

SHINGLAS Bitumen tiles

Installation instructions





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General instructions on installation of SHINGLAS bitumen tiles

The required roof temperature and humidity regime can only be ensured if the roof structure includes vapour insulation, thermo-insulation of adequate thickness selected according to relevant climate zone, a wind screen and a ventilated space under the roof.

Avoid the use of roofing products with different colour codes and batches with different production dates on the same roof.

A slight colour difference between shingles is not a defect; it is typical for flexible shingles of any manufacturer. To minimize a possible mismatch of colours, randomly mix the shingles from 5–6 packs during their installation. Shingles should be laid in diagonal lines.

If the roofing works are performed in cold weather (temperature lower than +6°C), the adhesive bottom side of a shingle must be heated by an industrial fan.

To avoid damaging of roofing, use a special board for on-site cutting of materials.

Do not stack pallets with production on top of each other; to avoid sticking of shingles inside the package, do not expose them to direct sunlight.

To loosen shingles inside the package, slightly bend a package and shake it before opening.

Warning: do not walk over the roof in hot, sunny weather, as it might damage the covering. Use special ladders for that purpose.

1. SHINGLAS materials to be used

Bitumen or modified bitumen flexible shingles. They come in a wide variety of shapes, colours, and shades (more than 50 types).

Hydro-insulating underlayment

Mechanically fixed hydro-insulating underlayment – glass fibre or polyester based hydro-insulating modified bitumen membrane roofing.

Recommend materials:

ANDEREP PROF – super light (0,4 kg/m²) and durable underlay membrane with polyester reinforcement. Lightweight roll and non-slippery polypropylene (Spunbond) surface provides convenience and safety during installation.

UNDERLAY PRO 500 stick – lightweight and durable, with non-slippery polypropylene (Spunbond) surface, provided with two self-adhesive strips on both sides for easier installation.

Self-adhesive preparatory hydro-insulating layer – glass fibre or polyester based hydro-insulating modified bitumen membrane roofing.

A self-adhesive hydro-insulating underlayment must be installed under bitumen shingles in areas of ice and snow accumulation. Membrane is laid on the possible leak areas: along the ridge, roof valley, slope lines (break points), and edges of the eaves.

Recommended material – **MIDA SELF PV S2,0s** – self-adhesive underlay membrane with high-strength polyester base and a fine-grained sand on the top. Durable and reliable material serves as an effective seal under bitumen shingles.

Materials for installation of a roof valley

Valley membrane – polyester based hydro-insulating modified bitumen membrane roofing. The top of the membrane is surfaced with basalt granules.

Installation of the elements of cornices and eaves

Made of metal, surfaced by a special, corrosion proof layer.

Special roofing nails

Galvanised nails (length – 25–30 mm). Head diameter – at least 9 mm, stem – at least 3 mm.

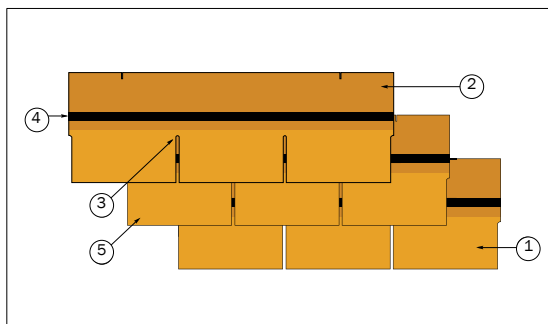
Mastic

Cold application modified bitumen mastic No. 23 (FIXER).

Ventilation

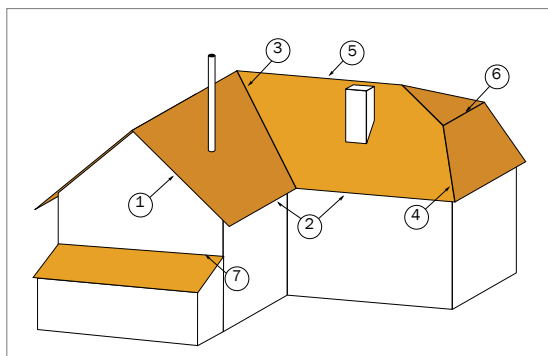
Roof ventilation openings and elements: ventilation funnels and ridge vents TechnoNICOL.

