




*Natural
Colours*

IN FINE ARTS



Pictures on cover and pp. 4-5 are made with leaves of spring lupines, rhubarb, turmeric, beetroot, coffee, and copper turquoise. Spots with lemon juice, soda water, and vinegar. Picture on this spread with red cabbage, copper turquoise, alum, and tannin.

Natural Colours In Fine Arts 2021

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contents

WOW! How It All Began	4
Colours in This Guide	6
For the Reader	9
General Information about Colours	10
Instructions on Using Colours	11
Utensils and Supplies	12
On Storage	13
Factors Affecting Colours	14
Yellows and Oranges	16
Reddish Purple	20
Pink	22
Red	24
Turquoise	26
Dark Blue	28
Blue	30
Purple	32
Green	36
Brown	40
Blacks and Greys	42
White	46
Indicators	50
Textures and Other Ideas	52
General Instructions for Preparing Colours from Natural Ingredients	56
Acquiring Raw Materials	57

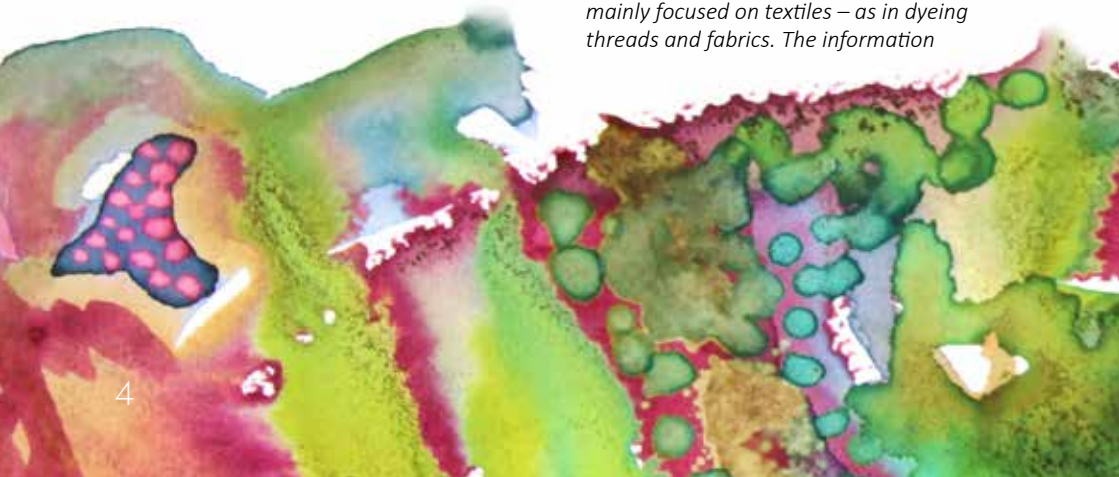
WOW!

That was the very first thought, when in January 2020 our group of teachers had a chance to experiment preparing colours out of natural ingredients and observe the changes in colour indicators in the Chemistry Class Gadolin in University of Helsinki. The changing colours of red cabbage and blueberry were so mesmerizing that from that point on we were on a journey into the unbelievable world of nature's colours.

First, we implemented experiments with our own students. They crushed, sifted, and boiled berries, onion peels, and so forth. They also examined how different substances impacted on the colours, which were extracted from various raw materials. Soon enough we realized the regular classes were not going to suffice testing natural colours systematically. The more we experimented, the more questions begged for answers.

How could we improve the lightfastness of colours? How to make natural colours deeper? Which natural ingredients could be used to easily manufacture a colour wheel?

We researched the literature and diligently google the topic. There was abundantly information on natural colours, but it mainly focused on textiles – as in dyeing threads and fabrics. The information



considering fine arts was rather scarce. I joined many highly interactive social media groups, which were about dyeing with natural colours. Since then, we have tried out and applied the gathered knowledge on fine arts. I even took a weekend course on how to dye yarn with natural colours. I did not participate in yarn dyeing – which, as an avid knitting enthusiast, I somewhat regretted afterwards – but concentrated solely on painting. Instead, I gathered samples from the colour cauldrons and did some experiments with painting. After the weekend I had about thirty colour samples, with which we could keep on working in the Fine Arts School.

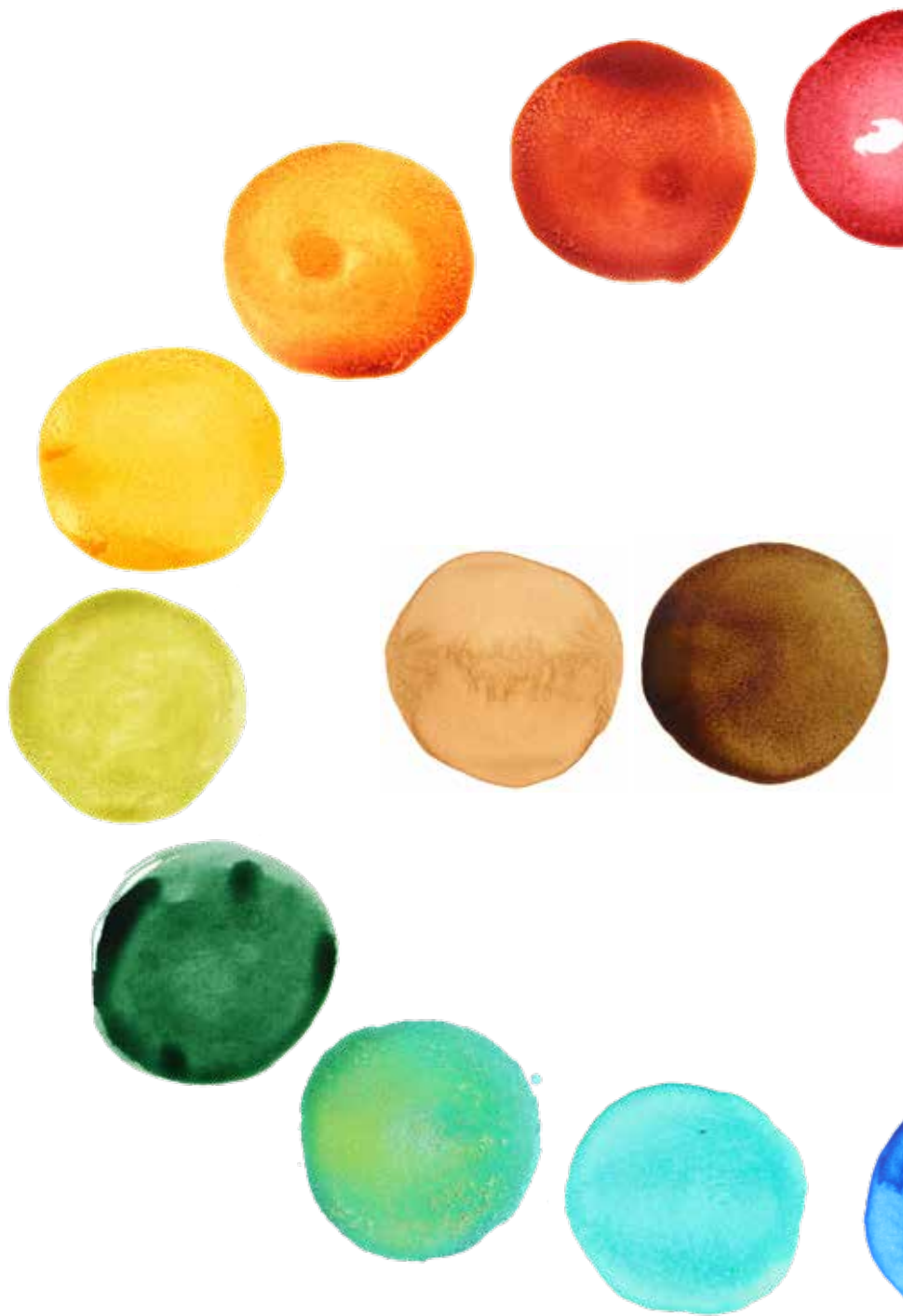
In the fall of 2020, we started the systemic testing of natural colours. During the 2020–21 school year we had a separate “laboratory”. The upshot was the guide you are reading. We had the good fortune to have an experienced and meticulous person to implement these tests, for it took way longer than expected. Although it might have been a case of “the more you know, you want to know even more”. Especially seeing the colours changing depending on acid or alkaline prompted further questions. So big thanks to Tiina for experimental mindset and following through and getting into the bottom of this!

