



# **SIMPLE SHELTER REPAIRS**



**A PRACTICAL SELF-HELP  
HANDBOOK**

# FOREWORD

Congratulations! You have been provided with a copy of IOM's *Practical Self-Help Handbook for Simple Shelter Repairs*.

It is common knowledge that every home has something in need of repair, as nothing is ever perfect – roofs may leak, walls may crack, pipes may clog up or burst, and cables may swelter.

Not everyone is an engineer or construction expert, but many of us have the technical skills to actually carry out simple repair works by ourselves.

Not everyone is an engineer or construction expert, but many of us have the technical skills to carry out simple repair works by ourselves. This simple handbook is meant to guide you to fix simple issues in your home to ensure the safety and comfort of your families. Simple repairs and insulation works can be conducted on roofs, walls and ceilings can be plastered and painted, pipes can be fixed or replaced, and sockets, switches, and cables can be renewed; even when no engineer or repair expert is available.

If you are not sure about some of the steps outlined in the Handbook, please consult with someone an expert in the respective subject matter. This may be a friend, a family member, a neighbor, your landlord, or the IOM shelter team. A short phone call can often suffice to solve many simple repair problems.

The last chapter of this Handbook on personal safety and hygiene is intended to help you protect your health by applying simple precautions to avoid accidents and injuries. Precautions and injuries can be easily avoided, and this chapter will assist you in doing so, as your health and safety are our direct concern.

In conclusion, IOM wishes you the best of success in your home repairs and hopes that you and your family always have a welcoming and pleasant stay in your new home in Turkey!

Torsten Haschenz  
Sr. Programme Coordinator for Refugee Response  
IOM Turkey

## IOM DISCLAIMER

The opinions expressed in this booklet are based on those of the author (Eng. Mohanad Ameen) and do not necessarily reflect the views of the International Organization for Migration (IOM).

The designations employed and the presentation of materials throughout the handbook do not imply the expression of any opinion whatsoever on the part of IOM concerning the legal status of any country, territory, city or area, or of its authorities, or concerning its frontiers or boundaries.

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# ACKNOWLEDGEMENT

This Handbook (1st edition) is the result of work done by the IOM Shelter Team to assist Syrians under Temporary Protection (SuTP) in Turkey to carry out simple shelters repairs.

I would like to thank the IOM Shelter Team, specifically Eng. Süleyman Demir, Eng. Hüsham Abdulsalam, Arch. Jiyen Şahin, Eng. Muhammed Ceyhunlu, Eng. Fatoş Cengiz, Eng. Kerim Bal and Eng. Semir Reyhan, for their dedicated work to compile this Handbook.

I would also like to thank Torsten Haschenz (Senior Refugee Response Programme Coordinator), Mazen Aboulhosn (Emergency Coordinator), Lado Gvilava (Chief of Mission) and Rex Alamban (Head of Office Gaziantep) for their direct and indirect support.

It is our hope that this handbook will become a primer for IOM beneficiaries, helping them across the country to learn, teach, and practice the correct steps for simple shelter repairs.

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## INTRODUCTION

This Handbook presents basic information on simple shelter repair steps. Its purpose is to provide guidance on pertinent choices, practical work modalities and steps, as well as useful tools needed for simple shelter repairs. The Handbook may be used to develop training on shelter rehabilitation methods such as roof leakage repairs. The intended readers are IOM beneficiaries under the ‘cash-for-shelter’ modality who are not expected to be construction engineers or otherwise experts, but who should have enough skills and capacity to carry out simple repair works themselves.

The Handbook is meant to be applied to single houses in Southeast Turkey built with local materials. These homes are usually one to two storeys high and are connected to electricity and water grids. In general, the housing typologies are permanent structures built of brick and mortar, mostly plastered and painted, with roofs made of timber and covered with clay tiles or corrugated roofing sheets made of galvanized iron. In urban areas, some houses also have concrete roofs.

This Handbook will guide Syrian refugees and other beneficiaries to implement simple repair works (i.e. windows, doors, roofing or walls) in their rented homes by applying the correct technical steps to improve the shelter and therefore, the living conditions of themselves and their families, ensuring adequate protection from the elements as well as safe and dignified living spaces.

## IOM IN TURKEY

The International Organization for Migration (IOM) – the UN Migration Agency – opened its first offices in Turkey in 1991, following the aftermath of the first Gulf War. The Mission’s activities began with resettlement for Iraqi refugees and were later expanded to Migration Management programmes. IOM’s partnership with the Republic of Turkey was formalized in November 2004 when Turkey was granted IOM member status. The partnership between IOM and Turkey has continued, including provision of support to the drafting of the Government of Turkey Law of Foreigners and International Protection, as well as supporting the establishment of the Ministry of Interior’s Directorate General for Migration Management in 2013.

Additionally, following the devastating earthquake in Van Province in 2011, IOM Turkey began its Emergency Response programmes which have since expanded in response to ongoing regional conflicts and crises, notably the 2012 Syrian Crisis and the 2015 Mediterranean Crisis.

With over 25 years of operational experience in Turkey, the IOM Turkey Mission is now one of the largest globally with over 900 staff in 15 different locations across the country, with a main office in Ankara, sub-offices in İstanbul and Gaziantep, and satellite offices in Adana, Hatay, Kahramanmaraş, Şanlıurfa, and İzmir.