2. Key definitions



- 1) Visible part of a shingle
- 2) Invisible (covered) part of a shingle
- 3) Cutout
- 4) Adhesive bitumen layer
- 5) Shingle sheets

Fig. 1



- 1) Slope eave
- 2) Cornice eaves
- 3) Roof valley
- 4) Edge
- 5) Ridge
- 6) Slope line (break point)
- 7) Slope joint to a vertical plane

Fig. 2

3. Cost of roofing

SHINGLAS package contains 3 m² of shingles (including overlapping). One package of SHINGLAS series CONTINENT and WESTERN contains 1,5 m², JAZZ and RANCHO – 2,0 m², COUNTRY – 2,6 m² of ready roofing.

To calculate the required materials for the roofing, estimate how many shingles you would need depending on the complexity of the roof's shape. Waste coefficient for SONATA, ACCORD, CONTINENT, JAZZ, COUNTRY, RANCHO and WESTERN shingles (including hip-ridge shingles) is approx 5%. In other cases (installing a starting row, edges and ridges), the waste coefficient varies from 10 to 15%. Quantity of special roofing nails – approx 80 g/m².

Coverage of mastic No. 23 (FIXER):

Slope edges – 100 g/m

Roof valley – 400 g/m

Sealing of a slope abutting a wall – 750 g/m

Thickness of the applied layer of the mastic should not exceed 1 mm. Because of the solvents contained in the mastic it can result in the formation of blisters and marks of bitumen leaks on the roofing if too thick of a layer of mastic is applied.



Preparation of the roofing deck

1. Materials used for roofing should conform to approved norms and regulations of construction standards

When laying bitumen tiles over a wooden roof structure or structures of other types, the rafter span varies between 600 and 1500 mm depending on permanent and temporary loads, as well as on the roof shape. Depending on the rafter span, a solid wooden deck of various thicknesses is used: waterproof plywood or Oriented Strand Boards (OSB-3), matchboards or trim boards (relative humidity not exceeding 20%).

Rafter span/ extra rafter joists, mm	OSB-3 thickness in mm	Plywood thickness in mm	Board thickness, mm
600	12	12	20
900	18	18	23
1200	21	21	30
1500	27	27	37

Board thickness – not exceeding 150 mm.

When using trimmed board as laths, their maximum permissible span should not exceed 5 mm.

When using plywood or OSB-3 boards as the deck, 3 mm spacing between the sheets should be left to counterbalance linear expansion in the summer time. The boards should be installed in a chess pattern, securing the edges with barbed or spiral-shank nails.

To extend the working life of the wooden elements of a joist structure, they should be processed with antiseptics and fire-retarding agents.

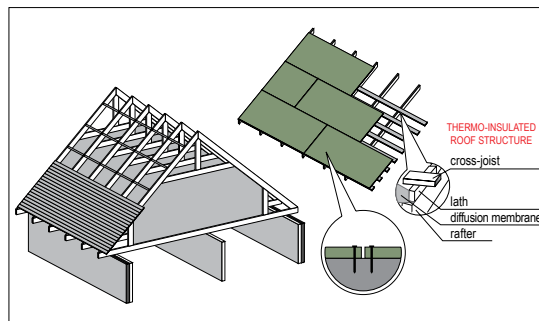


Fig. 3

Warning: when installing the board deck, ensure that the growth rings in all boards are oriented curving upward (fig. 4).

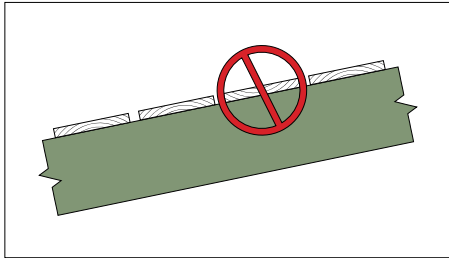


Fig. 4

2. Ventilation

To extend the durability of a roof structure, ensure adequate ventilation of the roof, especially above an attic used for residential purposes.