While compiling this guidebook we tried to find and use raw materials, which could be easily available to everyone. Purchased from shops, obtained from nature, or otherwise – but first of all, safe to use. Ingredients manufactured and used in this guide are safe for all ages. With these experiments we have found ways to slightly improve lightfastness of colours. We gathered so much knowledge, that it would be impossible to present it in this single guidebook. That’s why we launched a Facebook-group called “Luonnonvärit kuvataiteessa”, where we can share our experiences and tips, and open a forum for enthusiasts to talk about their own experiments and insights.

This year has been coloured by enthusiastic cheers of “WOW!” when our experiments have been successful. We hope our zest shines through our work and is contagious! We received a project funding from the Finnish National Agency for Education under the LUMA Centre Finland, which inspires and motivates children and youth into mathematics, science, and technology, and – in our case – combining them into fine arts. Without this funding, it would’ve been impossible to realize this guidebook.

Teija Lauronen









FOR THE READER

This booklet is your guide to diverse and enchanting world of natural colours. The guide at hand will teach you how to manufacture colours from natural ingredients and how to use them in fine arts as versatile a manner as possible.

You can get easily started with a functional colour wheel. You can find clear and simple guidelines on how to prepare each colour and which raw materials and supplies you will need. You can proceed one colour at a time or choose only the desired colours. Guidelines are compiled in accordance with each colour's properties. All the instructions have been designed and implemented in such a fashion, that the ingredients are easy to obtain and safe to use responsibly. Most of the ingredients can be found from ordinary well-equipped grocery or natural product stores or pharmacists. Some of the materials are not necessarily so readily available, so they may have to be ordered online. At the end of this guide you'll find the information about shops and online stores we used.

Research, get excited and explore! Peruse the fruit and vegetable selection in your local market or make an expedition into nature. Colours are everywhere. Do not hesitate preparing colours out of raw materials you find. At the end of this guidebook you'll find a general instructions for manufacturing colours, which helps you create also new colours.

On these pages you'll gather plenty of inspiration and tips using natural colours, which you can utilize on your way into the captivating world of nature's colours. We wish you a colourful journey!

GENERAL INFORMATION ABOUT COLOURS

Let us begin by saying, the fine art made with natural colours is not everlasting. The fragility – but also the beauty – of natural colours is that they are not permanent. In time the colours will fade away due to exposure to light and due to other factors as well. This phenomenon is referred to as lightfastness. This is mentioned when describing the properties of each colour – in this context we also talk about substances, which may improve lightfastness, i.e., mordanting substance. To find out more on this, check chapter “Factors Affecting Colours”.

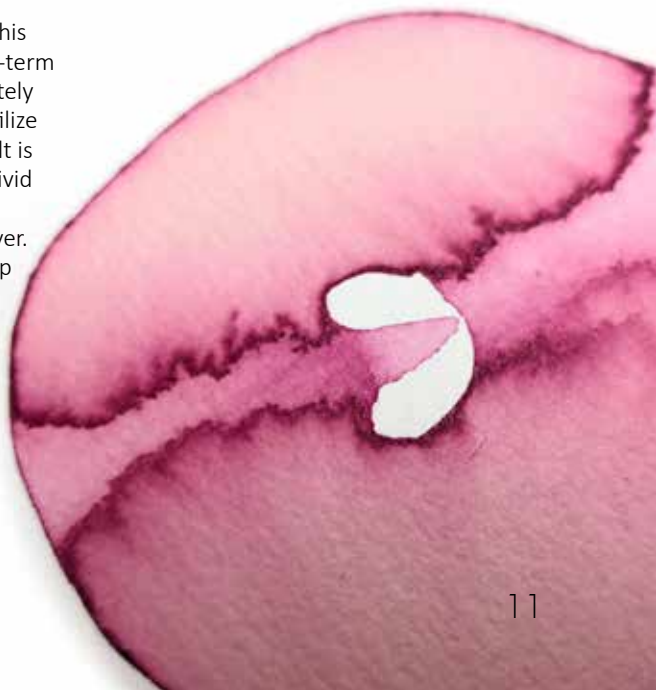
A colour made from natural ingredients is always unique. They have a life of their own, and everything has an impact on everything else. Impacting factors include, for instance, the origin of raw materials, biotope and environment, season, ripeness, temperature, preparing method, the quality of water, the quality of paper, etc. Natural colours are sensitive, and they react easily with other substances. More information on the colours’ sensitivity and ability to change is in chapters “Factors Affecting Colours” and “Indicators”. So, you’d be well-advised to approach natural colours with an open mind and curiosity while also respecting raw materials.

Instructions are usually meant for about 1 dl of colour. Multiply this according to your own needs.



INSTRUCTIONS ON USING COLOURS

- Gum arabic powder is used for thickening and fastener substance. It prevents powder-based colours from shedding or flaking off the paper. Using gum arabic also makes shades more even and makes it easier to work the colours. The more gum arabic used, the thicker the colour.
- Colours described in this guidebook are comparable to ordinary watercolours because they also are pale, light and – due to their liquidity – even somewhat difficult to control. The colour solution can sometimes differ quite a bit from the colour in the final painting. The result can be seen only when the paint is totally dry.
- Layers after layers after layers. This requires a bit of patience and long-term approach, but the trouble is definitely worthwhile. By layering you can utilize the colours full potential. The result is stronger and more beautiful and vivid layered surface. Let the paint dry properly before adding another layer. You can use a hairdryer to speed up the process.
- The colours can be mixed and used together as one pleases. Although it is advisable to take possible colour alterations into account. (See “Indicators”.)
- Always observe safe working methods, ensure proper ventilation and be extra careful when heating up the solutions. Never leave a solution unattended while heating. Avoid breathing powders or possible fumes.
- Do not store ready paints or paintings in direct sunlight or even in a sunny place.
- Always mix the colours well before using.
- The colours are at their best when fresh, so it is advisable to use them as soon as possible.



UTENSILS AND SUPPLIES

You can find specific information about supplies needed to manufacture each colour under their own chapters. That said, there are some utensils, which are useful for preparing most of the colours presented in this booklet:

- *Burner/hotplate and a microwave oven. Majority of the colours require heating.*
- *Electric kettle (not obligatory but handy). The water can very well be boiled also in a microwave oven or on a burner/hotplate.*
- *Kettles for boiling colour solutions.*
- *Filtering fabric and sifts for sieving and working colours. For example, natural fibre fabrics, scarves, linen, gauze linen, etc. Sieve makes it easier to use filtering fabric. Place the fabric into the sieve, filter the colour solution through it and finally squeeze or rub out all you can using the fabric.*
- *For grinding ingredients: Mortars, graters, chopping boards, knives, (hand blender) for crushing ingredients.*
- *For accurate measuring: Measuring cup (decilitre), tablespoon, teaspoon.*
- *Spoons for mixing colours.*
- *Cups and containers. Heat resistant bowls and other plates. It is worthwhile to utilize used baby food jars and other recycled containers.*
- *Aprons and protective gloves. Some raw materials are rich in pigment and thus they easily dye everything.*
- *Aquarelle brushes and paper. It is preferable to use high quality, pH neutral, thick aquarelle paper (300 g Fabriano, Canson). It should be noted that the quality of paper has a considerable impact on the tones and shades of colours.*



ON STORAGE

Completed colours are susceptible to go off quickly; the colour solution is prone to start fermenting and moulding. Prepared colours can however be stored for some time. It is essential to store solutions in a cool and dark place, for example in a fridge or a cold room.

Enhance the storage life of prepared colour:

- Effective cold storage.
- Boil and store in disinfected, airtight containers.
- Use only clean utensils.
- You can add a few cloves into the solution. Clove prevents the growth of fungi and bacteria and gives the colour a pleasant smell.

Drying is probably the most effective way to preserve surplus colours. Use appropriate containers. Colour dries quicker when using a flat container. You can, for instance, make natural watercolours in a used watercolour pan. Some colours crack when dried. You can grind dried colour in a mortar into powder. Store the powder in an airtight container or a Ziploc bag and keep it in a dry and cool place. You can reuse the colour by adding water.



In case you don't want to use natural colours later, you can dispose them into a sewer. Copper used in turquoise is recycled as metal.

FACTORS AFFECTING COLOURS

As stated earlier, natural colours are ephemeral. Some fade away even annoyingly fast, some are more durable. Some raw materials contain natural mordanting substances like acids and tannin, which improve durability. These include for example browns made from coffee and tea.

When creating this guide we tried to find ways to improve lightfastness. Multiple experiments with mordanting substances and lightfastness proved, that tannin and alum improve lightfastness in some colours. The challenge while using mordanting substances was their impact on colours because some colours change quite easily when their pH value changes.

However, using mordanting substances is not obligatory, so it's up to you!

