LITHOS

IMPORTANT

These instructions are a general guide for installing Nais products.

Some jobs may require different or more detailed specifications.

Hardly ever problems in a ceramic surface are due to the ceramic product, they are usually due to a poor laying process, so **please read and understand these instructions before beginning to install our products.**

NO CLAIMS WILL BE ACCEPTED IF THE PRODUCTS ARE NOT INSTALLED FOLLOWING THESE INSTRUCTIONS

If there is any problem related to defective tiles, you should detect it BEFORE INSTALLATION, so **it is completely necessary to check all tiles before installation.**

Open and check every box of tiles before laying them, because WE WILL ABSOLUTELY NOT ACCEPT CLAIMS REGARDING INSTALLATION COSTS.

Please e-mail to nais@nais.es any doubt you might have.

ÍNDICE

I) Receiving the tiles - *Page 3*
II) Installation - *Page 3*
1)Surface of installation - *Page 3*
2) Selecting bonding materials - *Page 4*
3) Tiling - *Page 4*
3.1.- Before you start - *Page 4*
3.2.- General planning and stakeout - *Page 5*
3.3.- Adhesive preparation - *Page 6*
3.4.- Laying the tiles - *Page 7*
4) Selecting grouting materials (laying joints) - *Page 8*
5) Grouting (laying joints) - *Page 9*
5.1.- Before you start - *Page 9*
5.2.- Grounting material preparation - *Page 10*
5.3.- Grouting - *Page 10*
5.4.- Cleaning and finishing - *Page 10*
III) Cleaning and maintenance - *Page 11*
1) Cleaning after finishing laying works - *Page 11*
2) Daily maintenance - *Page 12*
3) Extraordinary cleaning of stains and encrustations - *Page 12*
Annex 1 - *Page 14*

I) Receiving the tiles

If you notice that the boxes of tiles are somehow damaged, do not open them,e-mail a picture of the boxes showing the problem to nais@nais.es, with your name and order ID. We will contact you.

If there is any problem related to defective tiles, you should detect it BEFORE INSTALLATION, so it is completely necessary to check all tiles before installation.

Open and check every box of tiles before laying them, because WE WILL ABSOLUTE NOT ACCEPT CLAIMS REGARDING INSTALLATION COSTS.

If you are going to lay a combination of different coloured underlays, check that the calibre of everything is compatible, bearing in mind that there may be slight differences that can be corrected with the installation joints, without affecting the final result.

If you need to order more tiles because you ordered less than what you really needed, or to repair a surface tiled in the past, you will have to tell us the date of purchase and ID number of your order, so we can send you the same production lot, or the most similar one.

That is why **it is very important to keep your invoice.**

II) Installation

If you are going to place this product outdoors, remember that it is not anti-slip.

You will see the tiles you are about to lay a lot of times during a long time, so they have to look perfect. If you have any doubt, stop laying the tiles and contact us. Problems are always much easier to solve if tiles are not installed!

1)Surface of installation

It is the surface that you will apply the bonding material on.

The surface must be completely **clean** before starting the laying of the tiles. Any residue that is not eliminated will create weak bonding points that may generate future problems.

It is also necessary that the surface is perfectly **dry** (less than 3%), level and **plane** (less than 3 mm deviation y 2 m length, along any direction). The surface also has to have a good **cohesion**.

Finally, it is essential that the surface is **stable**, because surface shrinking, expansion or warping would be disastrous for the tiles.

The water-sensitive substrates (wood and chipboard, for example) may require a waterproofing primer.

If you are installing intermediate layers (insulation or waterproofing), or radiant floor heating, check instructions for these products before start tiling.

2) Selecting bonding materials

Check the following table to choose the better bonding material, according to the kind of surface you are tiling.

Anyway, it is always a good idea to ask to the manufacturer or distributor of the bonding material for the most suitable material to be used.

We do not recommend the use of cement or lime mortars in order to place our products.

See ANNEX I.