To ensure good ventilation of a superposed pitched roof it should have three main elements: air intake openings, air circulation passages above the thermal insulation and air exhaust openings in the upper part of the roof (fig. 5).

The area of the ventilation openings in a roof structure should make up 1/300–1/500 of the attic thermal insulation area. Pressure in the attic should be lower, therefore the area of exhaust openings should exceed that of the intake ones by 10–15%. Such location of vents will ensure intensive air circulation in the entire space of the attic.

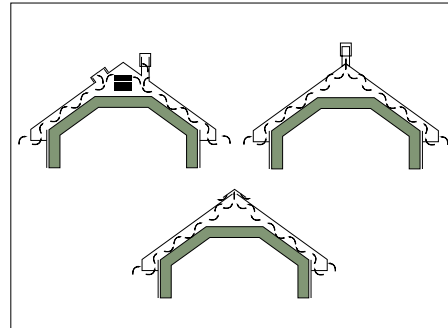


Fig. 5

If wooden wind boards are nailed to slope edges, use special ventilation elements – soffit strips. If cladding is used to ensure ventilation spacing, two possible options are shown in fig. 6 (provided that a heated rainwater draining system is installed). Plastic cladding planks are recommended for option A, and both plastic and wooden cladding planks – for option B.

Minimum height of air circulation passages above the thermal insulation – 50 mm, at a roof pitch > 20°. If the roof pitch is less (< 20°), increase the ventilation spacing to 80 mm.

Warning: it is very important to ensure even spreading of the air from outside in the attic. If there are only small ventilation intakes in the corners of the roof, this condition is not satisfactory and will result in the formation of stagnant air zones.

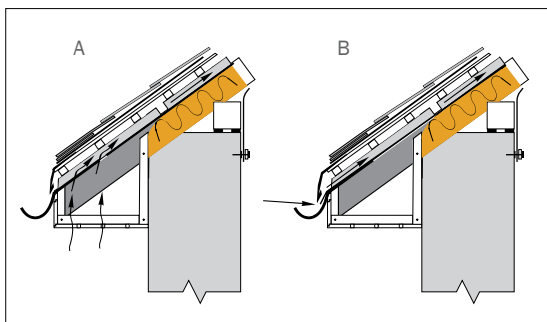


Fig. 6

3. Hydro-insulating underlayment

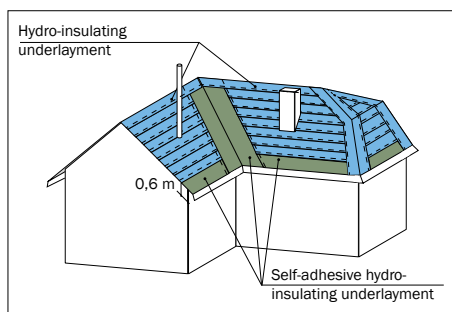


Fig. 7

Additional hydro-insulating underlayment under bitumen tiles SHINGLAS should be fitted over the entire slope at any pitch of the roof.

Self-adhesive hydro-insulating underlayment ANDEREP or other material with the same characteristics should be fitted along slope valleys and cornice eaves.

Fasten the edge of self-adhesive underlayment at 0.5–2 cm from the outer edge of the eave drip. In

a valley area it is laid at 1 m width (50 cm on each slope), at a cornice – lengthwise along the whole eave, at 2–3 cm from the edge and additionally a 60 cm distance from the facade plane upwards (fig. 7). Lengthwise hydro-insulation is required for prevention of leakage in the cornice areas resulted from ice dams. Seamless valley is recommended, but if seams cannot be avoided, then overlapping areas of the valley membrane should not be less than 30 cm and must be glued especially tightly.

