



Päivi Hintsanen & Ulla Lapiolahti

# SWEET WASTE DYES

Experiment with recycled colours!

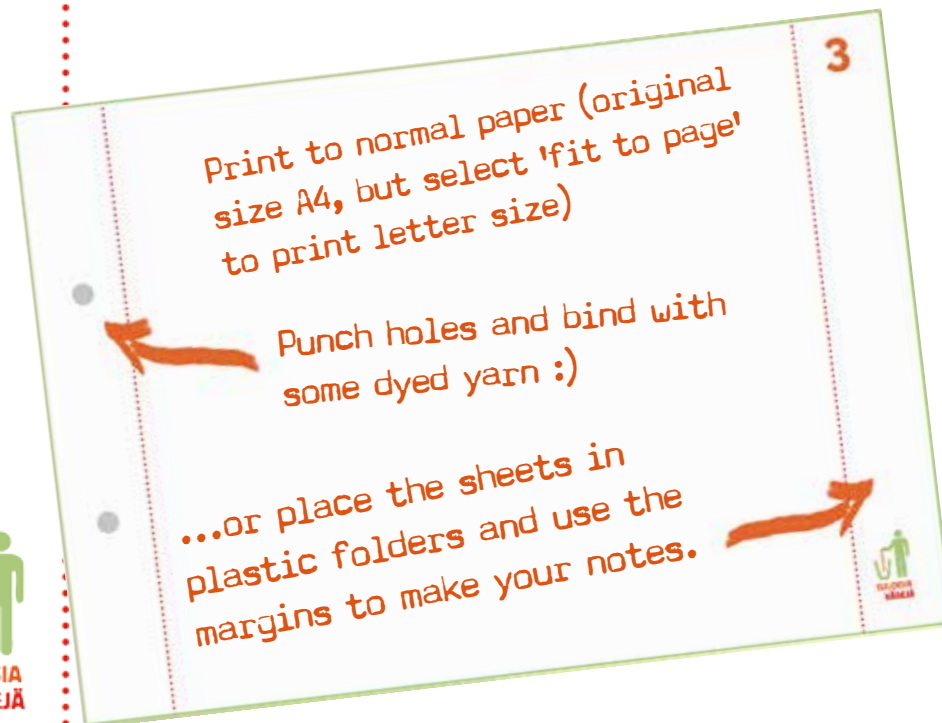


## A guide for colour explorers

In the Sweet Waste Dyes! (SULOisia värejä!) project we produce colours and dyes using material collected from kitchen waste and other trash bins. The project aims to inspire people to think about the consumption in general using the means of design and art. We deal with serious business, but we do it through humor, through hardcore eco type action. The work to promote sustainable development and a more eco friendly attitude must be more than just restating the facts. The guide is made for everyone interested - but especially for teachers and group councilors. We are glad if our guide can be utilised in teaching or any group activities.

The Sweet Waste Dyes! project was started by textile artist Ulla Lapiolahti and visual artist Päivi Hintsanen. We have both worked with colour themed events for a long time. Through experience we know that working with natural colours and dyes produces meaningful experiences, which generate enduring discoveries and new ideas.

Welcome to the world of recycled colours,  
Ulla and Päivi



### PRINT IT YOURSELF!

Our guide is made to be printed at home.

Home printers usually leave some margin, but we tried to take that into account. The printing should work fine, even though the printer says the paper is larger than printing area. If not (or if you are printing in letter size instead of A4), please choose "fit the page" option from your printer options.

The guide is designed to be printed two-sided, but one sided printing will work just fine.

## Where to get colours from?



### FRUIT RINDS

Try fresh or dried fruit skins, rinds, peels or husks! Soak and boil thick husks (like mangosteens or pomegranates) a bit longer.

TEA -  
in bags or  
without.

### COFFEE GROUNDS

SPICES -  
old and spoiled ones  
will do just fine.

ONION SKINS -  
easy, fast and lots  
of colour. Try yellow  
and red onions, but  
also shallot peels.

GRAPE STEMS, FRUIT  
SEEDS AND PITS...

P.s. You can find good bio  
waste outside the kitchen,  
too! Try flower petals and  
leaves from your garden  
waste.





## Dyeing with biodegradable waste

Dyeing with natural plant derived dyes is an ancient craft. Dyeing with garbage colours is the easy and fun version. The instructions in this booklet work best with woollen and wool blend materials.





