



**GEEK
& CO.
CRAFTS!**

INSTRUCTION MANUAL

3D SiDeWaLk CHALK



Warning.

Not suitable for children under 8 years. For use under adult supervision. Read the instructions before use, follow them and keep them for reference.

Franckh-Kosmos Verlags-GmbH & Co. KG, Pfizerstr. 5-7, 70184 Stuttgart, Germany | +49 (0) 711 2191-0 | www.kosmos.de
Thames & Kosmos, 301 Friendship St., Providence, RI, 02903, USA | 1-800-587-2872 | www.thamesandkosmos.com
Thames & Kosmos UK Ltd, Goudhurst, Kent, TN17 2QZ, United Kingdom | 01580 212000 | www.thamesandkosmos.co.uk



SAFETY INFORMATION

WARNING.

Not suitable for children under 3 years of age. There is a risk of choking due to small parts that may be swallowed or inhaled. Do not look directly into the sun with the 3D glasses. Save the packaging and instructions. They contain important information.

Safety rules for handling plaster

- Keep younger children under the specified age limit and animals away from the activity area.
- Store chemical toys out of reach of young children.
- Wash hands after carrying out activities.
- Clean all equipment after use.
- Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.
- Do not eat, drink or smoke in the activity area.
- Do not place the material in the mouth.
- Do not inhale dust or powder.
- Do not apply to the body.

First Aid Information

In case of eye contact: Wash out eye with plenty of water, holding eye open. Seek immediate medical advice.

If swallowed: Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.

In case of doubt seek medical advice without delay: Take the chemical and/or product together with the container with you.

In case of injury always seek medical advice.

Dear Parents,

With this kit, your child will be able to make his or her own fun and colorful chalk. Even though working with plaster is not particularly dangerous, it is still best to supervise and help your child with the projects.

Read and follow these instructions, the safety rules and the first aid information and keep them for reference.

This includes the warnings on the front cover, the safety rules on the inside front cover, and the first aid information at the top of this page.

The supervising adult should discuss the warnings, safety information and the possible hazards with the child or children before commencing the activities.

Incorrect use of chemicals (the plaster, particularly swallowing or inhaling it) can cause injury and damage to health. Only carry out those activities which are listed in the instructions.

You can avoid stirring up too much plaster dust by working slowly and carefully.

This chemical toy is not suitable for children under 8 years. For use under adult supervision. Keep this chemical toy set out of reach of children under 8 years old.

Because children's abilities vary so much, even within age groups, supervising adults should exercise discretion as to which activities are suitable and safe for them. The instructions should enable supervisors to assess any activity to establish its suitability for a particular child.

The area surrounding the activity should be kept clear of any obstructions and away from the storage of food. It should be well lit and ventilated and close to a water supply. A solid table with a heat resistant top should be provided.

The working area should be cleaned immediately after carrying out the activity.

Any spilled or leftover plaster can be disposed of in the household garbage.

Containers and utensils that come into contact with plaster should not be used in the kitchen afterwards.

The **colored dye tablets (harmless food dye)** can color objects intensely, and may cause stains on clothing that you cannot wash out. Your child should therefore wear suitable old clothing while working.

We hope you and your child have a lot of fun making the chalk!

PART 1

CHALK PRoDuCTION

MADE EASY!

Mixing the chalk paste

You will need:

Dye tablets, plaster, 2 measuring cups, wooden spatula, *old plastic bowl*, stone (about the size of an egg), water

Here's how:

- 1 The 3D chalk is super easy to make. First, take a dye tablet with the color that you want your first batch of chalk to be, and pulverize it in a small plastic bowl. Use the stone to crush it.
- 2 Then, add 1 ½ measuring cups of plaster powder from the bag to the dye powder in the bowl. Finish by adding another cup of water.



3 Now it's time to stir this mixture vigorously with the wooden spatula.

If your chalk paste is too stiff or too runny, carefully add a little more water or plaster.

Don't be confused by the light color of the chalk mixture. It will get darker as it hardens.

Now it's time to quickly get your chalk mixture into the mold! There are several ways to do it. See the explanation on the next page.



TIP!

Whichever technique you use, the chalk has to harden for a total of 2 days before you can use it. Of course, that can seem like a long time if you can hardly wait to try out your chalk. Use the time to think about what you might like to draw with your homemade chalk. Collect your ideas on sticky notes and attach them to page 10 of this manual!

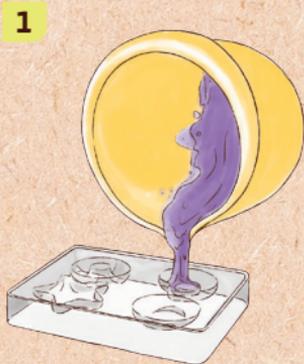
Cool chalk shapes

You will need:

Chalk mixture, wooden spatula, mold

Here's how:

- 1 You have probably noticed the cool shapes in the mold that comes with the kit. Fill them up to the rim with your chalk mixture and let the shapes harden.
- 2 After the chalk has hardened for 2 days and everything is completely dry, turn the mold upside-down and carefully push out the chalk pieces.