*Instructions on using mordanting substances:
Check the proper mordanting substance for each colour.
Measure, mix and solute.*

*Tannin 2 teaspoons / dl
Alum 1 teaspoon / dl*



YELLOWS AND ORANGES

Turmeric makes a powerful and warm yellow. Lightfastness is not that resilient, and (direct) sunlight makes it fade even faster. Tannin can improve results. You can also use sea-buckthorn, saffron, onion peels and rosehip.



YELLOW – TURMERIC

Utensils / Raw Materials:

Water boiler / hot plate /
microwave oven
Water
Turmeric powder
Gum Arabic powder
Baking soda (for orange colours)
Decilitre cup
Teaspoon
Tablespoon
Filtering fabric and a sift

Instruction:

1 dl water
4 teaspoons turmeric powder
4 teaspoons gum arabic powder

Boil the water. Mix turmeric and gum arabic well in a heat resistant container. Add hot water little by little mixing all the while. Let the solution cool down. Filter and squeeze colour through fabric.



ORANGE – TURMERIC + SODA

Instructions:

1 dl yellow colour
0,5 teaspoons of baking soda

Prepare the yellow according to the instructions above. Mix baking soda in and boil the result in a microwave oven. Beware of boiling over! Mix and let it cool down.

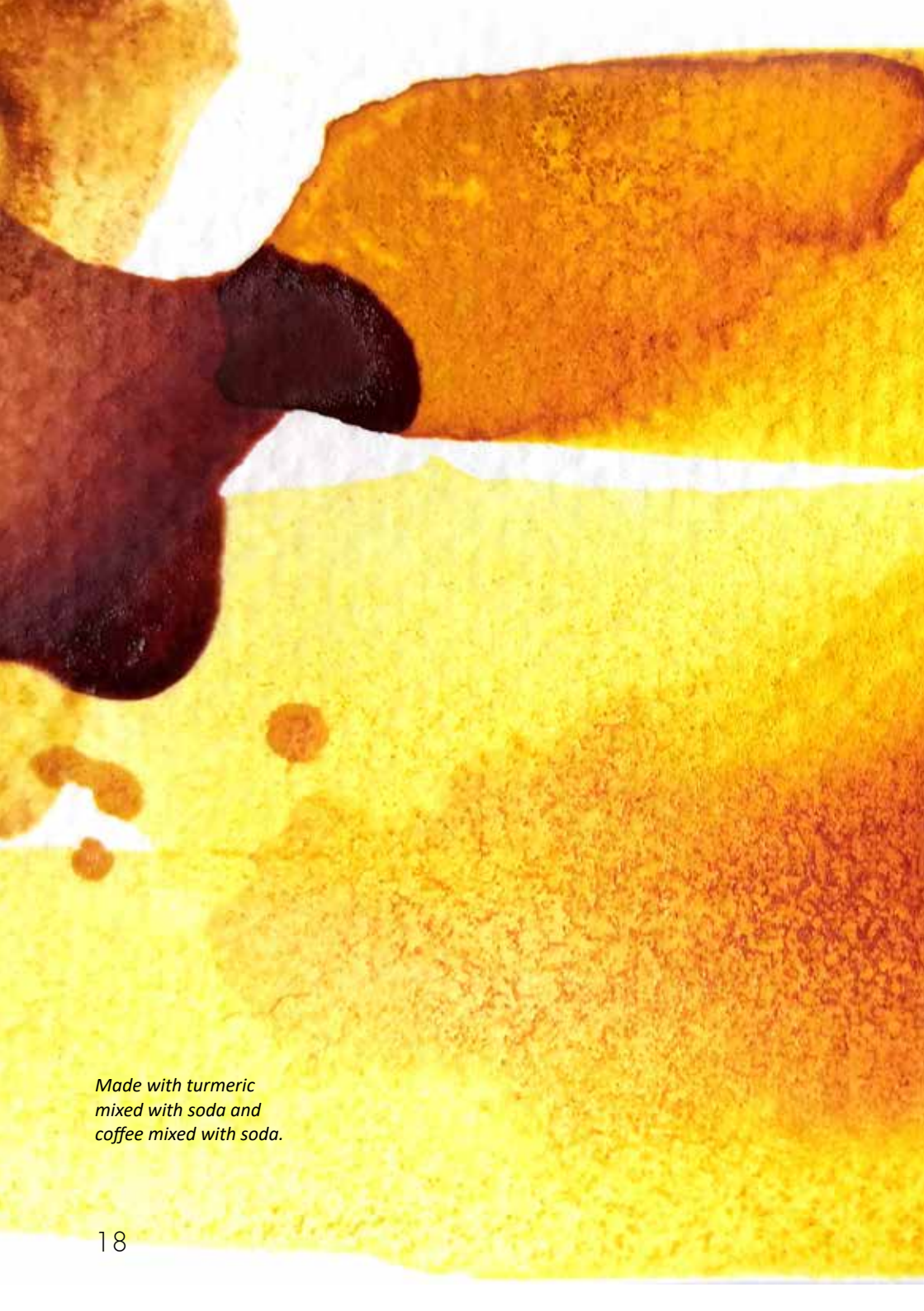
Tip!

You can make the orange darker by increasing heating time and the amount of baking soda.

Tip!

- Colour is also an indicator. Acidic solution is bright, while alky is darker.
- You can also prepare orange by mixing yellow from turmeric and red from beetroot.





*Made with turmeric
mixed with soda and
coffee mixed with soda.*



REDDISH PURPLE

You can prepare red with strong purple hue out of beetroot. Beetroot can be used preparing versatile shades of red. Beetroot's lightfastness is moderate. Alum can be used as mordanting substance for beetroot, though it changes the colour toward purple. Other sources for reds are dried hibiscus flower and other dried red flowers. Also blood red webcap can be used for red, and even tomato purée is worth trying.





REDDISH PURPLE

Utensils / Raw Materials:

Hotplate

Kettle

Water

Beetroot

Grater

Decilitre cup

Spoon

Filtering fabric and a sift

Instructions:

1 medium sized beetroot

1,5 dl water

Grate the beetroot into a kettle and add water. Boil approx. 10 minutes mixing all the while. Let it cool down. Filter and squeeze colour through fabric.



Instant Colour

Utensils / Raw Materials:

Beetroot

Grater

Filtering fabric and a sift

Instructions:

2–3 beetroots depending on their size

Grate the beetroots into fine strips. Filter and squeeze the grated beetroot through fabric.

Tip!

- Try this colour as indicator. You can prepare shades of brown using alkyl substances like baking soda.

PINK

You can make soft shades of pink using lingonberries. Colour is quite lightfast. Tannin can be used as mordanting substance. Pink can also be extracted out of other red berries and fruit such as raspberry, cranberry, cherry, and pomegranate.



PINK

Utensils / Raw Materials:

Hotplate

Kettle

1 dl water

2 dl frozen lingonberries

Decilitre cup

Spoon

Filtering fabric and a sift

Instructions:

2 dl frozen lingonberries

1 dl water

Measure the water and lingonberries into a kettle. Boil approx. 5 minutes on low temperature. Mix and crush the berries with a spoon during boiling. Let it cool down. Filter and squeeze the colour through the fabric.



Instant Colour:

Utensils / Raw Materials:

Utensils / Raw Materials

Microwave oven

Frozen lingonberries

Decilitre cup

Filtering fabric and a sift

Defrost 2 dl of lingonberries in a microwave oven. Let them cool down. Filter and squeeze the colour out of berries with fabric.



RED

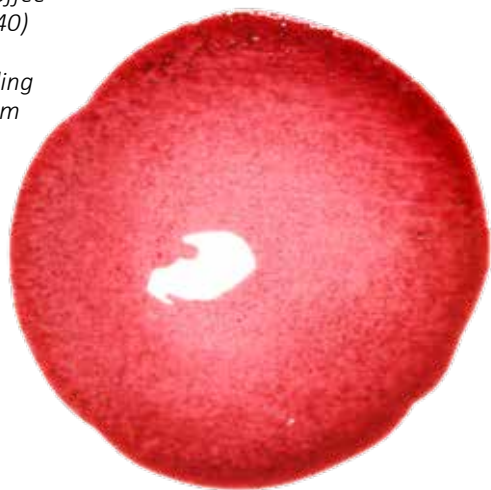
LINGONBERRIES AND COFFEE

Instructions:

*1 dl of prepared lingonberry colour
(see instructions p. 23)*

*2 teaspoons of prepared coffee
colour (see instructions p. 40)*

*Prepare the colours according
to instructions and mix them
together.*



Tip!