# Let's dye with onion skins

Two cooking-pot process (known as pre-mordanting)

## Before dyeing

First, get some material that you can use as a source of colour. Onion skins, tea, old spices, beetroots – there are countless options. For first-timers we recommend using the skins of yellow or red onions. They are easy to get hold of and produce strong colours. You also need to find some (woollen) yarn to dye.

### 1. Make a dye bath in one pot

- Put your onion skins in a pot. Get one or two handfuls of onion skin to each 10g (0.35 oz) of yarn – the more you have, the stronger the colour will be.
- Pour on enough water to cover the skins.
- Boil for an hour. If necessary, add water while boiling.
- After boiling, get rid of the skins using a strainer.

### 2. Mordant yarn in another pot

- Pour a small amount of water into a pot and heat. Measure alum and dissolve it in the water. Use 1g (0.04 oz) alum to 10g (0.35 oz) yarn. Next, add enough water to cover the yarns later and to reduce the temperature of the solution to lukewarm.
- Make skeins of your yarn and place them into the pot. Bring the heat to 80-100°C (176-212°F) and let the pot sit at that temperature for an hour.

### 3. Dye

- Move your skeins to the dye bath. Bring the temperature to 80-100°C (176-212°F) and leave yarns to take dye for about an hour. Cool down your dye bath with your yarn in it. After cooling, rinse yarn well with water.



1

You can extract dye from almost any material by boiling.



2

You can use a table spoon to measure alum: one tbsp is about 10g (0.35 oz).



3

Ps. Treating yarn with alum is called mordanting. It is a harmless salt of aluminium and potassium. You can get it from a pharmacy.

## Let's dye with onion skins


One pot process (known as simultaneous mordanting)

First, make your dye bath like in the previous recipe. After removing the onion skins, add alum to the dye bath. After alum is dissolved and dye bath is cooled down to lukewarm, add yarn to the dye bath.

The dyeing itself is done in exactly the same way as in the previous recipe (view page 5, step 2).

### TIP

**Does mordanting feel difficult?** If you use factory made yarns, you can try dyeing without alum. The dye takes quite well to industrially treated yarn without any mordant! This way you can complete the whole process in, for example, a single class.



Yellow onion skins give yellow and orange shades, but red onion surprises. The yarns in this photo are dyed with red onion. Even the green one!

Ps. Also try dyeing wooden beads, wooden and bone buttons, felting wool, fabrics, silk thread...



# Cold dyeing

= Energy saving dyeing in a glass jar

Dyeing can be done without a pot and a hot plate:

## 1. Prepare

Mordant your yarns or other materials (view page 5, step 2).

## 2. Put everything in a jar

Take a clean glass jar with a lid. Fill the jar with mordanted yarn or other stuff you want to dye, your garbage colour material like onion skins or tea bags, and water. Close the lid and leave it be. In a warm place the dyeing process is faster.

## 3. Admire

Open the jar after a week or two and take out the yarn.

Usually the result is beautiful, unevenly dyed yarn, that you couldn't get by boiling.



Cold dyed yarn  
with yellow onions

Ps. If you fill the jar as full as possible, no mold will form. But if some does, just peel it off and wash the yarn well.





## Ink and printing paste

You can prepare inks, printing pastes and crayons yourself. Here are a few recipes to start you off. These recipes use tea, but you can also use for example onion skins or berries to make inks or printing pastes.