Mechanically fitted hydro-insulating underlayment ANDEREP or other material with the same characteristics can be applied over the rest of the slope, laying it from the bottom upwards, overlapping diagonally 100 mm and lengthwise 150 mm, moving the roll parallel along the cornice. The underlayment is nailed to the deck every 200–250 mm with special galvanized wide-head nails. The bitumen mastic No. 23 (FIXER) is applied over overlapping areas in strips with the width of 8–10 cm.

4. Installation of eaves and slope edges

Slope edges are reinforced with metal slope edges and eave drips, the latter are nailed to the hydro-insulating underlayment with a 30–50 mm overlapping, with special nails (span 120–150 mm, and overlapping areas – every 20–30 mm).

When installing the eaves, water drips are nailed to OSB board, water-proof plywood or a deck of boards with a 30–50 mm overlapping, with special nails (span 120–150 mm, and overlapping areas – every 20–30 mm).

Self-adhesive hydro-insulating underlayment along the eaves is laid over the water drip.

5. Installation of a roof valley

A roof valley can be installed in two ways: open and closed.

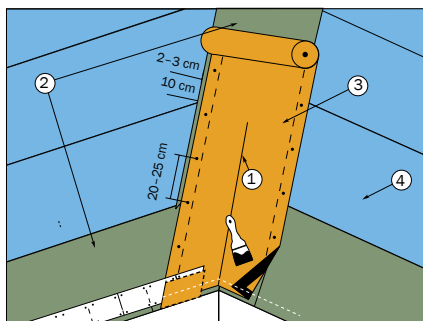


Fig. 8

- 1) Roof valley axis
- 2) Self-adhesive modified bitumen underlayment
- 3) Valley membrane
- 4) Mechanically fastened hydro-insulating underlayment

Open method

Bitumen valley membrane is laid lengthwise over the bitumen hydro-insulating underlayment ANDEREP or other material with the same characteristics along the roof valley axis beginning 2-3 cm from the edge of the underlayment. Nails are fastened at a distance of 2-3 cm from the edge, every 20-25 cm; apply the bitumen mastic No. 23 (FIXER) on the bottom part of the valley membrane prior to nailing along entire perimeter lengthwise within a 10 cm strip.

Seamless valley valley membrane is recommended, but if seams cannot be avoided, then overlapping areas of the valley membrane should not be less than 30 cm and must be glued especially tightly. Joints shall be made in the upper part of the roof valley.

Closed method

If this method is applied to install a roof valley, bitumen valley membrane is not used (see section: Installation of a closed roof valley).

6. Slope markings

Markings on the slope are required to avoid a discrepancy in shingle rows above a skylight, the markings also help to maintain correct placement of the shingles both vertically and horizontally.

The span between vertical lines is the same as the width of a shingle, and horizontal lines are drawn for five rows of shingles (at ~ 80 cm intervals).

Such markings are of guiding type only and should not serve as a model for shingle nailing.

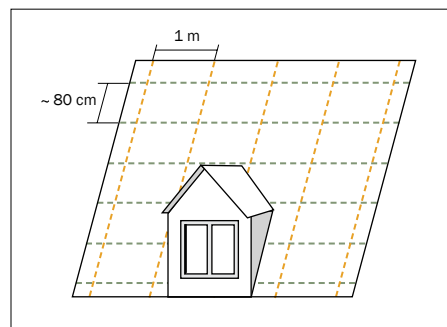


Fig. 9



INSTALLATION OF SHINGLAS BITUMEN TILES

1. Fastening of shingles

Nail every shingle to the roof deck with wide-head galvanized nails; the number of nails depends on the size of the slope. Correct nailing is extremely important – it should be done in such a way that a nail head is driven straight and flush with the shingle surface, but not driven too low. Nails should be nailed at a distance of 2–3 cm from the edge of shingle. Fig. 10 shows the number of nails per shingle and their location, the upper side of a shingle is shown in the picture, and the position of the bottom layer is shown by a dotted line. When installing shingles series CONTINENT, nails should be 45 mm-long.