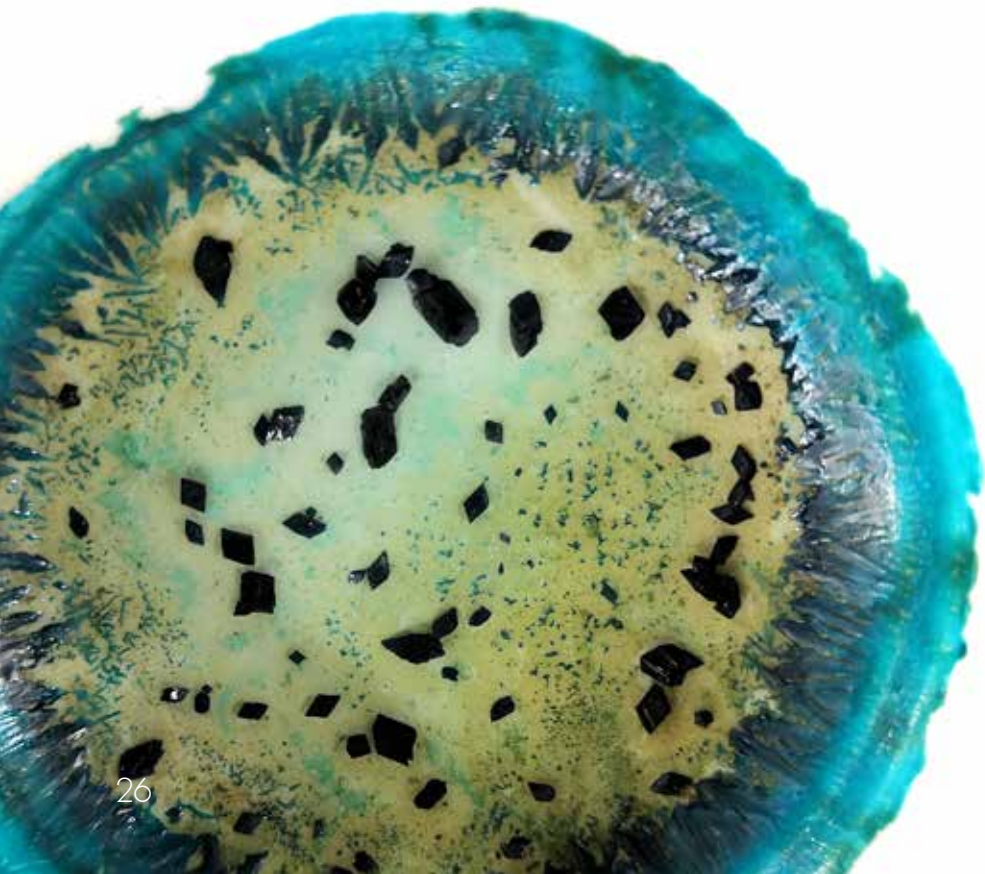
- Different shades of red can be achieved by altering the relative proportions. For instance, adding more coffee you get brick red.



Made with coffee, lingonberry, and mineral salt in addition with turmeric, soda, hibiscus, ethanol, and blueberry.

TURQUOISE

Fresh turquoise colour appears, when the acids from vinegar and salt with oxygen form a chemical reaction with copper. This reaction leads to patination, which is coppers equivalent to rusting. Colour has good lightfastness.



TURQUOISE – COPPER

Utensils / Raw Materials:

Copper (for example copper plate, wiring, tube etc.)

Vinegar

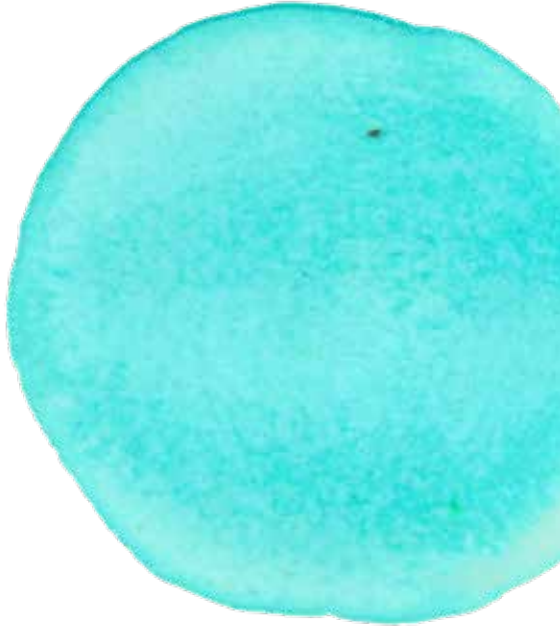
Sea salt

Spoon

Glass jar

Instructions:

Place copper on the bottom of a glass jar about 1/3 of the jar's volume. Add vinegar so that the copper is fully immersed. Add approx. 0,5 teaspoons of salt / 1 dl of vinegar. Leave the jar open in a well-ventilated safe place, for instance high up on a shelf. Mix daily and let it saturate a few weeks. The longer you let the solution stand, the deeper the colour. Some liquid will evaporate during manufacturing process, so make sure to add vinegar so the copper will be completely immersed the whole time.



Tip!

- It pays off to prepare bigger quantities at the same time, because of the longer processing procedure.
- Do not use all the colour at once but add plenty of vinegar after each use. This way you don't have to start the process all over again.
- Experiment with other colours because the vinegar will change the tones of colours used as indicators.

DARK BLUE

Dark blue is extracted from butterfly / blue pea's flower. As per its name, it releases plenty of pigment and produces deep Prussian blue colour. It is easily altered into various shades and tones, but lightfastness could be better.



DARK BLUE

Utensils / Raw Materials:

Hotplate

Kettle

Water

Dried blue pea flowers

Gum arabic powder

Decilitre cup

Teaspoon

Mixing spoon

Filtering fabric and a sift

Mortar

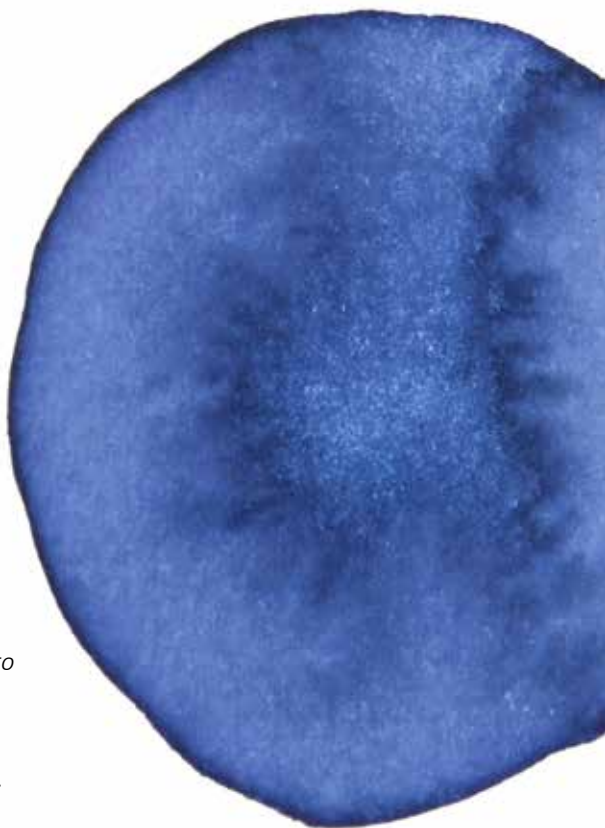
Instructions:

1 dl dried blue pea flowers

1 teaspoon gum arabic powder

1,5 dl water

Pluck the flower stems off. Measure the flower powder and gum arabic into a mortar. Crush and pulverize slightly. Pour the ingredients into a kettle and add water. Boil until there's about a decilitre of liquid left. Let it cool down. Filter and squeeze through fabric.



Tip!

- Try this colour as an indicator. Alky solution turns green, acidic will result in pink and purple.

BLUE

The decomposing algae cells of spirulina produce an intensive electric blue colour. This colour functions as an indicator, which produces multiple shades of blue and green, although the variations are quite subtle. Lightfastness is not very high. Tannin can be used as mordanting substance.

BLUE

- BLUE SPIRULINA

Utensils / Raw Materials

Water

Blue spirulina powder

Gum arabic powder

Decilitre cup

Teaspoon

Mixing spoon

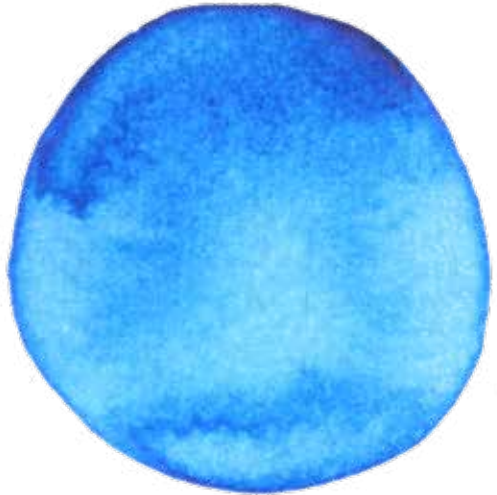
Instructions:

3 teaspoons blue spirulina powder

1 teaspoon gum arabic powder

1 dl water

Mix blue spirulina and gum arabic well together. Add water slowly and keep on stirring. After that, let the solution soak for a while.