2



Chalk finger

You will need:

Chalk mixture, sandbox or sandy ground, your index finger, bucket

Here's how:

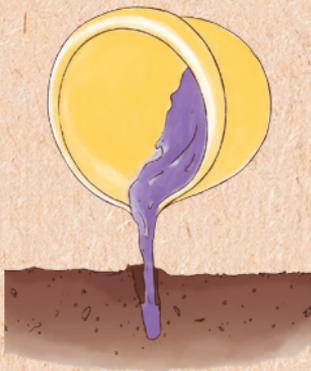
- 1 How about a finger made out of chalk? What, you've never seen one before? No problem, we'll explain. Simply follow us out into the garden. The first thing you have to do is use your finger to make a hole in the sand.
- 2 Now can you picture what a chalk finger is? Carefully pour the stirred chalk mixture into the hole that you made with your finger.

After the mixture has dried for about 2 days, carefully dig it out, and ta-da! Your very first chalk finger!

1



2



TIP!

Cover the chalk finger overnight with a bucket while it hardens.



Rainbow chalk

You will need:

Chalk mixtures in various colors, empty toilet paper roll, scissors, paper (such as an old catalog), tape

Here's how:

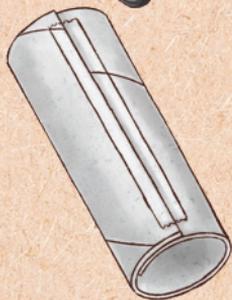
- 1 You can make a really cool stick of chalk out of an old toilet paper roll too. Cut the roll open lengthwise, roll it back up a little tighter, and tape it together again.

Just don't make it too narrow, or you won't be able to make enough layers.

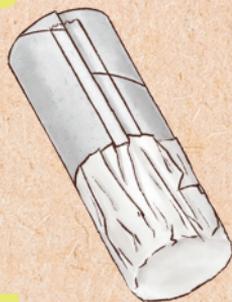
- 2 Cover one end of the toilet paper roll with paper.
- 3 Now, the entire roll, and especially the paper over the opening, has to be completely covered with tape. Otherwise the moisture from the chalk mixture will dissolve the paper and the wet mixture will leak right out of it.



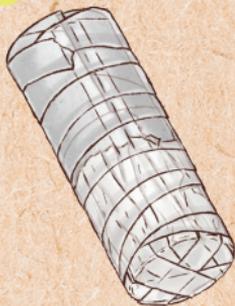
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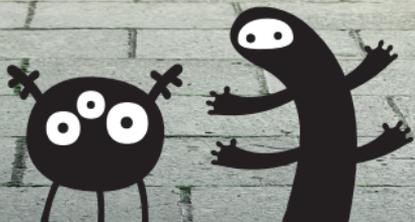
- 4** And now for a really special trick! Mix your first color of chalk mixture and carefully pour it along one inside edge of the roll. Wait 10 minutes for the mixture to start to dry.

While you're waiting, mix the next color, which you will then slowly pour over the first layer. Proceeding in this manner, you will end up with several layers of color on top of one another — a really cool stick of rainbow chalk.

4



Use this space
to stick your
creative ideas!



PART 2

CHALK- SCIENCE

Why is the chalk mixture warm?

You have probably noticed how your chalk mixture gets very warm as it hardens, even though the water that you poured into it was cold when it came out of the tap. Is it magic? No, it's simply a chemical reaction. Don't worry, though, you won't have to listen to a chemistry lecture. This is just a simple explanation that you can use to impress all your friends!

What's involved here is a so-called **exothermic reaction**. The word comes from the Greek "*exo*," meaning "out of," and "*therme*," meaning "heat." In other words, this is a process that produces heat.

But where does the heat come from? Dry plaster actually contains some water too, known as **water of crystallization**. You just can't see it, because it's hidden inside the plaster particles. Before the plaster is put into the bag, it is heated to about 130 °C. In the process, some of the water escapes from the plaster particles. When the plaster is later combined with tap water, it reabsorbs the water that it lost. When that happens, the warmth that went into it when it was heated comes out again — and the plaster becomes warm!

Rainbow experiment

You will need:

Soup bowl, water, small mirror, flashlight, white cardboard

Here's how:

If you want to understand how your cool 3D glasses work, it's important to know that light consists of a variety of colors. That's kind of hard to believe, isn't it? To help make the point, we have prepared a little experiment for you.

- 1 Fill the soup bowl with water and set your mirror in it at an angle.
- 2 Shine the flashlight onto the water and the mirror from above. Use the white cardboard to try to "catch" the reflected light.