Starter row (hip-ridge shingle)

The starter row is laid using universal hip-ridge shingles or regular shingles, having cut off their tabs. These shingles are nailed to adhesive hydro-insulating underlayment. When installing shingles series CONTINENT, JAZZ, COUNTRY and RANCHO, regular shingles are used for a starter row without cutting the tabs off.

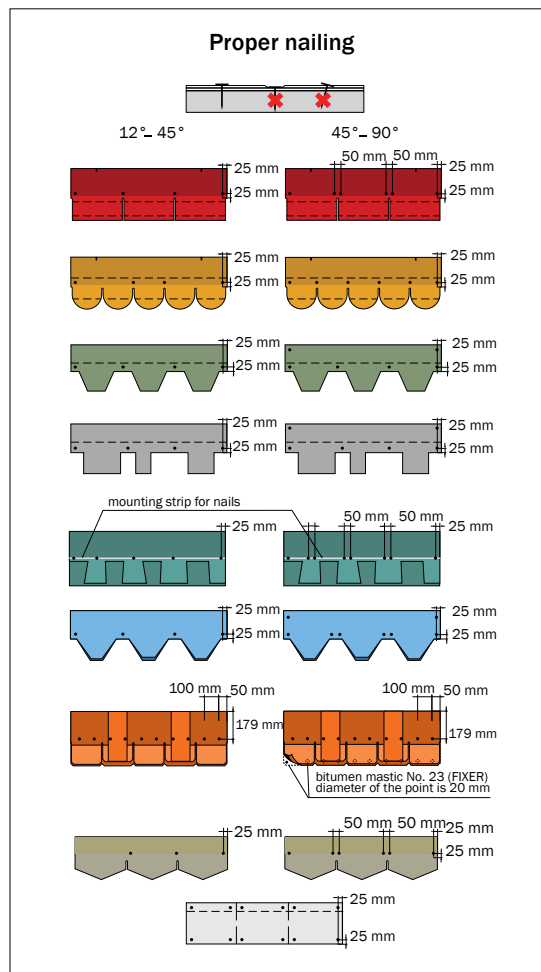


Fig. 10

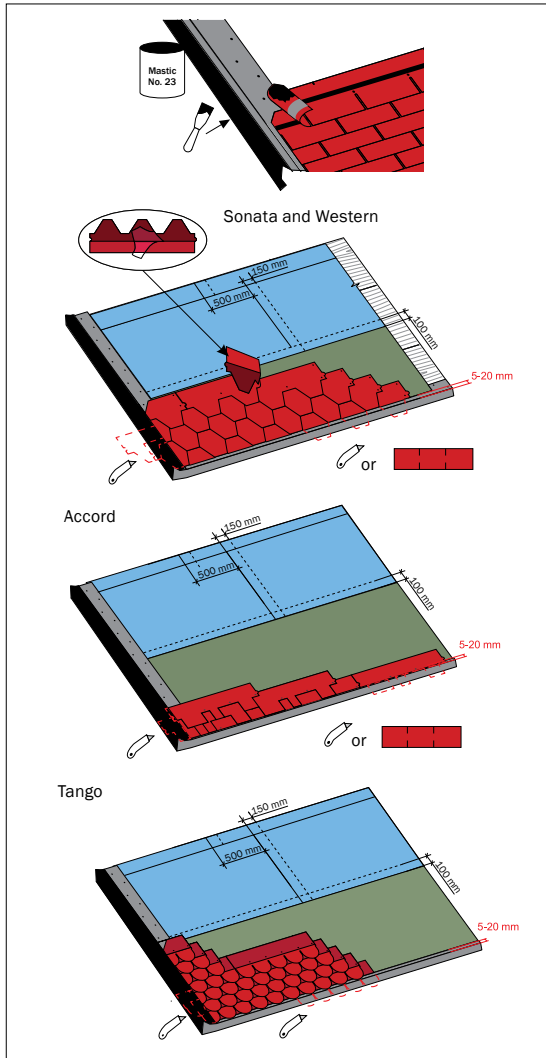


Fig. 11

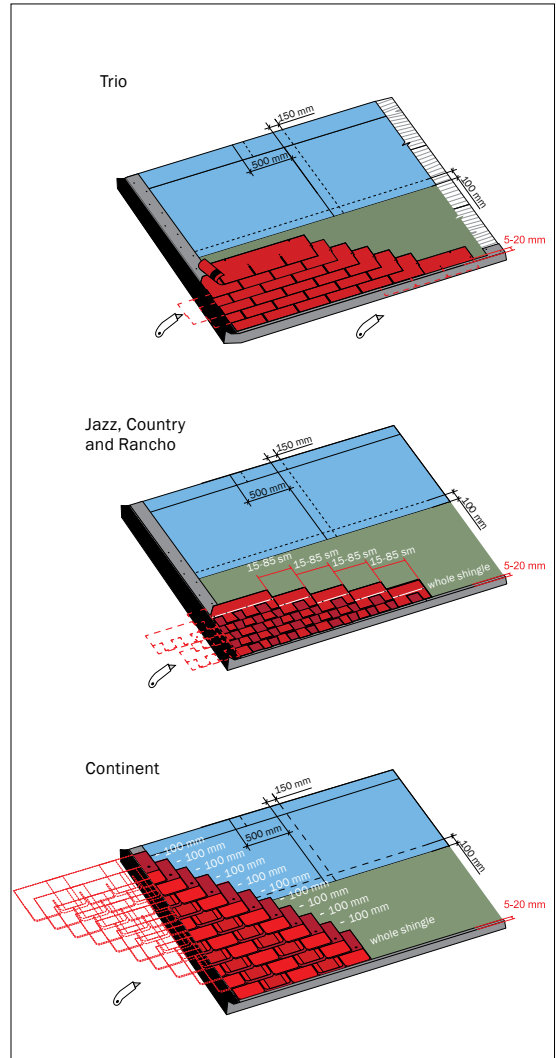


Fig. 12

First row of shingles and further laying

If the slope is long, it is recommended to start laying the first row from the middle of the slope, at 0.5–2 cm from the ridge-hip tile (fig. 11–12). The distance from the edge of the drip depends on the length and angle of the slope, i.e. the steeper and longer the slope, the bigger the distance from the edge.

The second row is laid above the first one, shifting a shingle by a half of shingle sheet to the left or to the right, aligning the shingles according to upper part of the cutouts of the first row shingles.