Tip!

- Try this colour as an indicator. Adding acidic and alky substances produce different tones of blue and green. Heating colours in a microwave oven changes them even more.

PURPLE

The colour of blueberry is deep dark purple. Blueberry is easy to use for preparing many shades and tones. Lightfastness is pretty good. Alum can be utilised for mordanting. Purple can also be attained using blackcurrant, aronia berries, crowberry, and red cabbage.





PURPLE — BLUEBERRY

Utensils / Raw Materials:

Hotplate

Kettle

Water

Frozen blueberries

Decilitre cup

Spoon

Filtering fabric and a sift

Instructions:

2 dl frozen blueberries

1 dl water

Measure the water and blueberries into a kettle. Simmer approx. 5 minutes on low temperature. Mix and crush blueberries during boiling and let the solution cool down. Filter and squeeze the colour through the fabric.

Instant Colour:

Utensils / Raw Materials:

Microwave oven

Frozen blueberries

Decilitre cup

Filtering fabric and a sift

Instructions:

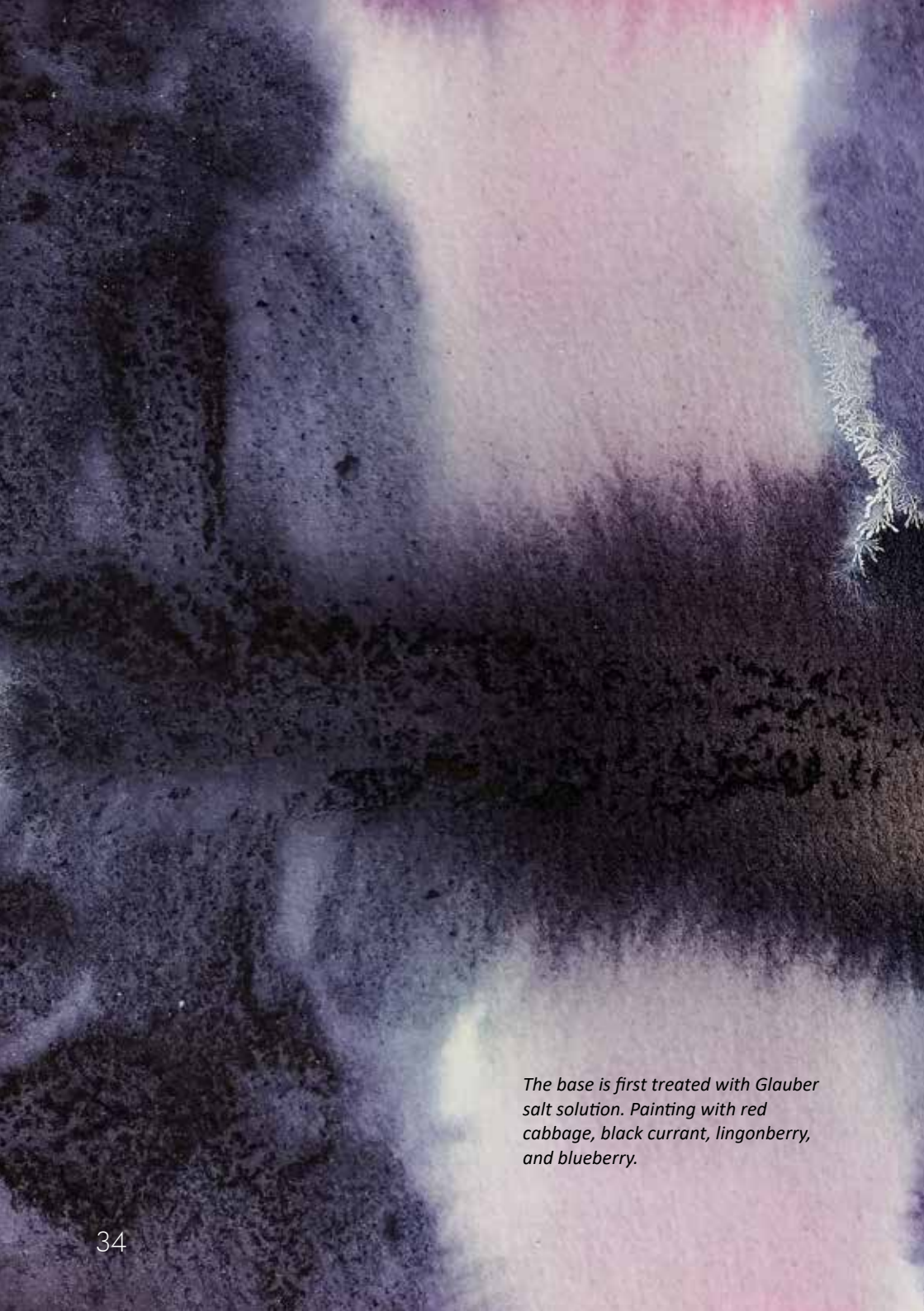
Defrost the blueberries (2 dl) in a microwave oven. Let them cool down. Filter and squeeze the colour with fabric. Notice, that the colour will not be the same as when boiled.



Tip!

- Try this as an indicator. Alky substances will produce blueish tones and acidic will come out pinkish.



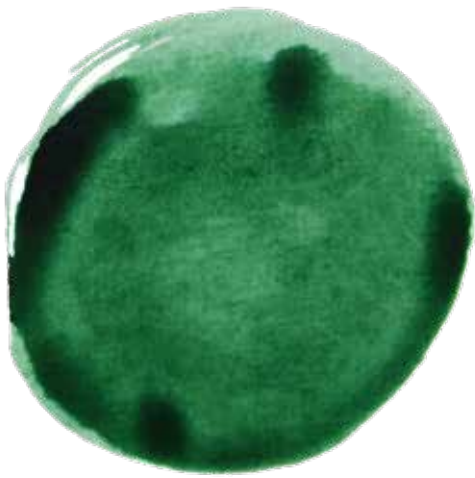


The base is first treated with Glauber salt solution. Painting with red cabbage, black currant, lingonberry, and blueberry.



GREEN

The colour of spirulina is powerful green with a blueish tone. Lightfastness is weak, so the colour fades quickly in sunlight. Tannin can be used when mordanting, if one is so inclined. Other sources of green are the peels of red onion, green powders, and red cabbage.



GREEN – SPIRULINA

Utensils / Raw Materials:

Water

Spirulina powder

Decilitre cup

Teaspoon

Mixing spoon

Instructions:

1,5 teaspoons spirulina powder

1 dl water

Mix the spirulina and water well. Let the solution ferment a moment.