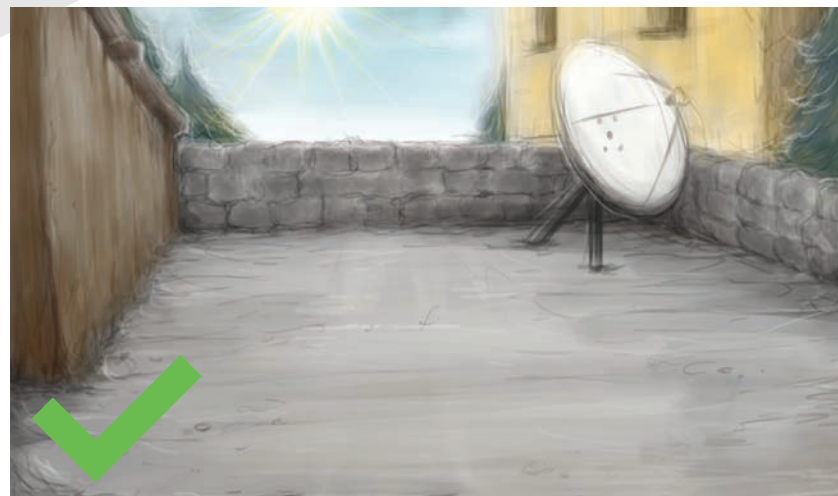


## ROOFING

- ▶ WATERPROOF INSULATION
- ▶ PLASTIC SHEET INSULATION



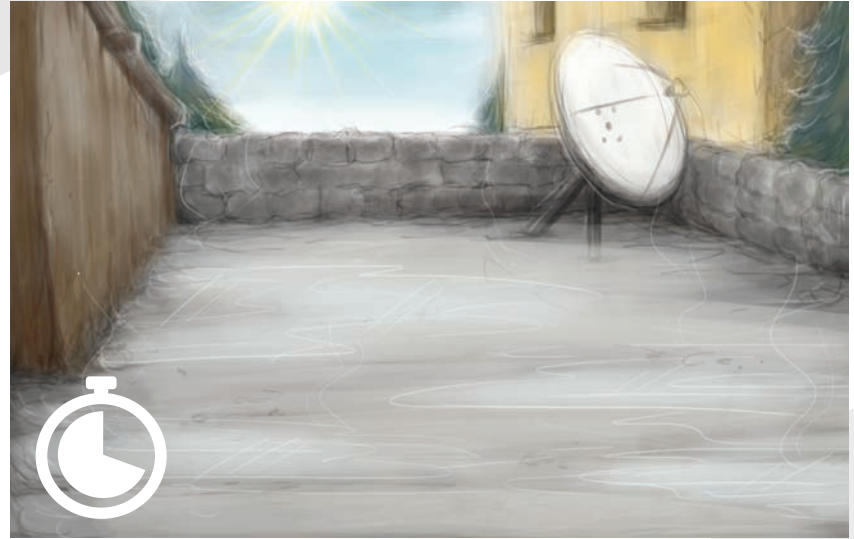
## WATERPROOF INSULATION



- ▶ Apply the waterproof roof insulation on a sunny day, not when there is rain.



▶ Wear gloves and a dust mask and clean the roof surface using a sweeper.



▶ Wait until the roof surface is dry.



▶ Wash the roof area with water using a rubber sweeper.



▶ Find any cracks in the roofing and clean them well using a scraper.



- ▶ Thoroughly mix the roof repair materials consistently until all lumps disappear.



- ▶ Wait until the materials are dry.



- ▶ Fill the cracks/joints in the roof with the repair materials using a trowel.



- ▶ To make the first layer, add 1 liter water to 3 liter waterproof insulation liquid in a bucket.



▶ Mix well the materials.



▶ Do not apply the waterproof insulation randomly.



▶ Apply the mixed materials to the roof in one direction using a roller brush.



▶ Wait until the first layer is dry.



▶ Mix well waterproof insulation liquid in a bucket without add water.



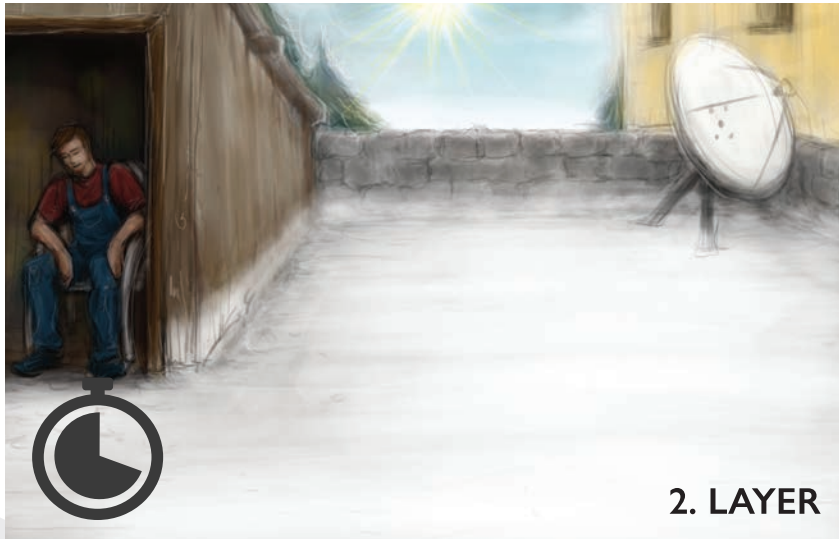
▶ Apply a second insulation layer, rolling-in the opposite direction from the first layer using a roller brush.



▶ For the second layer, water should not be added to the raw waterproof insulation material.



▶ The second isolation layer should not be applied in the same direction of the first one.



**2. LAYER**

▶ Wait until the insulation layers are dry.



**2. LAYER**

▶ Do not step on the roof surface after applying the insulation layers.

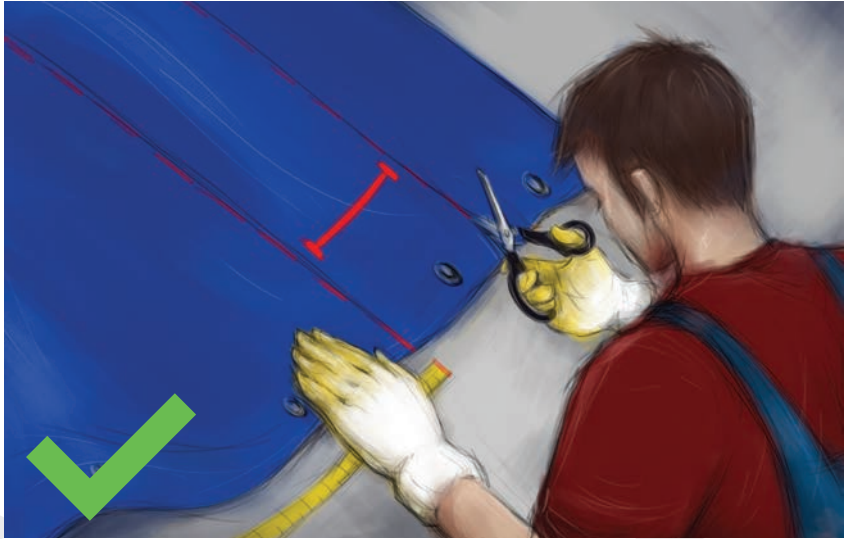
## PLASTIC SHEET INSULATION



▶ Identified shelters in need of roof repair.