The third and the next rows are laid over the second one shifting shingles by a half of shingle sheet to the left or to the right.

The same pattern applies to installing the entire roofing.

To ensure maximum protection of the roof from cross rain, apply the bitumen mastic No. 23 (FIXER) within a 10 cm strip on the bottom side of the edge shingle.

Cut the upper corners (2–3 cm) of the edge shingles abutting the metal edge of the eave (Fig. 11).

Note: when installing JAZZ, COUNTRY and RANCHO shingles, shingles of each successive row should be shifted from 15 to 85 cm to the right or to the left in regard to the lower row.

2. Installation of a roof valley

Open method

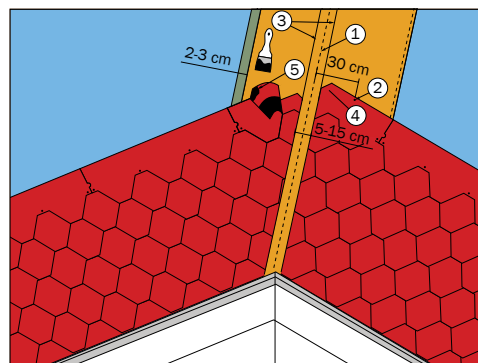


Fig. 13

Shingles are laid towards the slope interlock axis, on the bitumen valley membrane (3). The edge shingle is fastened with one extra nail in the upper part (2), not closer than within a 30 cm distance from the centre axis of the valley (1). Having covered both slopes, lay aligned twines each 5–15 cm along the valley axis and chalk the lines accordingly (3). Cut tiles to fit these lines.

To avoid damaging the hydro-insulating layer, cut shingles on a special board.