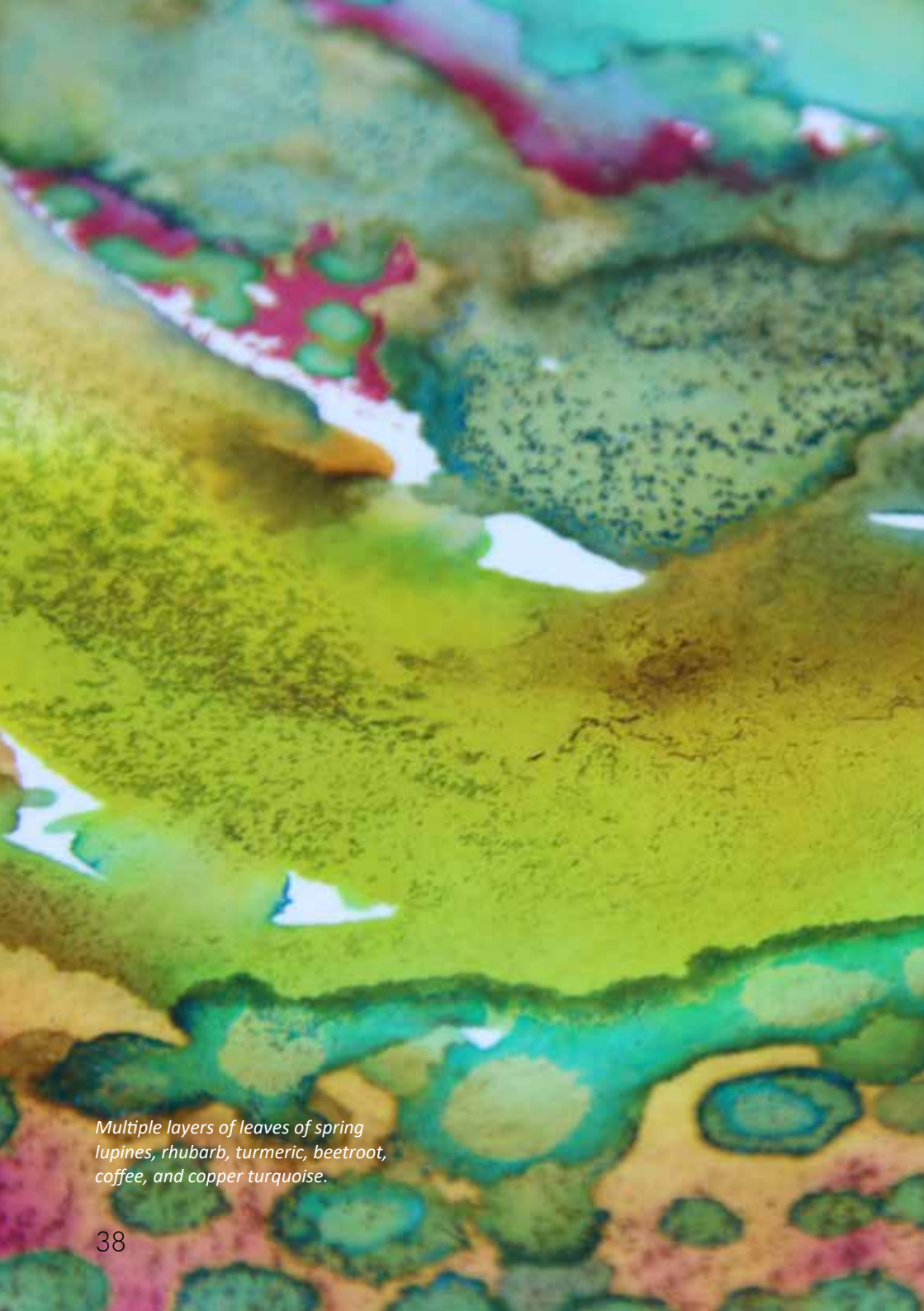
Do not store this colour, for the smell turns foul very quickly!



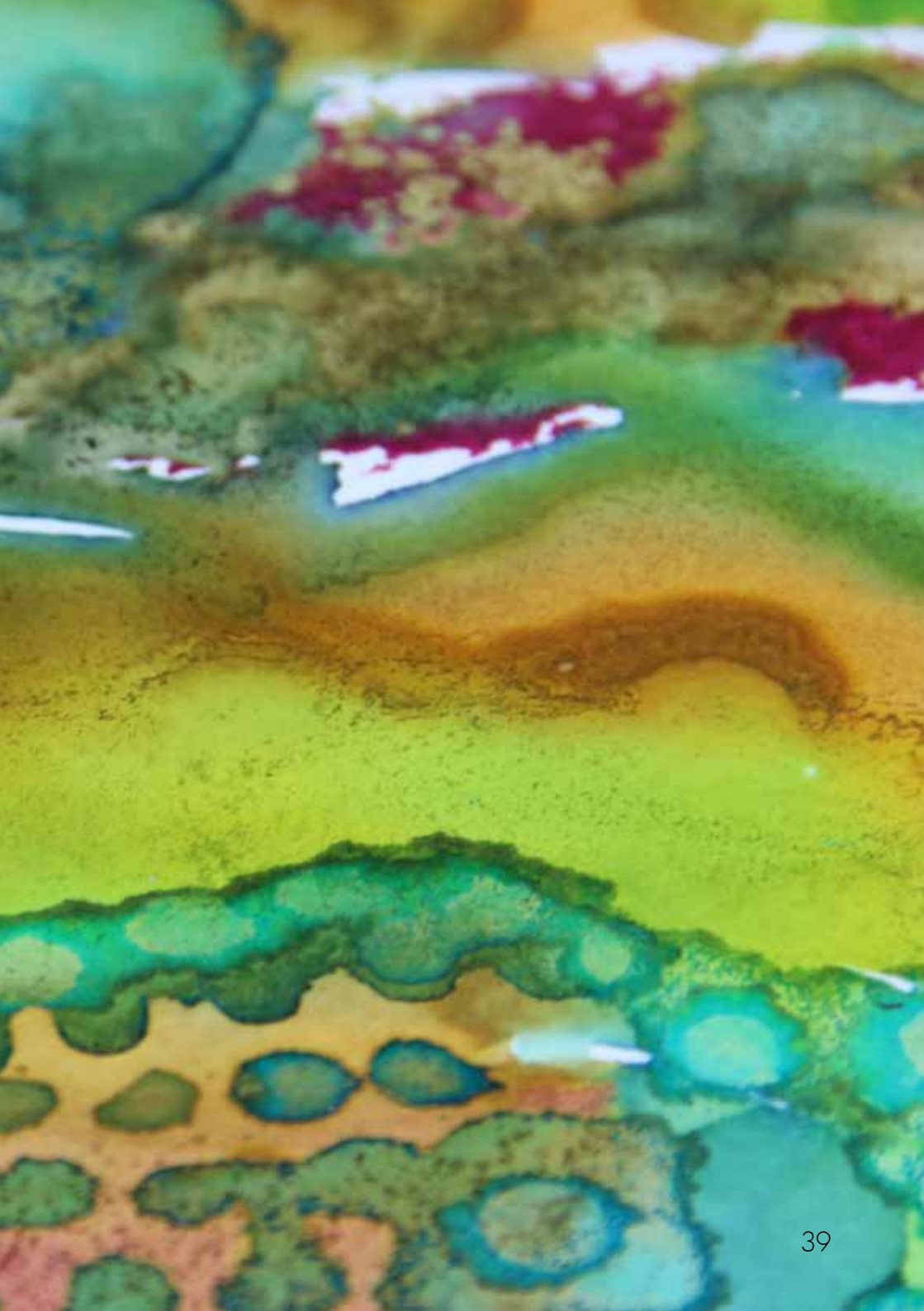
Tip!

- Mixed with turmeric produces different shades of green.
- Heating will turn the colour moss green.
- You may also want to mix spirulina with copper turquoise.





Multiple layers of leaves of spring lupines, rhubarb, turmeric, beetroot, coffee, and copper turquoise.



BROWN

With coffee you can manufacture authentic browns and plenty of warm shades of it. The more layers you add, the more saturated and nuanced the result. Brown can also be used to break the tone of other colours. Lightfastness is pretty good. Other raw materials to produce brown include tea, cocoa, liquorice powder and rust.





BROWN – COFFEE

Utensils / Raw Materials:

Water boiler / hotplate
Water
Instant coffee powder
Decilitre cup
Tablespoon

Instructions:

1 dl water
2 tablespoons instant coffee powder

Boil the water. Measure the instant coffee powder into a heat resistant container. Add the boiling water and mix. Let the solution cool down for a while.



LIGHT BROWN – TEA

Utensils / Raw Materials:

Utensils / Raw Materials:
Water boiler / hotplate
Water
Black bag tea
Decilitre cup
Spoon

Instructions:

2 bags of black tea
1 dl water

Boil the water, add teabags and let them simmer. Press the bags to get more colour out.

Tip!

- Altering the amount of instant coffee powder will produce different shades of brown.
- You may also want to try other varieties of tea, such as Rooibos, green tea, fruit and berry tea etc.

..... Also, beetroot turns to brown, when baking soda is added.

BLACKS AND GREYS

Using coal produces opaque black. It can be used to break the colours and to darken shades effectively. Lightfastness is sound.



BLACK – COAL

Utensils / Raw Materials:

Water

Coal

Gum arabic powder

Decilitre cup

Teaspoon

Mixing spoon

Mortar

Filtering fabric and a sift

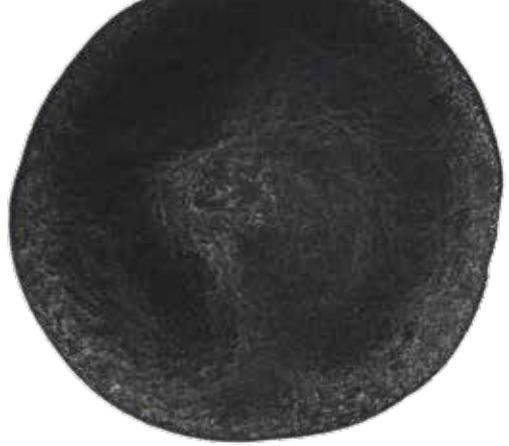
Instructions:

4 teaspoons coal powder

4 teaspoons gum arabic powder

1 dl water

Crush the coal in a mortar to fine powder. Sift the crushed coal to make sure it isn't too grainy. Mix the coal powder and gum arabic well. Let the solution soak for a while. Filter and squeeze through fabric.