▶ Take the outside measurements of the roof using a measuring tape and ladder.



▶ Cut the plastic sheeting according to the required dimensions using steel blade scissors.



▶ Use plastic sheeting to cover the whole roof area.



▶ Do not cut the plastic sheeting without taking the roof dimensions.



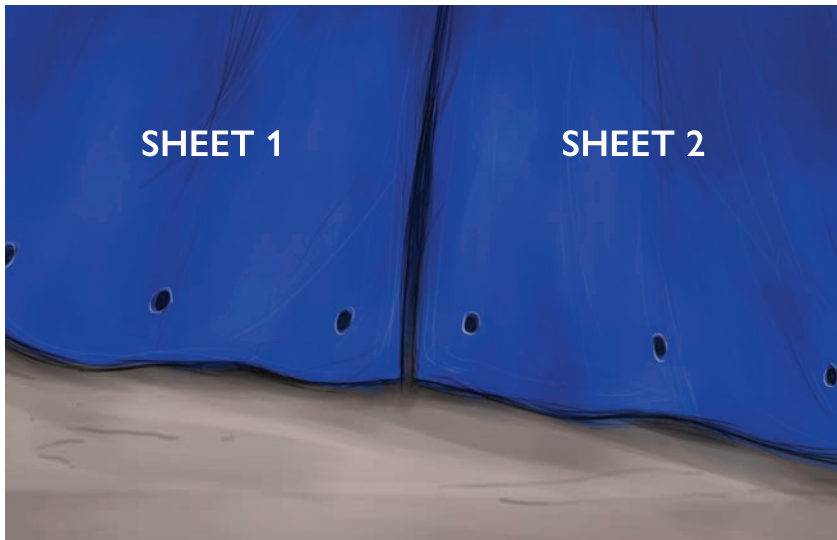
▶ If the roof width is less than 4 meter and length less than 6 meter, one plastic sheet is sufficient to cover the area. Otherwise, more than sheet will be required.



▶ If more than one sheet is required, fasten the sheets as instructed in the photos.



▶ Use the instructed way to connect the two sheets.



▶ Put the two sheets close to each other on ground.



▶ Use the rope to connect the two sheets.



▶ Measure the distance between the holes in the plastic sheeting and mark the location of the nails on the wall accordingly.



▶ Fasten sides of the plastic sheets to the iron nails that have been mounted to the wall using the ropes.



▶ Install the nails on the wall using a hammer and a ladder.



▶ Shelter roof have been repaired.

## OTHER METHODS FOR FIXING PLASTIC SHEETING CAN BE SEEN BELOW



▶ Using washers or bottle caps to fix the sheets with iron nails.



▶ Using timber battening to fix the sheets with iron nails.

## WALLS AND CEILINGS

- ▶ GYPSUM PLASTERING
- ▶ PAINTING



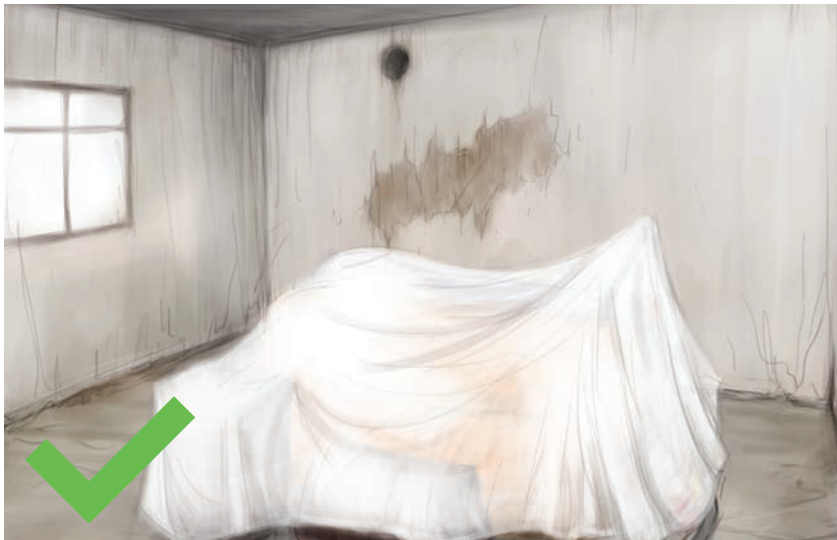
## GYPHUM PLASTERING (INTERNAL)



- ▶ Gather your furniture together and move it to the middle of the room.



- ▶ Wear gloves and dust mask and begin removing damaged, old plaster and paint using a hand scraper.



- ▶ Cover the furniture with a plastic sheet.



- ▶ Smooth the surface using sandpaper.



▶ Clean inside/around the cracks in the plaster using an adjustable knife or steel scraper.



▶ Add 2 liter of water to 5 kilogram of gypsum.



▶ Put 5 kilogram of gypsum in a bucket to cover around 4-5 square meter.



▶ Mix the water and gypsum well until the mixture is semi-liquid and there are no lumps. The mix should be used as soon as possible, otherwise it will begin to harden.



▶ Do not add more gypsum after finishing the mix to avoid roughening.



▶ The gypsum mixture should not be applied from the top to the bottom.



▶ Use the gypsum mixture to fill the cracks in the plaster using a trowel, moving from the bottom to top.



▶ The gypsum mixture should not be applied randomly.



- ▶ The gypsum mixture can also be applied to cracks in the ceiling once they are cleaned.



- ▶ After applying the gypsum mixture wait until it is dry. To smooth the surface of the wall, use a wet sponge but consider the proportion of the wetness (it should not be too wet). Sweep around the mortar slowly.