3) Tiling

3.1.- Before you start

Let us insist that it is very important that the final result is perfect, because you will see these tiles a lot of times for a long time. So **do not hurry**, do things slowly and safely, and arrange all materials and tools before starting the job.

If this is the first time you lay ceramic tiles, or you have limited experience, we recommend that you start tiling in a ?hidden spot? (a part of the surface that will be covered by furniture, for example), as test area.

Basically, the tools you need are: meter, rule, level, carpenter?s square, pails to prepare materials, notched trowel, rigid rubber plate, rubber hammer, rubber trowel, rigid sponges, cutter (manual or electric). And for your safety, at least: gloves, security glasses, knee pads and steel toe boots.

All products and tools must be used according to the manufacturer?s instructions.

During installation, the better weather conditions are:

- Temperature between 5 and 30 °C.

- Avoid rain or high humidity.
- Avoid risk of frost.

- Avoid strong wind.

- Do not wet the surface until 48 hours after tiling.

- The temperature of the water used to prepare bonding materials is important, check the manufacturer?s recommendations.

Do not use the thick-layer installation method, always install tiles following the thinlayer technique (3-5 mm thickness of bonding material layer).

Besides, as these tiles have a particular shape, **it is highly recommendable to use the double-bonding method** (apply adhesive also to the back side of the pieces) , so the back of the tiles is completely covered by the bonding material.

The laying joints must be at least 2 mm wide.

Do not submerge the tiles in water before installation.

The laying joints must be at least 2 mm wide.

Do not submerge the tiles in water before installation.

3.2.- General planning and stakeout

First of all, check that the laying surface is dry, stable, level, plane and has good cohesion.

Do not start tiling if any of these characteristics is not correct, because the result may be a complete disaster, and very difficult to correct.

Do a thorough cleaning of the installation surface. This is essential. Eliminate all remaining plaster, grease, wax, globs of mortar, organic substances and dust.

Any particle that you do not clean may reduce the adherence of the adhesive and let tiles fall off in the future.

Usually real measurements are quite different from dimensions shown in plans (sometimes even some cm), so once the surface is completely clean check again all measurements, including gaps (doors, stairs, etc.), and set the movement intermediate joints, if necessary.

These joints are essential in big surfaces, for surfaces being more than 8 m long (or 10 m2).

We also recommend the setting of perimeter joints in surfaces greater than 10 m2, specially for unstable surfaces (metal, wood, etc.).

The next step is to calculate the pattern of the laying joints, to avoid an asymmetric pattern of joins (respect to the perimeter of the surface), avoid narrow strips of tiles, and to try to cut as less pieces as possible.

If this job is well done, you will save a lot of work and the final result will be much better.

It is very useful to draw a sketch (even freehand), scale 1:50, so you can see exactly how the surface will look like before you lay the tiles.

A common way of laying tiles consists of starting setting whole tiles next to the corner or edge that will be more visible. Check if this is the best option for you, because sometimes this creates a very ugly final result, full of narrow strips of cut tiles.

Finally, organize all tools, materials and tiles in the room, to be able to work comfortably. It is a good idea to distribute groups of boxes of tiles throughout the room, so you will not have to be constantly going for tiles as installation goes on.

3.3.- Adhesive preparation

Prepare the fixing material, always following the manufacturer?s instructions, using an electric low speed mixer, until you get an **homogeneous and lump-free paste, without bubbles.**

The adhesive manufacturer will inform you about the quantity you will need per square meter.

Do not mix all the adhesive you will need at once, take in mind that, once mixed, adhesives have a limited lifespan. Prepare only the quantity you can use during that lifespan.

a) Cement adhesives (type C)

- Always drop powder adhesive on water (previously prepared in the mixing pail), and not water on powder.

- If you notice hard lumps in the powder, do not use that sack of adhesive. It means that it was hydrated and might have lost its adhesive properties. For this same reason, do not keep adhesives for a long time once opened.