# Make ink and printing paste

## Easy basic ink

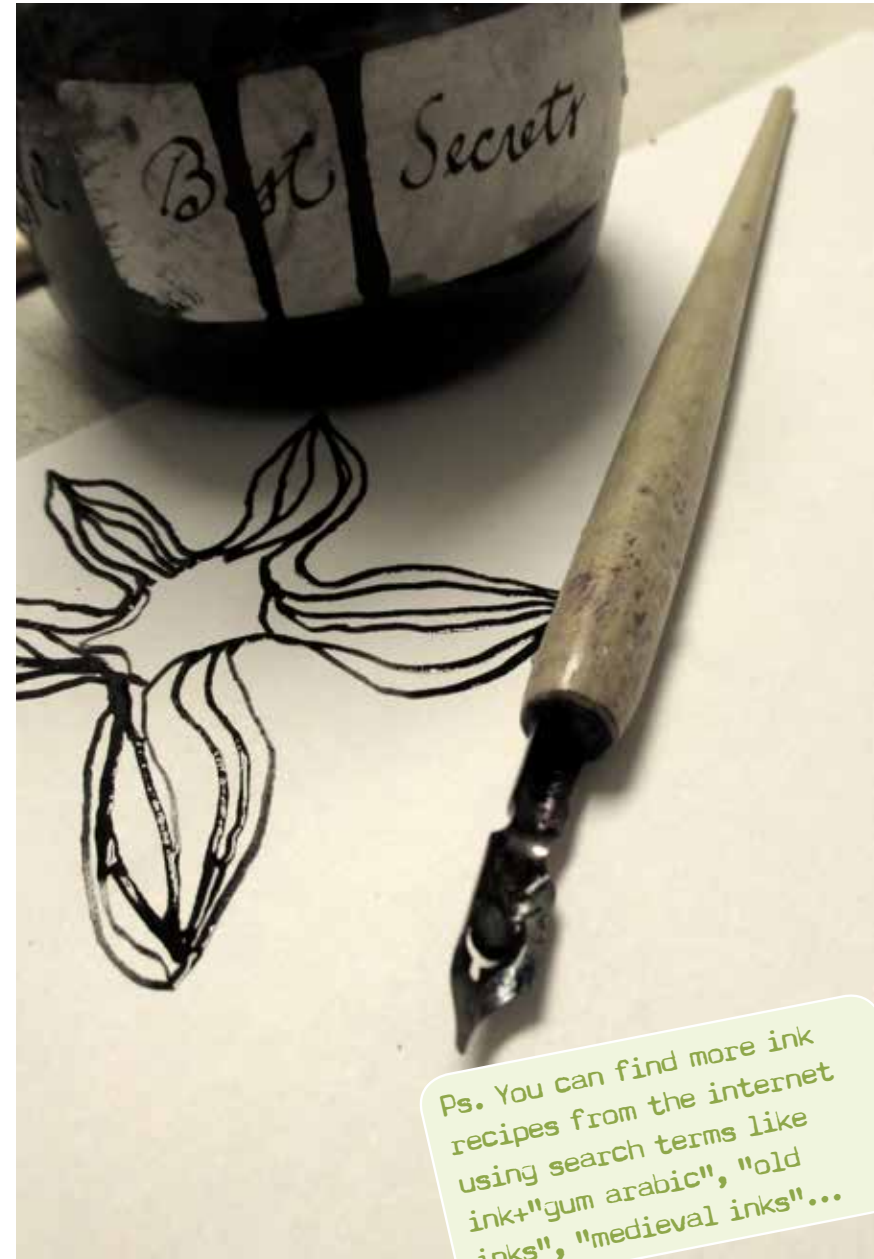
- Boil a strong dye bath from tea leaves or grounded tea. The stronger the dye bath, the stronger the ink colour.
- Strain the dye bath and add just a little bit of alum, about 1g per 100ml (0.04 oz per 0,42 cup or 0.2113 pt).
- Add gum arabic to the dye bath. It's easiest to use a ready made liquid, available from art supply stores. You can find the right amount through trial and error, but usually 1-2 tsp per 100ml (0,42 cup or 0.2113 pt) works just fine.
- Bottle the ink in a clean glass jar with an air-tight lid. If there are any lumps in the ink, strain it again before bottling it.

## Printing paste

Paste for printing onto paper is made in the same way, but more gum arabic is added; 5-10 teaspoonfuls per 100ml (0,42 cup or 0.2113 pt). You can also use ink to print paper if it isn't too runny.

Inks and printing pastes usually keep for several months. Adding alum and using clean jars helps them keep longer.

Both ink and printing paste can be darkened by adding just a bit of iron sulphate into the dye bath. Use protective gloves when handling iron sulphate.



Ps. You can find more ink recipes from the internet using search terms like ink+"gum arabic", "old inks", "medieval inks"...