## CEMENT PLASTERING (EXTERNAL)



- ▶ Wearing gloves and dust mask, begin removing the damaged plaster and paint using a hand scraper and sandpaper.



- ▶ Drop some water on the hard layers.



▶ Clean inside/around the cracks using an adjustable knife or scraper.



▶ Add water according to the required ratio (5 kilogram mortar to 1 liter water) for the amount of cement mortar needed.



▶ Put 5 kilogram of cement mortar (pre-mixed of cement and sand) in a bucket to cover approximately 2 square meter of surface.



▶ Mix it well using a trowel or by hand until the consistency is semi-liquid and without lumps.



▶ Fill the cracks with the cement mixture from the bottom to the top using a scraper or trowel.



▶ Wait until the applied mixture is dry.



▶ Ensure that the cracks are repaired entirely.



▶ To smooth the surface of the wall, use a wet sponge, but consider the proportion of the wetness (it should not be too wet). Sweep around the mortar slowly.

## PAINTING (INTERNAL AND EXTERNAL)



- ▶ After preparing the surface, use a trowel to apply the cement from the bottom to the top.



- ▶ Gather furniture together and move it to the middle of the room.



- ▶ After applying the cement plastering wait until it is dry.



▶ Be sure to cover all furniture before beginning.



▶ Prepare the base/primer paint layer by mixing with water.



▶ Don't start the work before gathering and covering the furniture.



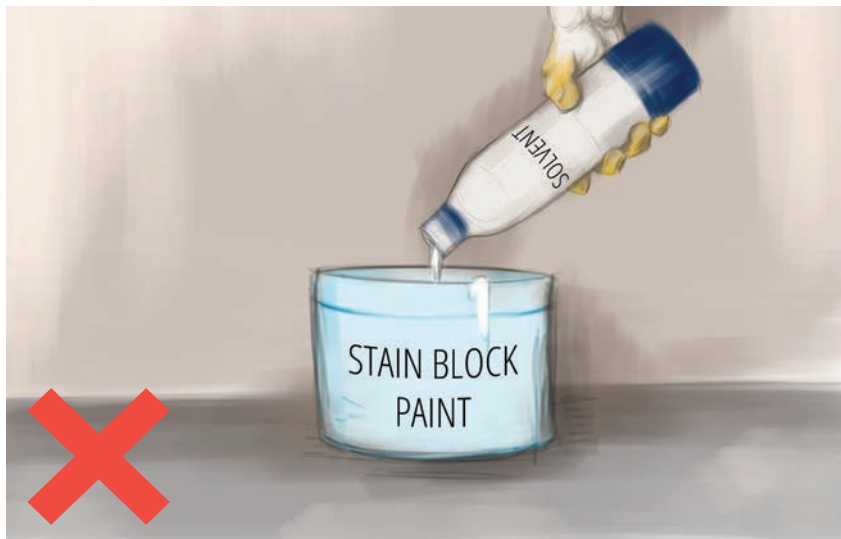
▶ Directly apply the base/primer paint on the walls or ceilings using the roller.



▶ Mix the stain block well.



▶ Use a roller to apply the stain block paint.



▶ Do not add any kind of solvent.



▶ Paint any areas stained by permanent mold, smoke, fire and any other areas that can't be covered easily using the stain block paint and roller. The undercoat (base layer) can be used if needed as well for this step.



▶ Wait for the base/primer layer to dry and prepare the main coat paint using a different bucket. Pour half of the paint into the bucket.



▶ Add water according to the quantity of the paint required (1 liter water to 5 liter main coat paint).



▶ Do not start painting directly from the main bucket, be sure to prepare the mixture first. Additionally, do not begin applying the paint before making sure that the applied plaster is well dried.



▶ Mix it until it the paint texture is consistent.



▶ Paint should be applied in one direction only.



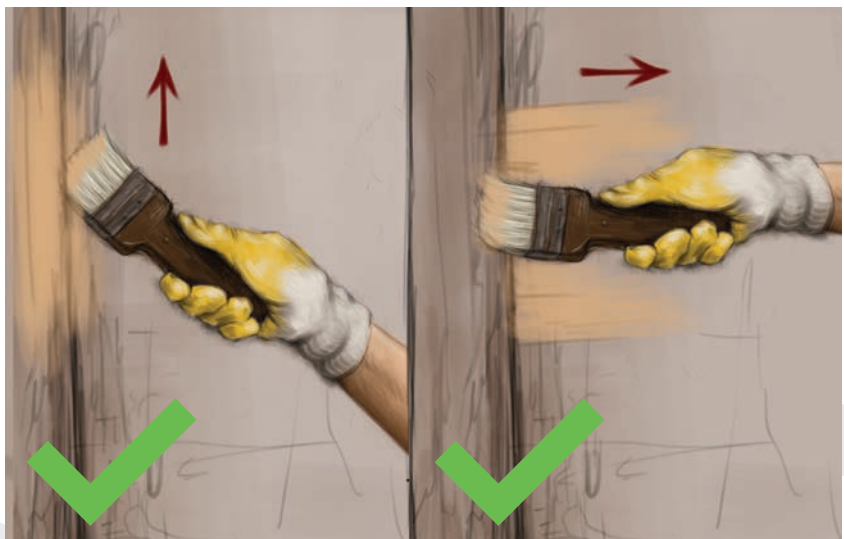
▶ Use the brush for painting corners.



▶ Do not apply paint randomly and use a roller brush for the ceiling and large areas.



▶ Do not use a roller for corners, be sure to use a brush for these areas.