To divert water flow to the valley, cut the top corners of the edge shingles (4) and apply the bitumen mastic No. 23 (FIXER) within a 10 cm strip over their bottom side (5). If there are several different directions of water flows on the slope surface, the gutter of the valley should be oriented towards the less intense flow. The width of the gutter can vary between 5–15 cm, depending on the location and construction of a building.

Bitumen valley membrane is laid lengthwise over the bitumen hydro-insulating underlayment along the roof valley axis beginning 2–3 cm from the edge of the underlayment. Nails are fastened at a distance of 2–3 cm from the edge, every 20–25 cm; apply the bitumen mastic No. 23 (FIXER) on the bottom part of the valley membrane prior to nailing along entire perimeter lengthwise within a 10 cm strip.

Seamless valley membrane is recommended, but if seams cannot be avoided, then overlapping areas of the valley membrane should not be less than 30 cm and must be glued especially tightly. Joints shall be made in the upper part of the roof valley.

E.g. if a building is located in woodland, a wider gutter is required to make the removal of leaves easier.

Installation of a closed roof valley

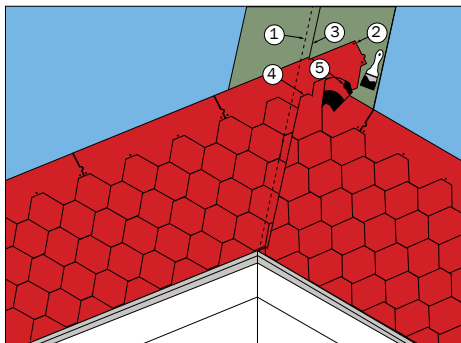


Fig. 14

Start installing the shingles from the lower slope moving on to the higher one not closer than 30 cm to the axis. Fasten the last shingles not closer than 25 cm from the axis of roof valley (1).

Additionally fix their corners with nails. Proceed in this way to install the lower slope of the roof.

Before starting installation of shingles on the steeper slope, draw a line on the slope 7–8 cm from the axis of roof valley and cut the shingles of this slope to fit this line (3).

To divert water flow to the valley, cut of the upper corners of the edge shingles (4) and apply a 10 cm-wide strip of the bitumen mastic No. 23 (FIXER) on the bottom side of the shingles (5).

The second row is laid above the first one, shifting a shingle by a half of shingle sheet to the left or to the right, aligning the shingles according to the upper part of the cutouts of the first row shingles.

The third and the next rows are laid over the second one shifting shingles by a half of shingle sheet to the left or to the right.

The same pattern applies to installing the entire roofing.

3. Slope abutting a vertical plane

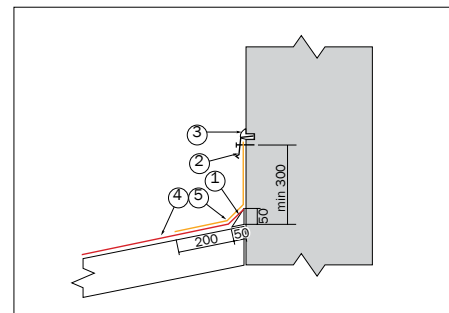


Fig. 15

Nail a triangular balk (50x50 mm) in the places where the slope abuts vertical planes. Bitumen shingles should overlap it (4). Plaster and prime a vertical wall if it is made of bricks. Fix a 500 mm wide valley membrane (all-over covered by the bitumen mastic No. 23 (FIXER) over the tiles (5). It should overlap the wall by at least by 300 mm; such overlapping may be bigger in climate zones with a higher probability of extensive snowfall and the resulting snow load.

Fasten the upper part of the valley membrane strip by a metal fillet (2), which is fixed to the wall mechanically and sealed with silicone or a similar sealant (3).

Cutouts of corrosion-proof metal are used to seal chimneys; they should be cut and bent as shown in fig. 18, 19. Keep the following distance from the external surface of flue funnels (chimneys) or to flammable or hardly flammable roof structures: 130 mm – from brick and concrete flue funnels (chimneys); 250 mm – from non-insulated ceramic flue funnels (chimneys); 130 mm – from insulated ceramic flue funnels (chimneys), where the heat resistance of insulation of flammable or hardly flammable structures is at least $0.3 \text{ m}^2\text{C}/\text{W}$.