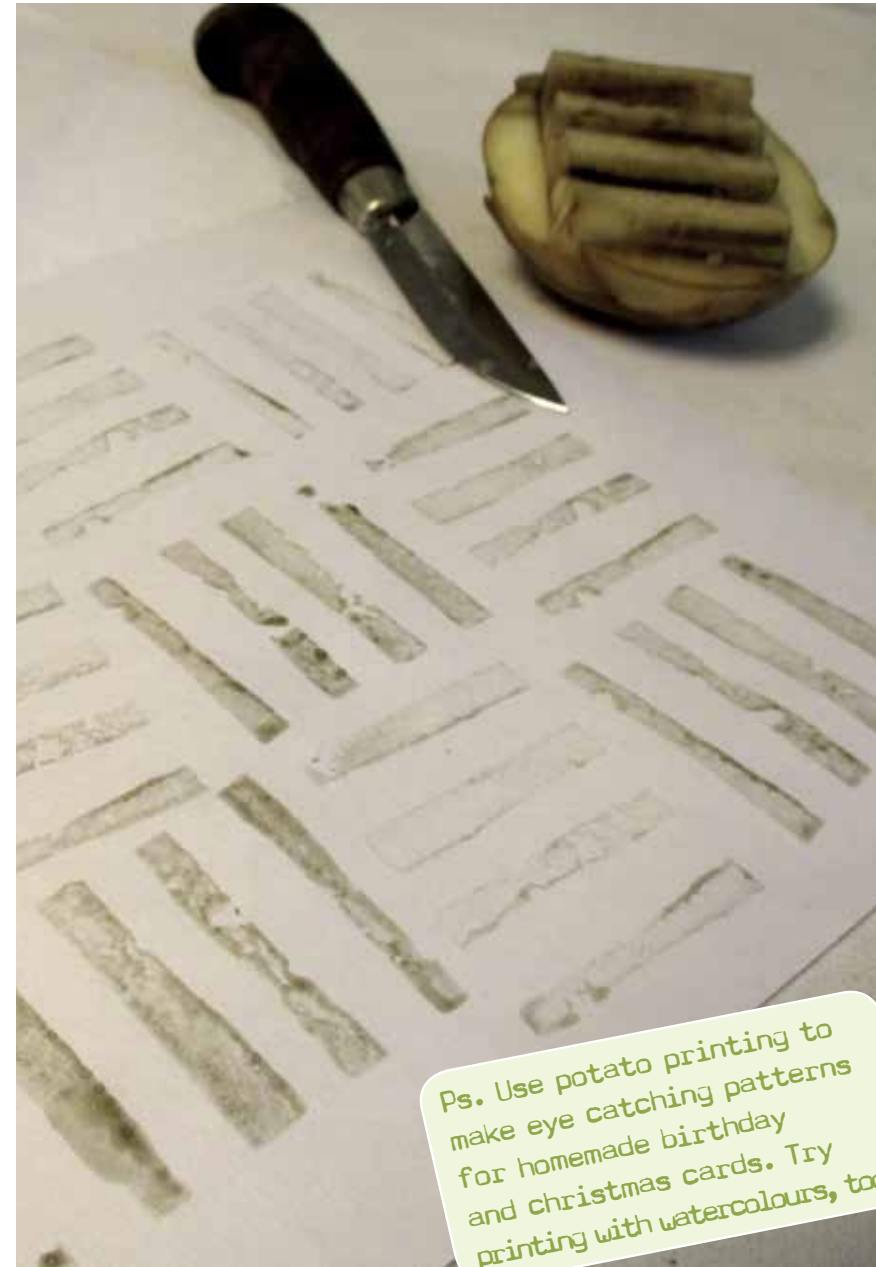


## Print with potato!

You can print with ready made stamps, wooden blocks and with ready made or self made stencils. You can brush the colour onto the stamp or use for example a foam rubber dauber with a stencil.

### Don't forget potatoes!

Potato is a venerable printing tool: versatile and cheap. Cut a potato in half and carve a pattern into the surface – and there you are, your stamp is ready to use! Printing is easy and the result has a nice rough and rustic feel. Simple cuts can make impressive textures. You can get great patterns just by printing with a half-cut potato, without cutting it further!



*Ps. Use potato printing to make eye catching patterns for homemade birthday and christmas cards. Try printing with watercolours, too.*



## Print with potato!

### Change colour!

You can also try patterning / printing with mild acids and alkalies.

Safe acid ingredients from your own kitchen include

- lemon juice or lemon conservate
- old lingonberry or cranberry juice
- household vinegars

Safe alkalies include

- soft soap / potassium soap
- baking soda

Acids and alkalies that are made for household and kitchen use are quite mild, but use protective gloves anyway. Using acids or alkalies is not recommended when crafting with small children.



