



# INSTALLATION INSTRUCTIONS

for calibrated (even thickness) of type Minera Skifer Otta

## Subsurface

The subsurface must be stable, levelled and have good adhesion. Concrete and cement products must have hardened sufficiently. We recommend using a membrane when laying outdoors, although this is not necessary if an impermeable covering is not required. The subsurface is decisive for the quality of the result.

## Cutting slate tiles

The slate can be cut using a diamond saw and cooling water, or be cut using slate clippers.

## Tiles with natural surface

Products with a natural surface are not completely level, even when they have been calibrated. There can also be small differences in width and thickness. Dust on the underside of the slate must be removed to achieve maximum adhesion.

Avoid the slate being heated by direct sunlight until the adhesive has set. Cover with tarpaulin or plastic. The slate may be moist when being laid, but not running wet.

## Adhesive

Use slate adhesive or standard tile adhesive with sufficient adhesion. All cement products must have been stirred sufficiently.

Allow to stand for 5-10 minutes and then stir again to keep the product workable.

## Indoor installation

Spread the adhesive with minimum 6 mm toothed applicator and minimum spacing of 3 mm.

## Outdoor installation

We recommend that you use a membrane on the subfloor. The tiles should be laid with a minimum spacing of 5 mm and the tiles should have a minimum thickness of 18 mm. Spread the adhesive with a curved toothed applicator and ensure that there is 100% adhesive coverage below the slate tile. Also apply adhesive to the underside of the slate.

## Grouting

Mix small amounts of grout and work on small areas at one time. You should grout a max. 3-4 square metres before you systematically wash off surplus grout, so that it does not set on the slate.

Only sponge over a maximum of 20-30 cm before rinsing the sponge. Change to clean, cold water and repeat the process with a clean sponge.

NB! Many grout products have rapid hardening times. Avoid washing with acid products as this can discolour the grout.

## Surface treatment

When the grout has hardened the slate surface can be treated. Outdoor, we recommend impregnating surfaces that would be especially exposed to staining in both the slabs and the gaps.

## Follow the manufacturer's instructions

It is important that the manufacturer's instructions for membranes, adhesive, grout and treatment are followed. Our dealers can provide advice about suitable products.

Good luck!

### Minera Norge AS

Head Office  
Engan  
N-7340 Oppdal  
Tel. +47 72 40 04 60  
Fax +47 72 40 04 61

Sales/Marketing Department  
Fossumsveien 70  
N-1359 Eiksmarka  
Tel. +47 67 16 49 90  
Fax +47 67 16 49 99

Production Dep. Oppdal  
Engan  
N-7340 Oppdal  
Tel. +47 72 40 05 00  
Fax +47 72 40 05 01

Production Dep. Alta  
Postboks 68, Bossekop  
N-9501 Alta  
Tel. +47 78 43 53 33  
Fax +47 78 43 53 74

Production Dep. Otta  
Postboks 24  
N-2675 Otta  
Tel. +47 61 23 69 00  
Fax +47 61 23 69 01

### Subsidiaries

Minera Skiffer AB  
Odenskogsvägen  
S-831 48 Östersund  
Tel. +46 63 208 60  
Fax +46 63 216 47

# Minera Skifer - experiencing handicraft and quality



There is normally a connection between old rock formations and high quality. This means that Scandinavian slate provides durable and high quality materials. Minera Skifer's quarries at Alta, Offerdal, Oppdal and Otta represent rock formations that are 400-800 million years old, giving high quality products of phyllite and quartzite slate.

## A traditional craft

Despite the development of new machinery and aids, production of slate is a skilled process. The slate blocks have different shapes and the quality is determined by the natural processes. Every slate sheet has its individual character. An important part of the craft is, therefore, how the raw material can be used for different types of product. The mineral make-up changes, even within individual blocks, and from site to site in the quarry area. Such minerals as mica, hornblende and feldspar are found in different concentrations, creating a varied impression. This leads to both limitations and opportunities, giving

Minera Skifer's products variation and diversity. Production of slate is labour-intensive, providing important jobs in the local communities that Minera Skifer is part of. The craft has been developed over centuries. More industrial production developed when new and more efficient transport was developed. The opening of the railway was an important milestone for the quarries in Oppdal and Otta.

## The Market

Minera Skifer is the leading producer of slate in the Nordic Region, and has supplied slate to a number of reference projects in Scandinavia and the rest of the world, not least because of the quality of its products. Slate is a product both for traditional and modern building styles, with an area of use that is only limited by your imagination – a product for the future.



## Minera Skifer Otta – *Dark, slip-proof and durable surface for indoor and outdoor use*

Rock type: Phyllite slate.

Age: Ordovician (approx. 460 million years).

Otta slate represents what was originally a clay/siltstone formation which during the Caledonian period was deformed and metamorphosed with the foundation of regular cleavage strata. Good slate deposits occur in tight fold structures. Sheet thickness varies between 8 and 80 mm.

In the lower part of the slate formation, the phyllite contains large crystals of needle-shaped hornblende (Pillarguri and Høgsæter). Pillarguri is exclusively quarried to the south of Ottadal, whilst Høgsæter is quarried on the north side. In certain areas the slate can be found with a rusty surface.

This rust colour occurs in cleavage planes which have been exposed to erosion from water and to oxygen.



Alta



Offerdal



Oppdal



Otta