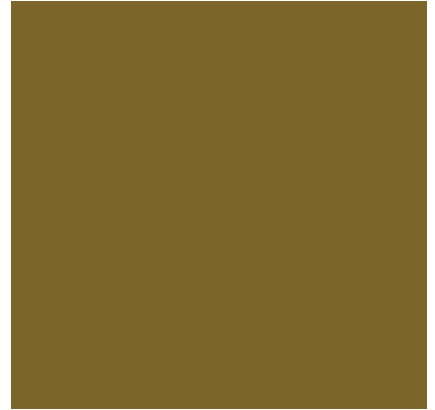




UNIVERSITY OF  
SASKATCHEWAN



# Smart Purchases Big Impact

**Sustainable Purchasing Guide**  
**Hand Tools**

*Sustainability... your university, your world*

A stylized black silhouette of a tree with many leaves.



## Introduction

This section provides information on currently available options for **hand-held tools** that can help to move the University of Saskatchewan toward its sustainability goals. Living within the boundaries of our sustainability objectives 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](mailto:purchasing.services@usask.ca)

### Office of Sustainability

Tel: (306) 966-1236  
Email: [fmd.sustainability@usask.ca](mailto: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
<ul style="list-style-type: none"> <li>Durable high quality tools</li> <li>Sustainable materials</li> </ul>	<ul style="list-style-type: none"> <li>Plastic components</li> <li>Compound/hybrid materials</li> </ul>

### Option: Choose Renewable Materials

Strategy: Substitution (SO 3)

Renewable materials are becoming more popular and available in the tool industry. Bamboo is commonly used in tools that are only required for light-weight uses, such as broom or rake handles. As well, bamboo can be plied together for reinforcement to increase the product strength.

### Option: Choose Sustainably Harvested Wood

Strategy: Substitution (SO 3)

Look for Forestry Stewardship Council of Canada approved products. This verification ensures that the forest ecosystem the materials are harvested from is being sustainably maintained.

### Option: Choose Good Quality and Durability

Strategy: Dematerialization and Substitution (SO 1, 3, 4)

Buying a well-made tool and performing regular and proper maintenance can help your tools last for decades (depending on frequency of use). By maximizing the life of your tools, more materials will be successfully diverted from the landfills and the energy and raw material requirements will be vastly reduced.

### Option: Avoid Plastic Content

Strategy: Substitution (SO 1, 3)

Plastic tool components (such as handles, grips or hinges) are often not very durable and can be difficult to replace. In addition, plastic has a much lower end of life value and therefore provides less incentive for recycling. Metal parts should be chosen over plastic, since they can be more readily recycled at the end of their useful life. Plastics often make their way into the waste stream where they will never fully breakdown.

### Option: Choose Monomaterials

Strategy: Substitution (SO 3)

Hybrid or compound materials are commonly found in the handles or other parts of tools. These products are not recyclable. By choosing products made of a monomaterial, such as steel, these individual parts can be removed and recycled.



# Arriving at the currently preferred options

## 1. Identify the service

Tools are used to perform maintenance and repairs.

## 2. Assess the need

The University of Saskatchewan requires various tools to carry out renovation, maintenance and repair activity on campus.

## 3. Identify the contents

Tools generally consist of plastic or wooden parts in combination with metals (usually steel).

Tool components designed for impact, such as, hammer heads, are generally made of high carbon, heat-treated steel for strength and durability. The heat treatment helps prevent chipping or cracking caused by repeated blows against other metal objects. Certain specialty products may incorporate copper, brass, and other metal components.

The handles of tools may be made from wood, steel, or a composite material. Wood handles of tools that are used to deliver impact are usually made of straight-grained ash or hickory. These two woods have good cross-sectional strength, excellent durability, and a certain degree of resilience to absorb the shock of repeated blows. Steel handles are stronger and stiffer than wood, but they also transmit more shock to the user and are subject to rust. Composite handles may be made from fibreglass or graphite fibre-reinforced epoxy. These handles offer a blend of stiffness, light weight, and durability. Steel and composite handles usually have a contoured grip made of a synthetic rubber or another elastomer.

Tools with a fine tip, such as a screwdriver or chisel, may be plated with nickel or chromium and generally have a light-weight, plastic handle.

## 4. Identify sustainability impacts

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

- The petroleum or natural gas used as feedstock for most **plastics** is extracted from the earth's crust at a rate much greater than it can be naturally regenerated.
- **Fossil fuels** are also combusted to provide energy during the extraction of raw materials, transportation and the production of tools.

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

- If the plastic used in tools is not recycled, it usually ends up in landfills or incinerators. The plastic persists in the environment after it is used and discarded, contributing to an increase in concentration of complex human-made substances in nature.

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

- The **extraction of raw materials** (for metals and petrochemicals) negatively impacts the environment in the form of mining, processing and transportation activities, especially where land is not managed properly and not reclaimed after use. For this reason, it is extremely important to use the materials extracted as efficiently as possible and to increase the proportion of recycled waste
- If the forests supplying the feedstock for the manufacture of wooden components are not sustainably managed, this may lead to the systematic degradation of nature.

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

- A number of the compounds produced by the combustion of fossil fuels (e.g. nitrogen oxides, carbon monoxide, sulfur oxides, particulate matter) have a negative effect on human health.

## 5. Envision sustainable hand tools

In an ideal world, tools would be made from renewable resources that do not physically degrade nature and break down in to natural components or are able to be completely reused. Sustainable tool production should also include the use of biocompatible finishes.

## 6. Identify and prioritize alternatives

To identify the best options, review the Current Options on page one and choose the most appropriate alternative by using the following three criteria for assessment:

- Does the product or service move us in the right direction with regards to our four Sustainability Objectives?
- Does the product or service create a flexible platform for the next step toward sustainability?
- Is the decision financially viable?

*continued on page 3...*

## Resources and Additional Information

1. How Products are Made: Hammer  
<http://www.enotes.com/how-products-encyclopedia/hammer>
2. How Products are Made: Screwdriver  
<http://www.enotes.com/how-products-encyclopedia/screwdriver>
3. Forestry Stewardship Council of Canada  
<http://www.fsccanada.org/>



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