**Photos:** paper dyed with onion and tea is printed with lemon juice using a potato stamp.



Ps. Try out changing your dye colour too: add some acids or alkalies to the dye bath or soak your dyed yarns in alkali or acid.





## Making patterns on paper

Testing and trying out different kinds of methods is an essential part of dyeing with garbage colours. This experimental approach lead Päivi to a more modern take on garbage colours - patterining photo paper.





# Creating patterns on photo paper

## 1. Choose your paper

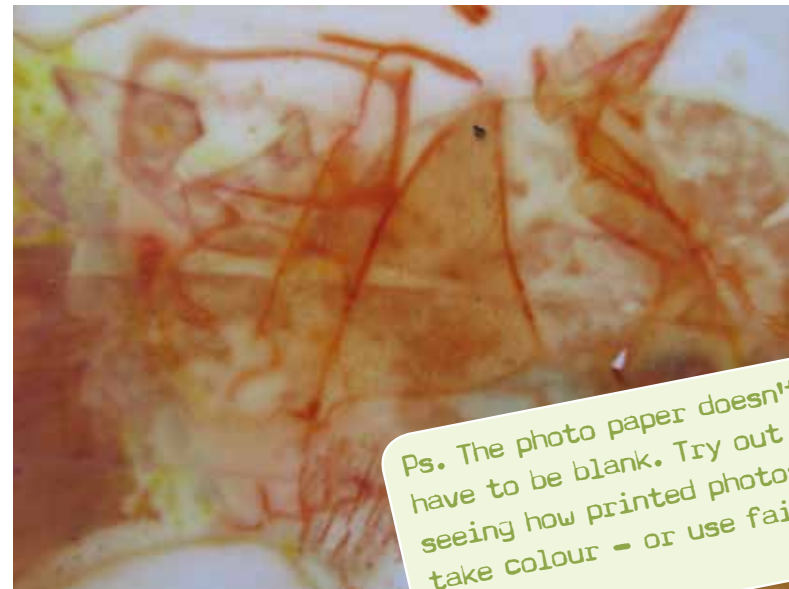
Use photo paper for digital printing. Different brands of photo papers act differently. Some will take dye fast and others more slowly, and some take almost nothing at all. Good photo paper for this use is for example Epson Premium Glossy Photo Paper or HP Premium Photo Paper, Glossy.

## 2. Place some colour (=biowaste) on paper

- Use a spray bottle to moisten the paper's surface or dip the paper in a bowl of water.
- Spread some biowaste onto the paper: yellow and red onion skins, tea, coffee grounds, etc.
- Make sure that there is enough moisture: if not, you can still spray some water onto the dry material. The dyeing process won't start without moisture.
- Cover everything with plastic and put a weight on top. Wait a few hours or leave overnight.

## 3. Final touches

Remove the material from the paper and gently rinse the paper with water. Let the paper dry. You can speed up the drying process by wiping the surface with paper towels or a window squeegee.



Ps. The photo paper doesn't have to be blank. Try out seeing how printed photos take colour - or use failed prints.



## Making patterns and shapes...

### Master your motif!

Freely composed biowaste patterns make strong and even surprising colours, but maybe you would like to create specific shapes. You can use for example wax crayons, sticky tape or stencils to help do so.

### Wax crayons and sticky tape

When you use wax crayons and tape, remember, that the parts you draw or tape will not take the colour. You can use any water resistant crayons: try them out to find the best ones! The best tape is very lightly adhesive masking or electrical tape, which peels off easily. Tapes with strong adhesives may peel off the top layer of the paper, or leave a hard to remove sticky residue, so make sure to test before Big Projects.