- Once the mix is done, **do not add more water, in any case and under any circumstances.**

- After mixing, wait for the **repose time** of the adhesive (set by manufacturer) before using it. After this time has passed, slightly stir the adhesive again.

b) Reactive resins (type R)

- They usually consist of two separated ingredients. Mix them pouring the minor component (hardener) on the major component (resin, previously prepared in the mixing pail).

- They usually do not require repose time.

3.4.- Laying the tiles

Apply the adhesive on the laying surface, using the straight side of the notched trowel, in a small area, for no more than 4 or 5 tiles, according to the open time of the adhesive (maximum time during which the adhesive can be used, from the moment it is applied).

Next, ?comb? this adhesive, using the notched side of the trowel. The manufacturer of the adhesive must inform you about the most suitable kind of notched trowel to use. Usually a U6 is correct.

Comb the adhesive always creating straight lines, perpendicular to the last installed row of tiles.

This combing is important to get a uniform thickness of the adhesive layer, and to **get a maximum contact of the back of the tiles with the adhesive.**

If the back of the tiles is not completely covered by adhesive, you will regret it in the future (tiles that fall off, grouting material that falls off, tiles that broken when hit or drilled, etc..).

Now it is time to lay the tile. Make sure that you do it before the open time of the adhesive finishes (if not, the back of the tiles may not be completely covered by adhesive).

Do not trust the open time given by the manufacturer, because it might change depending on the real atmosphere conditions you are working on. Check it from time to time, pulling up the last tile you just laid to see if its back is really 100% covered by the adhesive.

Check every tile before laying it, to make sure it does not have any defect.

The best way to lay tiles is the so-called **Tarver Method:**

- Apply adhesive also in the back of the tile, in the case of double-bonding, with the straight side of the notched trowel.

- Lay the tile more or less in its position, leaving **at least a 1 mm wide joint.** You can use crosstree pieces.

- Slide the tile, perpendicular to the grooves of the adhesive, away from the closest tile, about the distance of one adhesive groove.

- Slide the tile again to its original position, now laying it exactly in its final location, leaving the necessary laying joints.

Using this method you will let the air in the adhesive grooves to get away, eliminating bubbles.

Once the tile is in its position, check that it is in the same plane than the others, with no low or high corners. If necessary, use a clean rigid rubber plate, and hit it with a rubber hammer.

Do any needed correction of the position of the tiles during **the adjust time** of the adhesive.

Do never force a tile if it is hard to move, the only thing you will get is a poor adhesion of the tile, so it will easily fall off in the future.

Clean the excess of adhesive that accumulates in the spaces of the joints before it hardens, and also the adhesive in the glazed side of the tiles. It is also important to remove the crosstree pieces before the bonding material hardens.

4) Selecting grouting materials (laying joints)

The kind of grouting material to use depends on the final use of the ceramic surface, and on the width of the joints. It is a good idea to **ask the grouting material manufacturer** about the more suitable product.

The most commonly used grouting materials are type CG2, but it depends on the type of adhesive you used to lay the tiles:

- If you used C2 adhesive, use CG2 grouting material.

- If you used cement deformable adhesive (S1 or S2), use deformable grouting materials (CG S1 or S2).

- For R adhesives, use RG grouting material.

Cement grout maybe used in those areas that do not need to be cleaned regularly, so it is not recommended for bathrooms, kitchens, etc.

Use waterproof, anti-mildew grouting materials. Joints will be much easier to clean and maintain.

The most common is to use white grout for wall installations and grey for floor installations, but you can use coloured materials, depending on the colour of the tiles, or to contrast with them. We recommend that you spend some time trying out the different options, you will see how the appearance of your wall changes depending on the colour of the joint. On our website you can see our suggestions for each model.

In any case, do not ever use materials coloured with black smoke (micronized coal), they are very difficult to clean.

5) Grouting (laying joints)

5.1.- Before you start

The grouting operation deserves as much care and skill as the laying of the tiles. The durability and aesthetic quality of the ceramic surface largely depends on this operation.

So, again, **do not hurry**, do things slowly and safely, and arrange all materials and tools before starting the job.