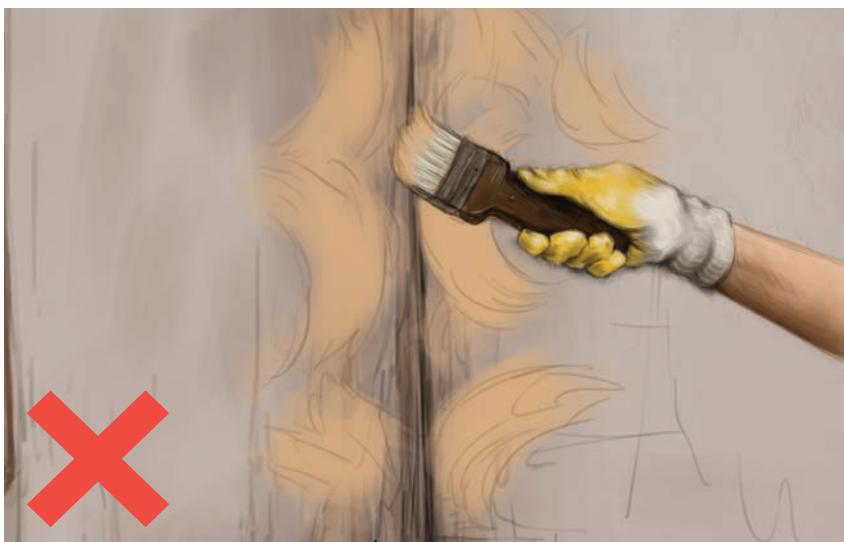


▶ Use the brush vertically and horizontally as needed.



1. LAYER

▶ Apply the first layer of paint.



▶ Don't use the brush randomly.



1. LAYER

▶ After completing the first layer of paint, wait until it has dried.



## 2. LAYER

- ▶ Begin with a second layer of paint following the same steps.



- ▶ The same steps can also be used for the external painting.



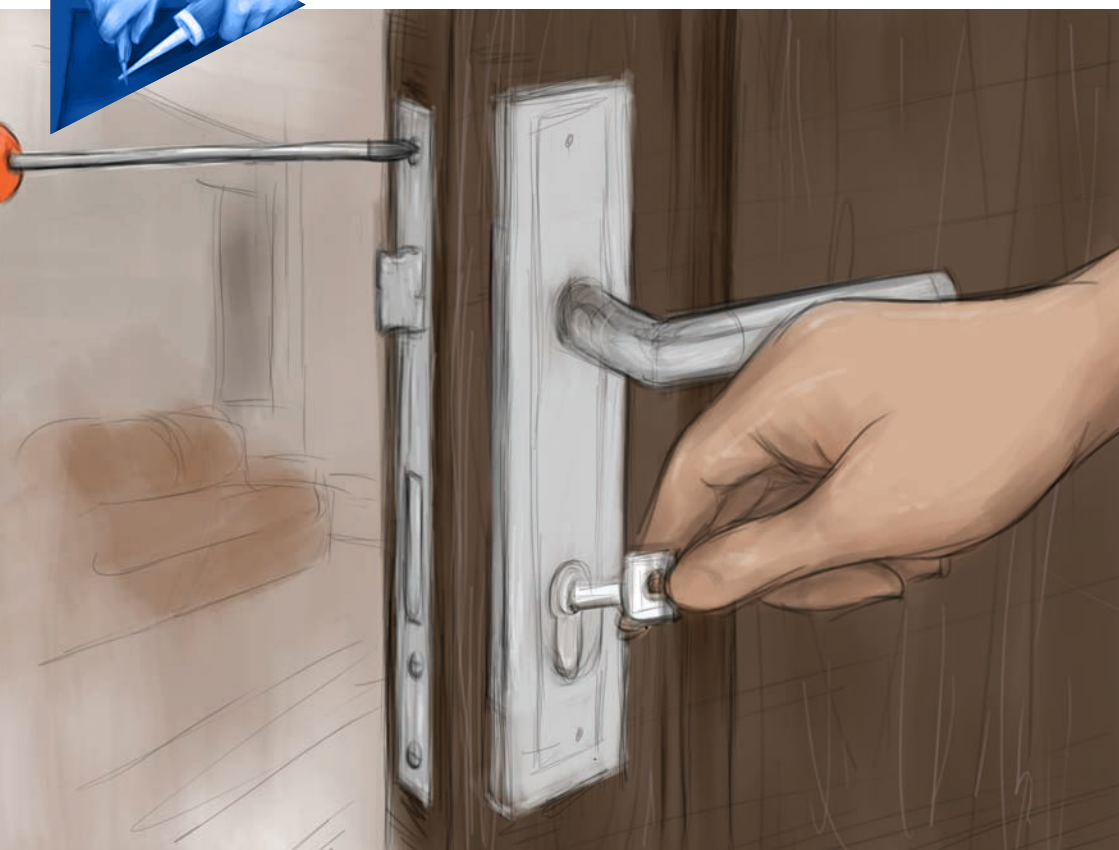
- ▶ Clean the paint roller and brushes at the end of every working day using water or thinner.



- ▶ Do not leave the paint roller and brushes without cleaning.

## WINDOWS AND DOORS

- ▶ WATERPROOF SILICONE SEALANT
- ▶ DOOR HANDLES



## WATERPROOF SILICONE SEALANT



- ▶ Wear gloves, then remove the top of the silicone sealant using a steel knife.



- ▶ Install the plastic extension tube.



▶ Cut the plastic tube end in a V shape length using a steel knife.



▶ Use the silicone to fill around window frames.



▶ Fill the silicone gun with the waterproof silicone.



▶ Use the silicone to fill around door frames.

## DOOR HANDLES



▶ Insert the key into the lock and twist it until the lock is loosened.



▶ Use a screwdriver to remove the screws of the broken door handle.



▶ Remove the old lock and spindle from the door.



▶ Insert new lock and spindle inside the door.