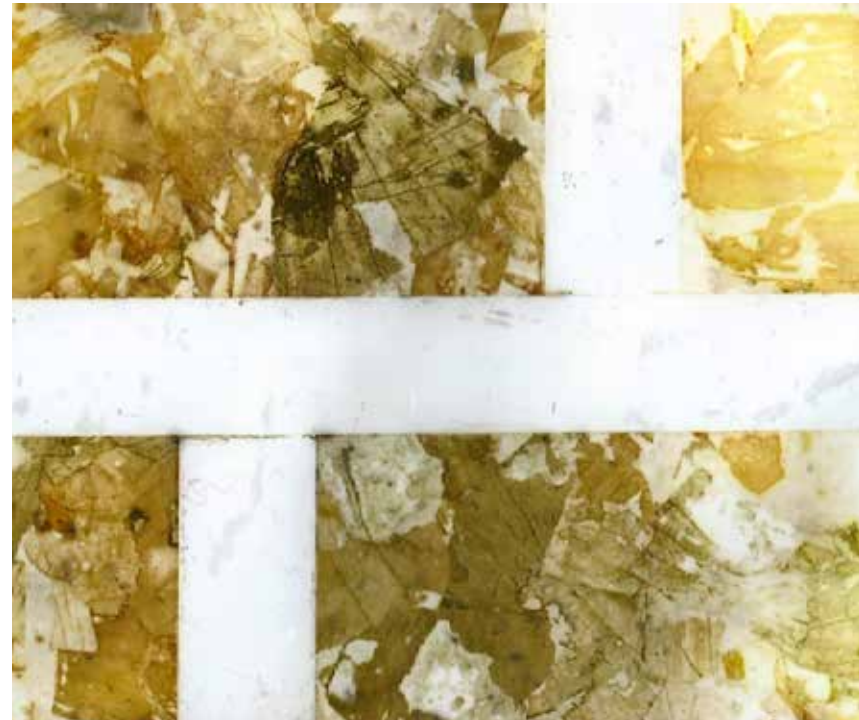
### Stencil

It's helpful to mark the stencil with the parts you want to cut out and the ones you want to leave, especially with complex patterns. Say you want to create a colourful circle in your picture: cut a circle shaped hole in your stencil and place the material in it. Or if you'd like to have a white circle with a coloured background, cut your stencil into a circle and place the material around it. You can make a stencil out of any water durable paper, but often you'll find just the thing in your household package waste.

### TIP

You can colour any plain paper in the same way as photo paper. Use soft, heavy paper (like aquarelle paper) – or paper which would otherwise go in the bin.

Even the smallest pieces of paper can be used to create fine details eg for card crafting.





Ps. If your paper curls in the process, place it under a heavy weight for a couple of days to straighten it.



MPLES

10 HIGH-QUALITY PRINT PAPER

&

DYED YARN

&

CONTACT STAINED PH



YELLOW ONION SKINS



PLUM STONES



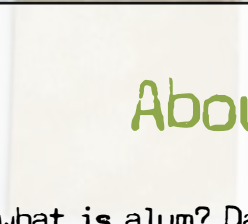
ORANGE & MANDARIN PEELS



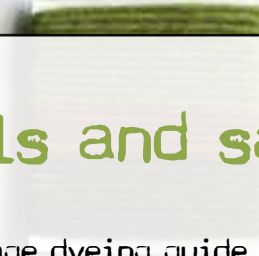
YELLOW ONION



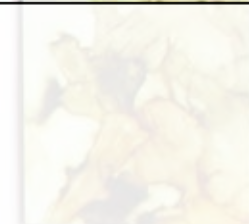
AVOCADO PEELS



BEETROOT



BLACK CURRANT



RED ONION



BLACK CURRANT



BEETROOT



BLACK CURRANT



BLUEBERRY



RED ONION SKINS



CARROT TOPS



AVOCADO PEELS



COFFEE GROUNDS



GREEN TEA



BLUEBERRY



KIWI PEELS



BLACK TEA + Fe

## About materials and safety

So what is alum? Dare I try? In this garbage dyeing guide we show only safe substances and methods. Nevertheless, it's nice to know what you are working with.

# Checklist

## Alum

Potassium alum (hydrated potassium aluminium sulfate,  $KAl(SO_4)_2 \cdot 12H_2O$ ) is used in dyeing. It is a double salt of aluminium and potassium. Dye needs it to bind to the material being dyed. Treating material with alum before dyeing is called mordanting. Other uses for alum are for example disinfecting aquarium plants and as a natural "stone" antiperspirant. In the past, it has been used as a preservative, but it hasn't been recommended for use in food for years. You can purchase alum from pharmacies or drug stores, and from some hardware stores.

## Gum arabic

Gum arabic is a natural gum. It is made from the sap of certain species of acacia. It is used as a glue, a binder and as a thickening agent in the preparation of sweets and watercolours. Gum arabic is a natural product, grown mainly in the Sahel area of Africa, for example in Senegal and Sudan. You can get gum arabic in liquid form from art material suppliers. Some traditional paint stores sell it in lumps, coarse grounded grains or as powder, which are all less expensive than liquid gum arabic.

