nor would it include heavy metals in its pigments, resins or additives. It would be made from materials that nature can easily break down and assimilate. This either requires recycling all of these substances in tight technical cycles or replacing petroleum feedstocks with sustainably-harvested renewable and biological feedstocks.

6. Identify and prioritize alternatives

Step 6 helps identify the product or service that offers the best pathway toward meeting all four of our Sustainability Objectives by using the following three criteria for assessment:

a) Does the product or service move us in the right direction with regards to our four Sustainability Objectives?

b) Does the product or service create a flexible platform for the next step toward sustainability?

c) Is the decision financially viable?

Resources
and Additional Information

1. Green Seal Certified Paints
   http://www.greenseal.org/FindGreenSealProductsandServices.aspx?vid=ViewProductDetail&cid=10

WHISTLER

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