If this is the first time you lay ceramic tiles, or you have limited experience, as we did for laying the tiles, we recommend that you start grouting in a ?hidden spot? of the surface.

Use all products and tools according to the manufacturer?s instructions.

Check that **joints are empty and clean of bonding material**, that they are dry (specially for RG materials), and that they have a uniform depth, equal to the thickness of the tiles.

Wait for the time indicated by the manufacturer of the adhesive you used before starting grouting.

In order to get a uniform colour of all grouts once the job is done, try to use all the grouting material from the same production lot (it must all have the same die lot code and date of production).

5.2.- Grounting material preparation

For CG materials, use exactly the amount of water indicated by the manufacturer, and, as you did when preparing the adhesive, pour powder on water (not water on powder).

For RG materials pour liquid (minor ingredient) on paste (major ingredient).

Mix using an electric low speed mixer, until you get a homogeneous colour and texture.

As you did when preparing adhesive, do not prepare all the quantity of grouting material you will need at once (these materials also have a lifespan).

For CG materials, wait as indicated by the manufacturer once the mix is done before using it.

5.3.- Grouting

Most manufacturers will show you on their web page how to apply grouting materials.

We will describe the most common method.

Using a hard rubber trowel, distribute the material along the surface, always diagonally with respect to the joints. This way you will fill the joints with the grouting material uniformly, cleaning the tiles at the same time.

Sometimes RG materials are quite hard, so you might need steel spatulas or even an extruder.

Use the appropriate tool to curve the surface of the joints. For narrow joints this is not necessary, you will get it when cleaning the joints before they harden

5.4.- Cleaning and finishing

a) CG materials

Once all joints are filled, clean them with water. **Wait for the time indicated by the manufacturer before cleaning the joints.**

Use a wet but well drained rigid sponge (it is better if it is attached to a trowel), rubbing the surface in circles. Clean the sponge with water and drain it as many times as necessary, and change the cleaning water when it starts to be turbid. It is very important that the sponge is always well drained, to avoid different shades of the grout and future efflorescences.

You may need to do a second cleaning of the joints. If the first cleaning was done efficiently, this second cleaning can be done using just a dry cloth or suede.

Do not use espartos for cleaning.b) RG materials

Cleaning is quite more difficult for these materials, so make sure that you understand the instructions given by the manufacturer before starting.

Usually, these materials must be emulsified using water and special sponges, rubbing circles on the surface. Clean sponges very often.

6) Cutting and drilling

There is a wide range of tools to make all cuts and drilling you will need to install the tiles.

In general, it is advisable to lay the cut pieces in the position where the cut is less visible.

The manual cutter is useful for most cuts, but does not guarantee high accuracy.

Drilling for water intakes or drains should be done with electric drills, without striker, equipped with diamond-tipped drill bits, properly cooled by water.

For square holes use an electric cutter.

Drilling for water intakes or drains should be done with electric drills, without striker, equipped with diamond-tipped drill bits, properly cooled by water.

III) Cleaning and maintenance

1) Cleaning after finishing laying works

As a general rule, take always into account the following cautions:

- Never use an acid product if the bonding or grouting material has not set, because the acid reacts with the non-set cement, damaging the joints or leaving insoluble compounds on the surface.

- Carefully read and observe the instructions and recommendations given by the manufacturers of cleaning products.

- Before using a cleaning agent, test its effect on the ceramic tiles and grouts.

- Protect the surfaces where there are no ceramic tiles, they may be affffected by the cleaning product.

- Never use scrubbers or espartos to clean grouts.

- It is important to always use clean water. Change cleaning water every 15 m2 approximately.

- If you used a porous grouting material, non waterproof, you may want to protect it with a grout sealer, specially if grouts are white of have a light colour.

For screed laying, it is common for there to be a lot of dust on the floor, so the first thing you will need to do is to sweep the surface carefully.

As a result of laying operations and grouting, the surface may have cement residue in the form of a film or small accumulations.

In most cases it will be sufficient to clean it with a diluted acid solution (vinegar, for example) to remove these residues.