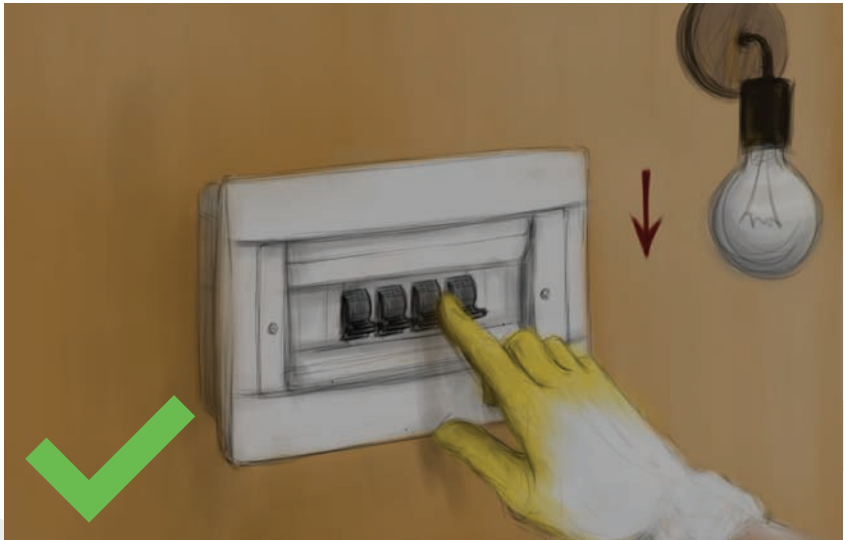


▶ After inserting the new lock and spindle inside the door then screw in all the necessary accessories.

## ELECTRICAL WORKS

▶ (BULBS, PLUGS, SWITCHES, FAN)





▶ Before beginning any electrical work, put on gloves and be sure to **SWITCH OFF** all circuit breakers.



▶ Don't start any electrical work before **SWITCH OFF** all circuit breakers.

## BULBS



▶ Remove damaged bulbs.



▶ Replace bulbs with new ones.

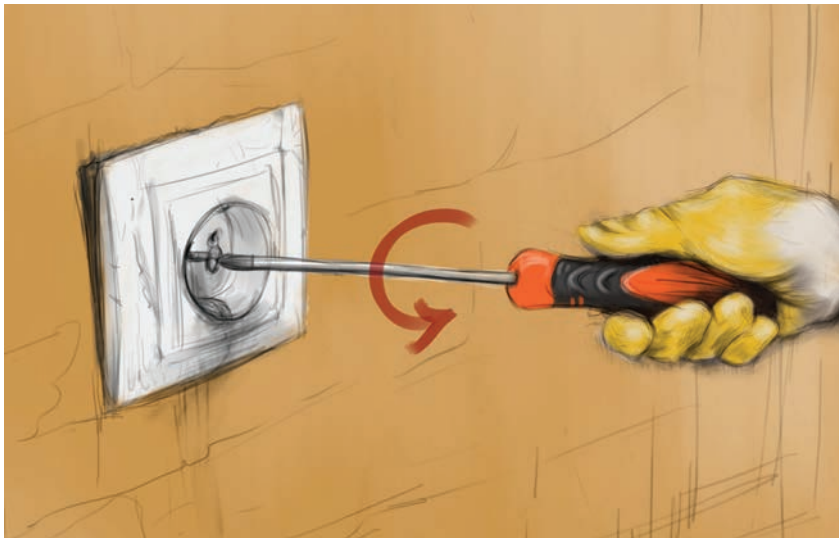
## PLUGS



- ▶ Ensure that all the breakers switched off by testing plugs using a tester screwdriver.



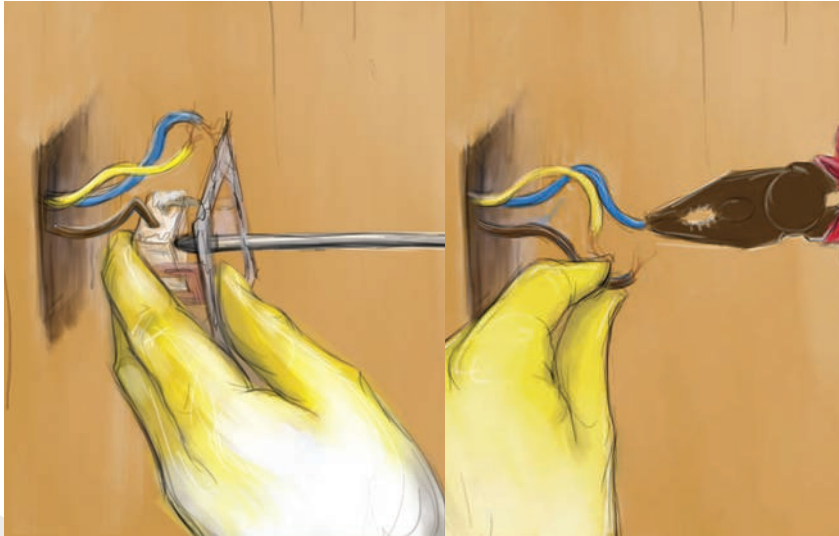
- ▶ Remove the plastic cover of the damaged socket.



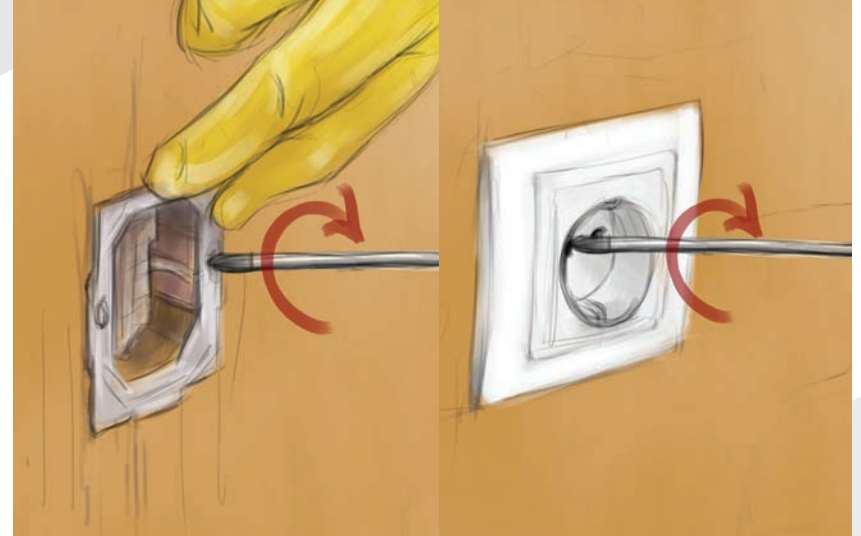
- ▶ Unscrew the damaged socket using a screwdriver.



- ▶ Unscrew the screw of the internal box.