Tip!

- You can use even charcoal or activated charcoal to manufacture a colour.
- Mixing with other colours will result to magnificent darker shades.
- You may also want to prepare different kinds of grey by mixing whites and blacks prepared beforehand.

GREY – COAL AND CHALK

Instructions:

1 dl chalk powder

3–4 teaspoons coal powder

4 teaspoons gum arabic powder

1 dl water

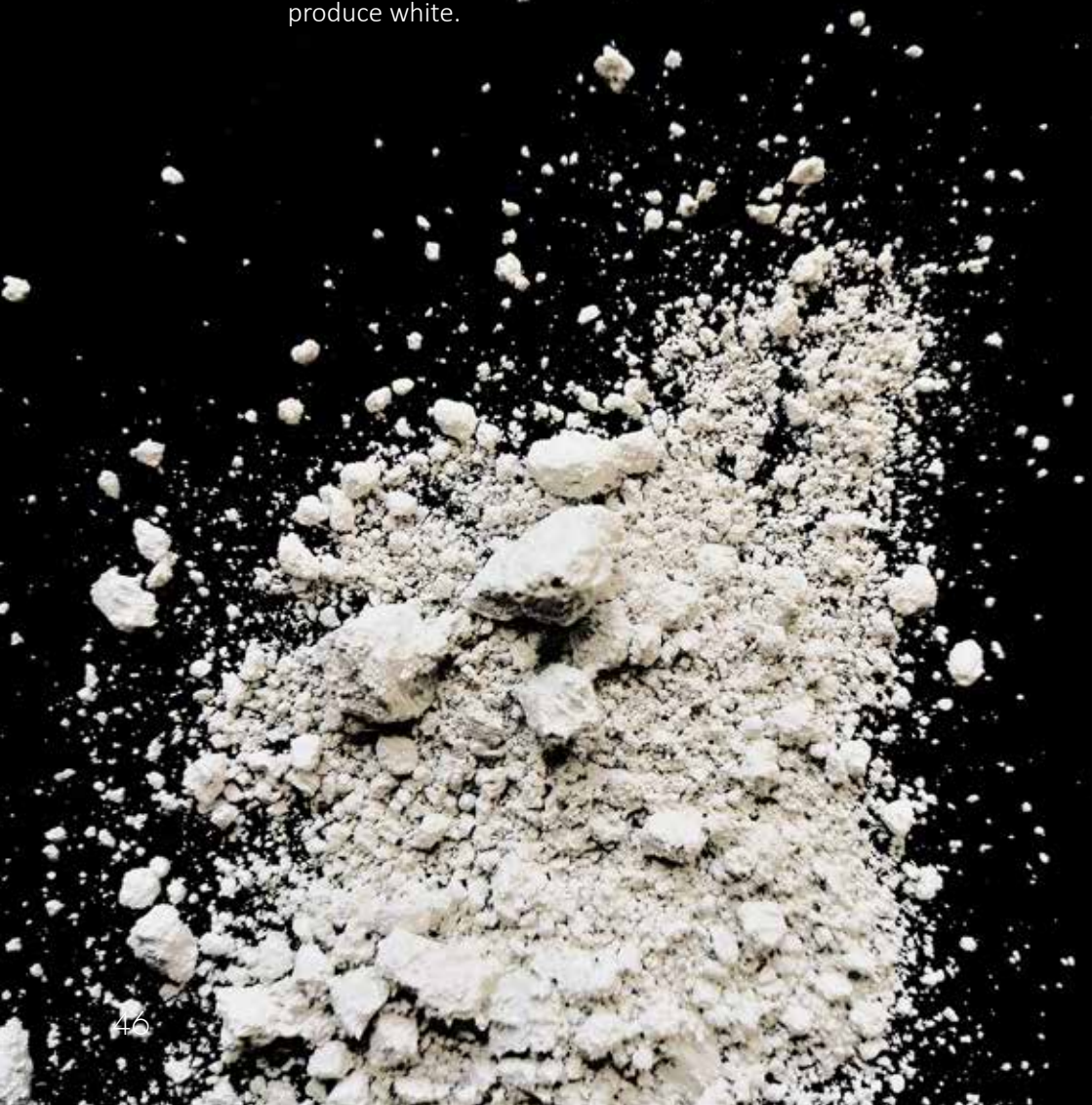
Mix the ingredients sufficiently. Add water little by little mixing all the while. Let it set for a while. Add or subtract the amount of coal powder to obtain the optimal shade.

*Made with coal and pastel colours
made into toothpaste basis. Pastels
with turmeric, lingonberry, black
currant, and spirulina.*



WHITE

Chalk produces a fresh and opaque white. Chalk white can also be used to break other colours resulting in beautiful pastel shades. Lightfastness is firm. Titanium dioxide, corn starch, toothpaste and gypsum also produce white.



WHITE- CHALK

Utensils / Raw Materials:

Water

Chalk powder

Gum arabic powder

Teaspoon

Decilitre cup

Mixing spoon

Instructions:

1 dl chalk powder

4 teaspoons gum arabic powder


1 dl water

Mix the gum arabic powder and chalk powder well together. Add water little by little mixing all the while. Let the solution soak for a while.

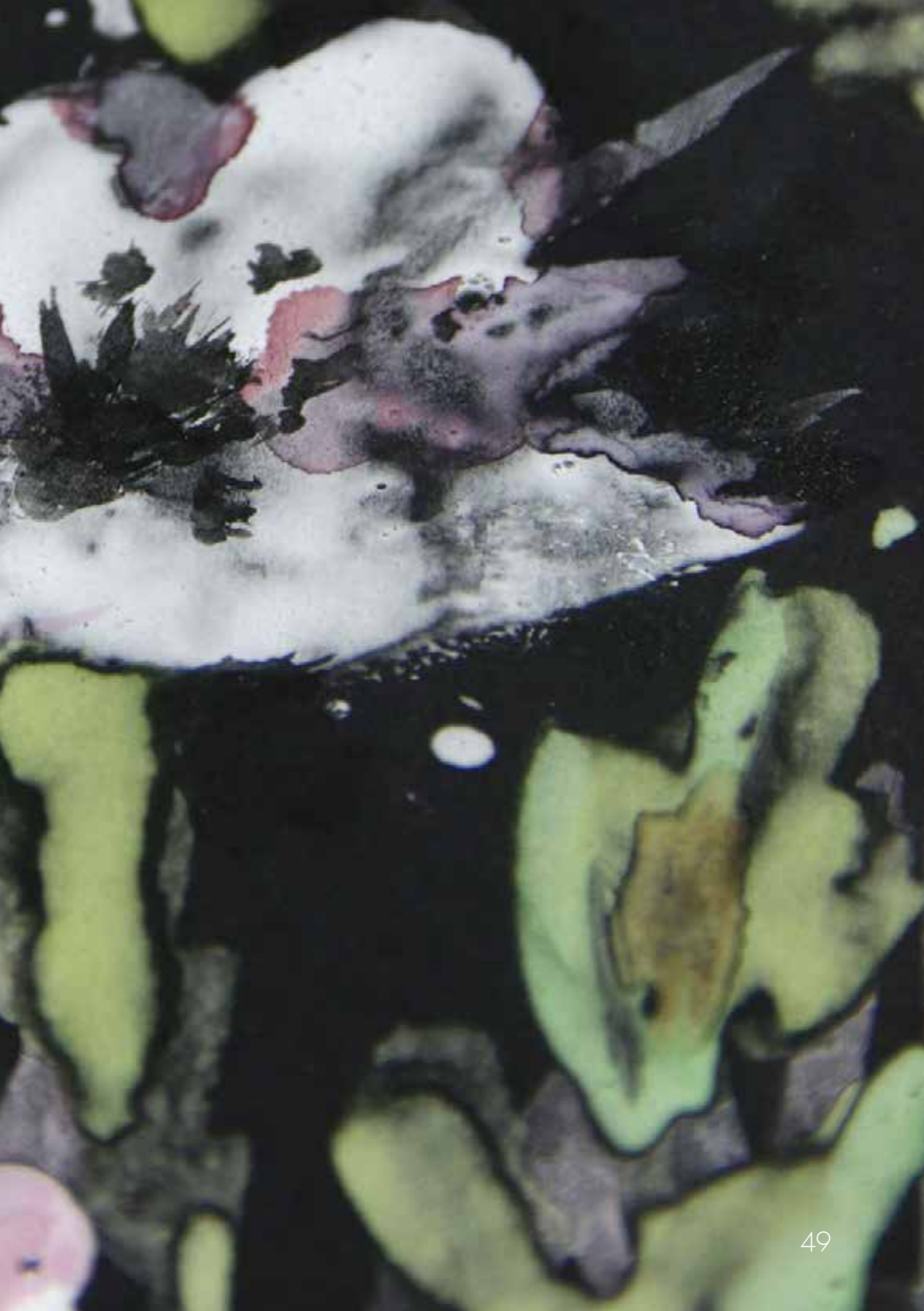
Tip!