## IMPORTANT!

- Use protective gloves when handling dye baths and rinsing the materials. Normal household gloves will do.
- Use only equipment reserved solely for dyeing. Don't use the same pots and spoons you use for food.
- If you dye in your kitchen, use the extractor hood. It's always a better option to dye in a place reserved for it. If there is ventilation available, use it.
- Use only the recommended amounts of chemicals. Using extra won't help, and it ends up down the drain, putting unnecessary burden on the environment.
- When crafting with small children, make sure an adult is always the one handling alum and iron sulphate.

## Sulphate of iron $FeSO_4$

Sulphate of iron is used for example in making paint and weathering wood. It is harmful to your health if swallowed and it may irritate the skin if handled with bare hands. You can buy it from hardware or paint stores.







## Last tips

When you reach the point of planning your meals based on the biowaste you'll get for dyeing, you might have gone just a little bit too far... although, why not? The best dyeing materials are found in the pits, skins, rinds, husks and tops of healthy fruits and vegetables.



## How do I know what produces colour?

There are some examples in this booklet, but there's still a lot to explore. Just go ahead and try everything out. It's easy: collect material (optionally dry it) and boil it. If the broth is coloured, you can try dyeing with it.

## Is success guaranteed?

No idea! What we can guarantee is that you probably won't get the same shade twice. You can enhance the result by collecting a lot of dyeing material. One pomegranate husk won't give you a lot to play with, but as you eat pomegranates one by one, dry the husks (in the sun or on a radiator) and place them in a jar to wait until you've collected enough. The more stuff you have to dye with, the stronger the colour will be. If you try out new materials, test with small amounts first to see if they dye well.

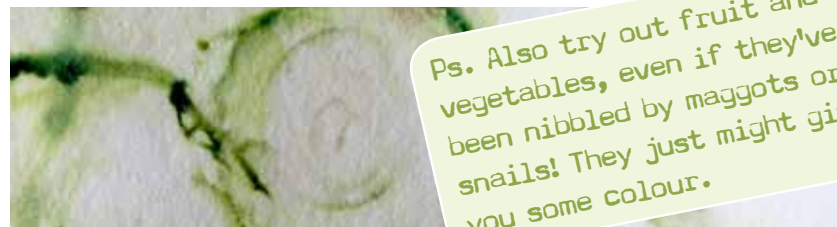
## Reuse preused

In Sweet Waste Dyes, the colours themselves are recycled, but it doesn't have to end there! Dyeing is cheaper if you use second hand yarn. That way you can also discover more variations: different kinds of yarn dye differently. Animal fibres such as wool and silk take colour the best, but try out wool blends too.



## What should I make?

- Even small amounts of dyed yarn can be used to add unique stripes or other sweet details to knitwear. A pocket, fringes or tassels. Wouldn't it be nice to tell your friends that the pompom bouncing on your beanie was dyed with kiwi fruit?
- You can make small framed pieces of art, bookmarks or cards from patterned photo paper.
- You can use patterned paper to make homemade gift paper and cards, or use the paper in book binding or paper crafting.



Ps. Also try out fruit and vegetables, even if they've been nibbled by maggots or snails! They just might give you some colour.



## Sweet Waste Dyes

Experiment with recycled colours!

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Proofreading of the English print: Miia Huttunen and Frankie Robertson

Jyväskylä 2013, Jyväskylä 2015

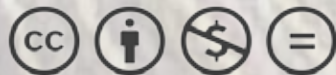
ISBN 978-952-93-6329-2

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The **Sweet Waste Dyes** guide is available for free download on the project website at

**<http://suloisiavareja.wordpress.com>**

You may save the guide to your own computer, print it and share it freely with others. It is forbidden to modify the guide or use it commercially.



## The Sweet Waste Dyes project

You can find more Sweet Waste Dye tips on our website. An open-to-all blog is the project's kitchen laboratory. The site is used for documenting experiments and sharing information: it's a place to share your experiences. We hope to see a variety of experiences with biowaste dyes from everyone, everywhere. The site is in both English and Finnish. You are invited to share your garbage colour experiments and experiences!

**<http://suloisiavareja.wordpress.com>**

The original Finnish booklet was supported by the Jyväskylä Art and Science Foundation.