There are also specific commercial products for cleaning cement, but you should use them with caution, as they usually have high acid concentrations.

2) Daily maintenance

It is very easy to maintain our tiles. Just **clean them usually with warm water or a dilute solution of a common detergent.**

Try not to use scrubbers or espartos to clean tiles, and never use them to clean grouts.

It is important to always use clean water. Change the cleaning water every 25 m2 approximately.

If green or dark stains appear, it is usually due to humidity and fungus. Clean the tiles or grouts with bleach, and try to eliminate the source of humidity.

3) Extraordinary cleaning of stains and encrustations

In most cases, the use of household products is enough to eliminate the most common types of stains.

However, sometimes some products that have strong colourings may spill or come into contact by chance with the ceramic surface, producing spots or encrustations that can not be removed by normal cleaning operations.

In those cases special cleaning agents and procedures must be used. The choice must be made with caution, taking into account the nature of the stain.

Before using a special cleaning agent, **test its effect on the ceramic tiles and grouts**, specially in the case of strong cleaning products (high concentrations) or solid detergents with abrasive particles.

Carefully read and observe the instructions and recommendations given by the manufacturers of cleaning products.

It is important to always use clean water. We recommend changing the cleaning water every 15 m2 approximately.

Protect the surfaces where there are no ceramic tiles, because the cleaning agents may damage certain materials such as wood, metals, etc.

ANNEX 1

Superficie a revestir	Tipo de adhesivo	Observaciones
Ladrillo cerámico, bloque cerámico o de hormigón[1]	C2	- En caso de condiciones climáticas adversas (humedad, altas o bajas temperaturas, vientos) utilizar un adhesivo con el tiempo abierto ampliado (E), y no usar tipo F (fraguado rápido) - Considerar la opción de utilizar adhesivos deformables (S1 ó S2)
	R	- Utilizar en ambientes con exigencias químicas
Revocos y enfoscados[2]	C2	- En caso de condiciones climáticas adversas (humedad, altas o bajas temperaturas, vientos) utilizar un adhesivo con el tiempo abierto ampliado (E), y no usar tipo F (fraguado rápido) - Considerar la opción de utilizar adhesivos deformables (S1 ó S2)[3]
	R	- Utilizar en ambientes con exigencias químicas
Superficies lisas de hormigón	C2	- En caso de condiciones climáticas adversas (humedad, altas o bajas temperaturas, vientos) utilizar un adhesivo con el tiempo abierto ampliado (E), y no usar tipo F (fraguado rápido) - Considerar la opción de utilizar adhesivos deformables (S1 ó S2)
	R	- Utilizar en ambientes con exigencias químicas
Enlucido de yeso o placas de escayola[4]	C2 (S1 ó S2)	- En caso de condiciones climáticas adversas (humedad, altas o bajas temperaturas, vientos) utilizar un adhesivo con el tiempo abierto ampliado (E), y no usar tipo F (fraguado rápido)
	R deformable	- Utilizar en ambientes con exigencias químicas
Superficie cerámica esmaltada, terrazo o piedra natural[5]	C2	- En caso de condiciones climáticas adversas (humedad, altas o bajas temperaturas, vientos) utilizar un adhesivo con el tiempo abierto ampliado (E), y no usar tipo F (fraguado rápido)
	R	- Utilizar en ambientes con exigencias químicas
Madera[4]	C2 (S1 ó S2)	- Aplicar sobre capa de desolidarización prefabricada
	R deformable	
Metal	R deformable	

Para colocaciones en pared con adhesivos cementosos (tipo C), es recomendable que tengan un desplazamiento vertical reducido (T).

[1] Es recomendable que tenga una edad mínima de 2 meses.
[2] Es recomendable que tenga una edad mínima de 1 mes.
[3] Especialmente si la superficie de colocación tiene menos de 1 mes.
[4] Es recomendable aplicar previamente una imprimación impermeabilizante.
[5] Asegúrate que las piezas existentes estén bien adheridas al soporte y sin suciedad. Es recomendable realizar una imprimación puente de adherencia.