- You can make pastel colours by adding white into other colours.





Pastels made into a basis of corn starch with black currant, spirulina, turmeric, and coffee. Black details with coal. Made on black paper.



INDICATORS

Natural colours may have a magical ability to mutate. Nature can provide multiple examples of acid-alky-indicators, which can change colours due to pH i.e. acidic features. Red cabbage is one of the primary examples. A solution made from red cabbage changes colour depending on whether you add acidic, neutral or alky solution into it. Colour may come out as vivid pink or green, even bright yellow, or something in between of all of them. Other indicators include blueberry and beetroot. It is worthwhile to experiment with all of the above, for it may produce happy surprises.

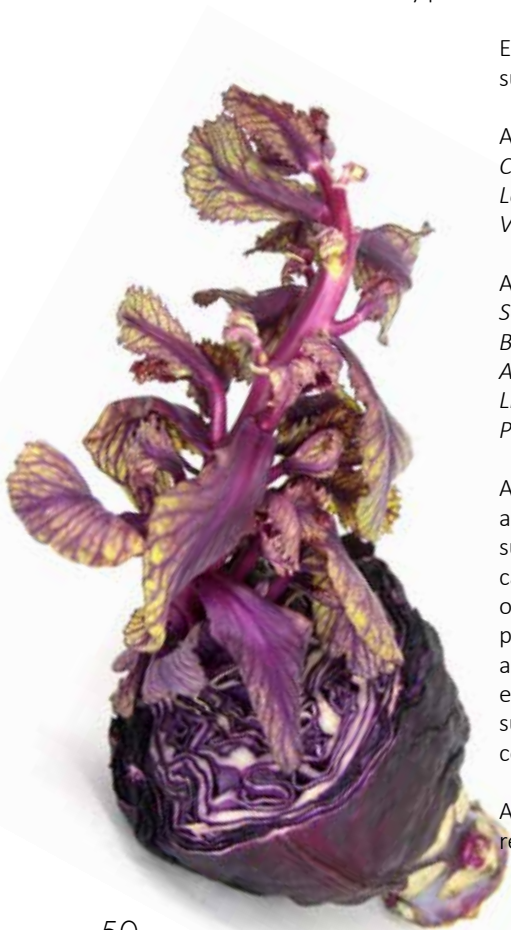
Experiment with these acidic and alky substances:

- Acidic:
Citric acid
Lemon juice
Vinegar

- Alky:
Sea salt
Baking soda
Alky mineral salt
Liquid soap
Pine soap

Acidic or alky substance can be mixed into a colour solution or spread onto a painted surface. If the colour doesn't change, you can try heating the solution in a microwave oven (or otherwise). Remember, that it is not possible to change the tones and shades of all natural colours. And that's why you must examine and research the pH of different substances and try mixing them with various colours.

All the colours of page across are based on red cabbage.





RED CABBAGE

Utensils / Raw Materials:

*Red cabbage
Gum arabic powder
Knife and a chopping board
Grater
Filtering fabric and a sift
(Microwave oven, hand blender)*

Instructions:

*1 red cabbage
4–5 teaspoons gum arabic powder,
depending of the size of the cabbage*

Cut the cabbage in small pieces and grate them into finer strips. Mix it with gum arabic. Crush and tug the mix with hands. Make smaller portions of the result and grind the colour off with the filtering fabric. This may be arduous and time-consuming task, so you may want to try heating the ingredients to make it release colour somewhat easier.

You can also use a hand blender to grind the substance even finer, but do this in smaller portions and remember to add water. Take notice! Do not add too much water, for it fades the colour. Mix in the gum arabic. Filter and squeeze the colour out of the thick puree.

Alum can be used as mordanting substance.

TEXTURES AND OTHER IDEAS

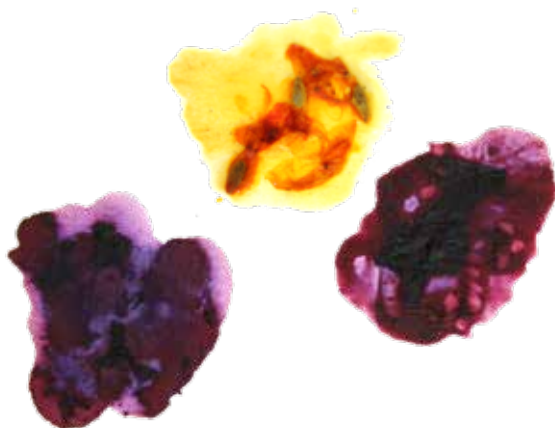
The number one rule in using natural colours is to layer. The more layers the better. Paint, let it dry, paint, let it dry – you get the drift. With layering you will create incredibly beautiful details, soulful and vivid surfaces and make the colours truly shine.

Try to make use of the ingredients as such. Sprinkle, smear, crush and smash them onto surfaces, on paper and onto painted surface.

Different kinds of salts react differently with various colours depending on their pH-values and compounds. With different salt crystals you can create interesting details and glamorous surfaces. It will be rewarding to see all kinds of alterations! Try sea salts, alky mineral salts or Glauber salt.

Tip!

Smash the berries straight onto to the surface to get more vivid result. On left blueberry, sea-buckthorn, and black currant.





*Base treated with blueberry.
Additional ingredients:
Meinebase mineral salt*



Glauber salt



Iodised table salt



Rock salt



Sodium salt



Sal soda



Silica Gel

Raw materials include nettle, ethanol, turmeric, lingonberry, coffee, and blueberry. Baking soda sprinkled on top.



GENERAL INSTRUCTIONS FOR PREPARING COLOURS FROM NATURAL INGREDIENTS

Examine the raw material thoroughly. Think about the sources of pigments and ponder of how to utilise them when manufacturing a colour. Is it worthwhile to use the raw material wholly or use just a part of it.

MANUFACTURING FROM THE RAW MATERIALS:

Always try this first:

- *Grind the material as fine a powder you can. For example, by crushing in a mortar, chopping with a knife, grating, or using a hand blender.*
- *ADD WATER ONLY WHEN NEEDED AND AS LITTLE AS POSSIBLE to keep the colour as strong as possible.*
- *Filter and squeeze through fabric.*
- *Add gum arabic when needed.*

MANUFACTURING BY BOILING:

- *Grind the raw material as fine a powder you can and put it in a kettle.*
- *Add water conservatively.*
- *Mix the solution and press the materials with a tablespoon during boiling.*
- *Boil until colour is like desired and strong enough. Let it cool down.*
- *Filter and squeeze through fabric.*

PERTAINING RAW MATERIALS

Most of the ingredients can be obtained from a garden, the woods, from a grocery store, or from pharmacists.

Alum, tannin
www.raranatura.fi/verkkokauppa
Also, readymade natural colour powders.

Tannin
www.kotiviini.fi/tanniini-5-g-grape

Gum arabic, chalk powder
kauppa.kyminpalokarki.fi

Alky mineral salt (MeineBase), Glauber salt, citric acid
www.sinunapteekki.fi
This is the most affordable alternative, but also regular pharmacists sell these.

Blue spirulina
centralsun.com/fi/tuote/sininen-spirulina-50g/

Dried blue pea / butterfly pea flowers
take-t.fi/products/organic-butterfly-pea-flowers

Activated charcoal is sold by pharmacists.

SOURCES:

<https://coloria.net/>

<https://biocolour.fi/>

<http://varjarikilta.fi/>

<https://www.facebook.com/luonnonvarjarit-varjarikilta>

<https://tetridesign.com/>

Sienivärjäys; ANNA-KAROLIINA TETRI

Luonnonvärjäys; ANNA-KAROLIINA TETRI

MAKE INK- A Forager's Guide to Natural Inkmaking; JASON LOGAN

The back cover pictures base treated with Glauber salt solution. Painting was made using red cabbage, black currant, lingonberry, and blueberry.



FORSSAN
KUVATAIDE
KOULU