- ▶ Loosen the terminal screws using a screwdriver and free the 3 cable cores using nose pliers.

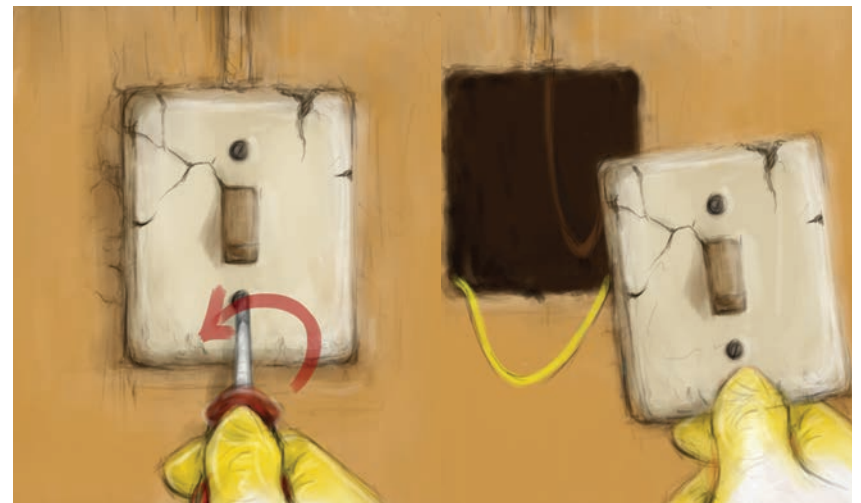


- ▶ Screw in all the internal and external screws using a screwdriver.

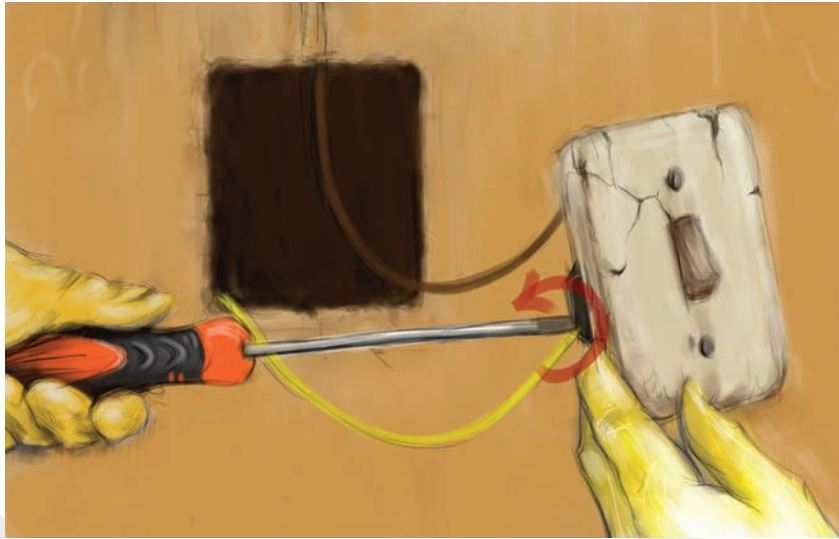
## SWITCHES



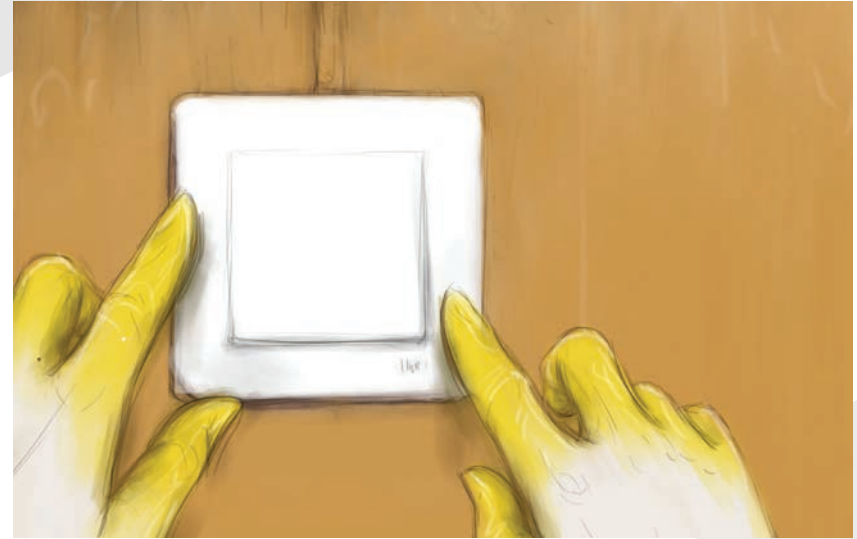
- ▶ Install the new base socket and put the 3 cable cores in the correct order before screwing then in: neutral (blue) on the left, hot (brown) on the right, earth (yellow or green) in the middle. Then re-insert the socket into the wall.



- ▶ Unscrew the external cover's clips and interior screws, then take out the old switch from the wall.

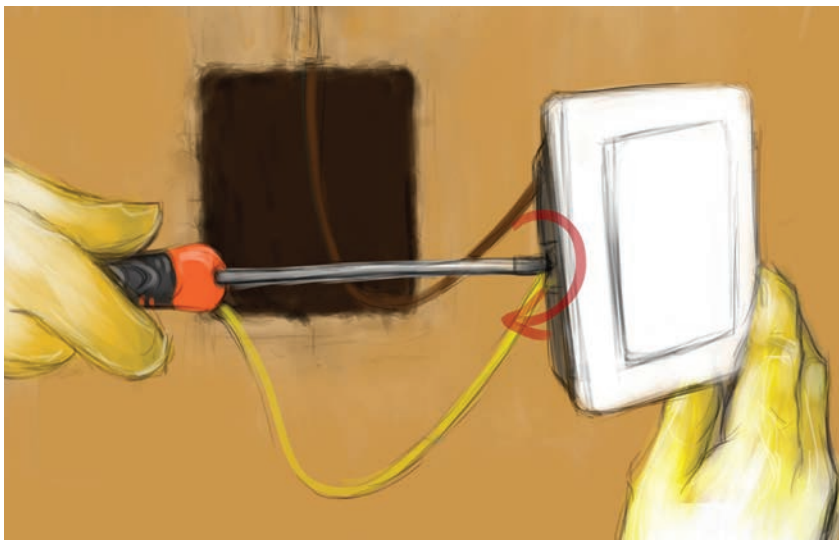


- ▶ Loosen the internal screws using a screwdriver and free the cables cores from each side.