1



2



What's happening?

If you manage to find just the right position for the flashlight and the cardboard, you will suddenly see bright colors. That is because white light actually consists of lots of light rays representing all the colors of the rainbow.

So what you did in your experiment was to separate the light into all its individual colors! But how? Rays of light actually always move in a straight line. But when they move from one material into another — from air to water, for example — it changes their direction just slightly. This is known as **light refraction**.

The blue light rays, though, change their direction a little more than the green ones, the green ones a little more than the yellow ones, and so on. That means that the rays for each color of light end up moving in a slightly different direction.

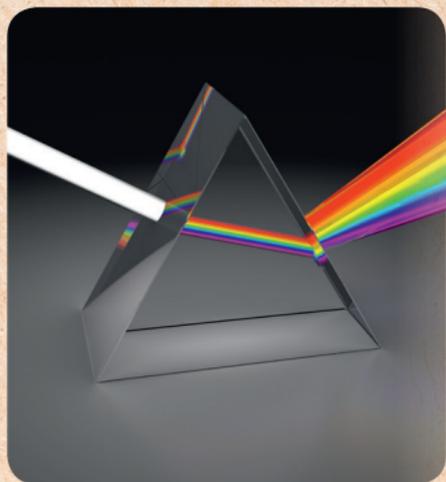
The mirror redirects the rays of light back out of the water onto your cardboard “screen,” where you can capture and view them!



A leap into the 3rd dimension

Did you make a work of art with your homemade chalk? Good. Now it's time to put on your 3D glasses. The effect may seem a little subtle at first. But if you look closely, you will see how your picture seems to come toward you or lift itself a little bit up off the surface on which you drew it.

How is that possible? The trick lies in the glasses that you put on. The eyeglass lenses contain lots of little prisms. A **prism** is a clear geometric shape made of plastic or glass that looks like this:



When ordinary light strikes a transparent prism, it is broken into its constituent parts and you see a rainbow. It works exactly the same way as in the previous experiment, except in this case the light is moving through the prism's material rather than water.

When the colors are guided in different directions by the glasses, they strike different parts of the eye. This tricks your brain into thinking that the different colors are actually different distances away from you.



TIP!

You can intensify the 3D effect by drawing on a dark surface. Try it!

PART 3

THE GREAT

WORK OF CHALK ART

Chalk mandala

You will need:

Your cool homemade chalk, *section of leftover wallpaper or similarly thick paper, pencil, scissors, a couple friends, tape*

Here's how:

- 1 Usually, mandalas are drawn with colored pencils. But why be modest when you have 3D chalk at your disposal? For your chalk mandala, start by cutting a large circle out of a leftover piece of wallpaper.
- 2 Now, use a pencil to draw lots of shapes on the circle (flowers, stars, animals, etc. — let your imagination run wild). Be sure to make them big enough to be colored in with chalk. Finally, carefully cut out the shapes.

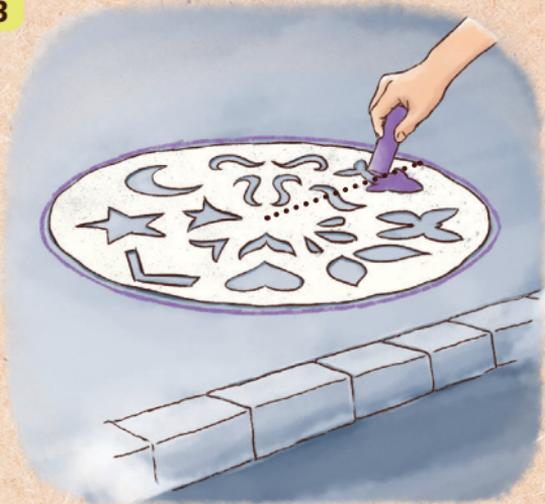
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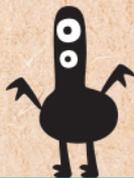
3



- 3 And off you go! Place your stencil on a sidewalk or some other surface that you want to draw upon. Start by tracing the outline of the circle. Then pick out a few shapes that lie on an imaginary line between the circle's center and its edge. In our example, two such shapes are the fish and the wave. Fill in these shapes with chalk. If you have a few friends join you, it will go faster and be more fun!

- 4 Rotate the circle a little and keep filling in the same shapes over and over, until you reach the beginning again. Then set the wallpaper template aside and study your artwork through the 3D glasses.

4



TIP!

If you combine several leftover wallpaper pieces with tape, you can make a really huge mandala!



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Project management and editing: Kristin Albert

Text: Jessica Stuckstätte, Hamburg

Technical product development: Elena Ryykin

Manual layout: Michaela Kienle, Fine Tuning, Dürmentingen

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