- ▶ Place the new switch into the wall.

## FAN INSTALLATION



- ▶ Make sure cables on both sides are screwed in well, and the inner cover of the switch has been fixed.



- ▶ Identify the place where the fan needs to be installed and the nearest circuit box to provide electricity.



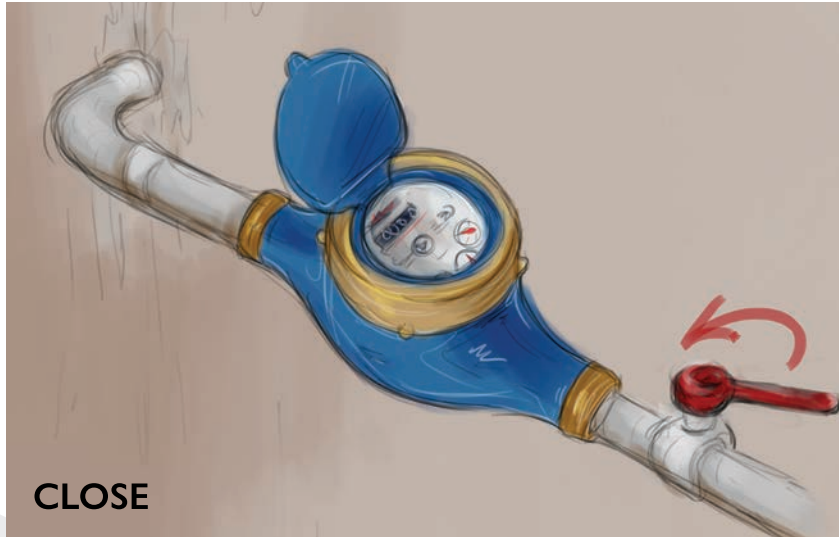
- ▶ Locate a proper place to fix the switch of the fan. Measure the length of the electrical cable needed to connect the fan to the electrical switch.



- ▶ Prepare electrical cables (2\*1.5 square millimeter size) according to measured distances and install new switch and fan in the wall. Complete all necessary connections using electrical cables and tapes.

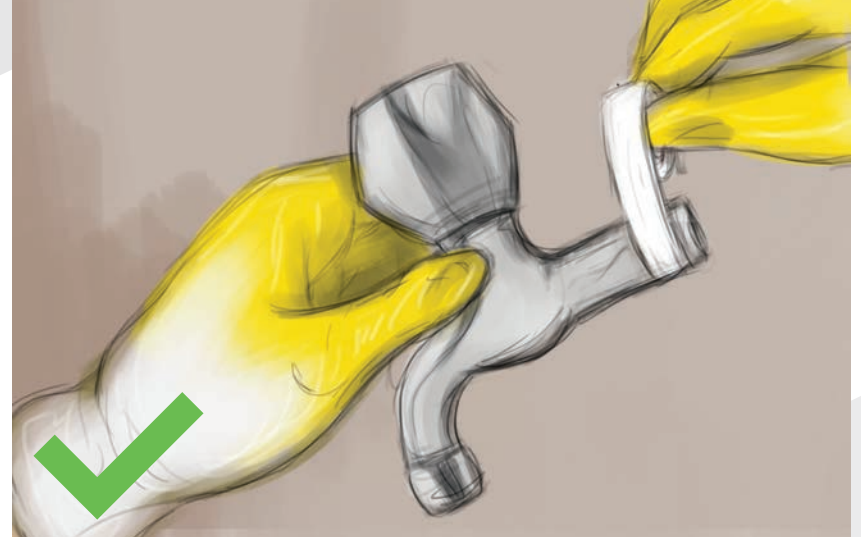
## PLUMBING WORKS





**CLOSE**

- ▶ Close the main water source from the water gauge.



- ▶ Bring the new water tap and roll Teflon sealing around the screw side.



- ▶ Wearing gloves, unscrew the old tap using an adjustable wrench.



- ▶ Screw the new tap and tighten it well using an adjustable wrench.



**OPEN**

▶ Open the main water source from the water gauge.



▶ Test the new water tap and make sure there is no leakage.

## ANNEX

▶ PERSONAL SAFETY AND HYGIENE



## ANNEX: PERSONAL SAFETY AND HYGIENE \*

### Eye Protection

A wise worker will certainly take good care of his eyesight. A small fragment may cause serious consequences if it enters one's eyes. When there is a risk of eye injury, such as in concrete breaking or using abrasive wheels, you should wear suitable eye protectors. Take proper care of the eye protectors provided to you. Replace damaged or defective eye protectors immediately. Ensure that eye protectors are comfortable to wear, and keep clean. Use eye protectors for eye protection — do not put it on your head or hang it on your neck. Bear in mind that eye protectors are replaceable, but not your eyes.



Remember to wear a mask when working in a dusty environment. Wear eye and ear protectors whenever necessary.

Wear a safety harness and secure it to a safe anchorage point when working at height. A bamboo scaffold is not a safe anchorage point, so do not fasten the safety harness to it.

Wear safety shoes to prevent foot injury. Consult your supervisor if in doubt.

### First Aid

If you sustain an injury or feel not well while at work, even if it is minor, go to the first aid room right away for medical treatment and notify your supervisor. Put the case on record.



### Safety Helmet

Wear a safety helmet on a construction site. Keep the harness of the helmet clean and make sure that it fits well. Do not drill any holes on the helmet or use it for pounding.



### Noise

Wear ear protectors in areas with high noise levels. Properly wear ear protectors according to the manufacturer's instructions. Do not reuse disposable ear plugs. Clean ear protectors regularly.



### Personal Protective Equipment

For your own safety and interest, use the personal protective equipment provided by your employer. Wear gloves when handling or contacting chemicals.