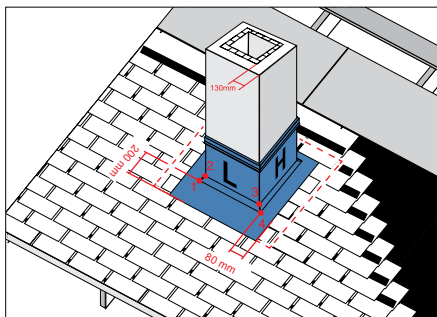


Fig. 16

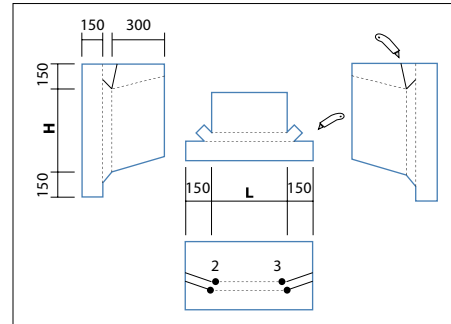


Fig. 17

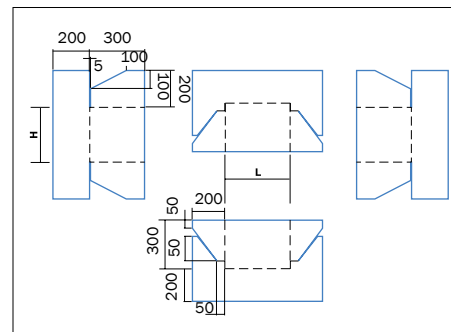


Fig. 18

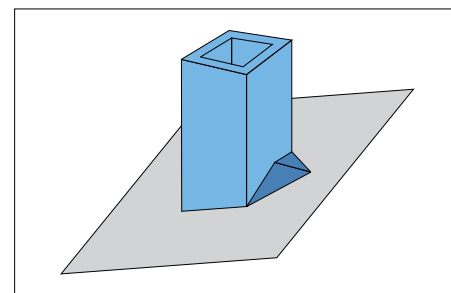


Fig. 19

Cover the gap between a chimney and flammable or hardly flammable roof structures with a non-flammable roofing material. The fastening method is shown in fig. 17. Start with fastening of the front, overlapping it over the shingles. Then fasten the left and the right cutouts. The last one to fasten is the rear cutout. When installing the flashings, follow the water cascade principle. A 8 cm-wide gutter for water drain should be made on the left, right and rear part. The bitumen mastic No. 23 (FIXER) must be applied on an approx. 10 cm-wide strip of the shingles laid over the flashings and their upper corners cut out.

If a chimney is wider than 500 mm and located across the slope, it is recommended to install an extra ridge (fig. 19) to avoid snow gathering.

Seal roof ventilation shafts, aerals, and communication pipes with elements specially designed for bitumen shingles (fig. 20). Fasten the elements with nails and glue shingles over them with bitumen mastic.

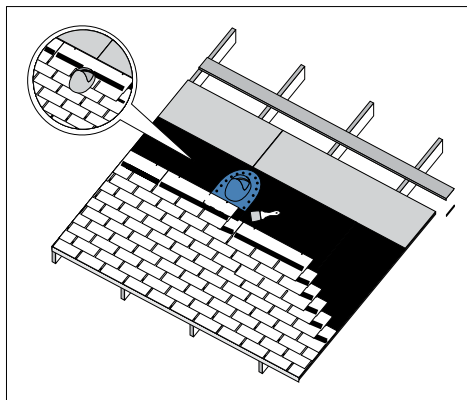


Fig. 20

4. Installation of eaves and slope ridges

Cut the edges of shingles lengthwise to fit each particular slope edge – leaving a 0.5 cm gap between them. Then fasten a hip-ridge shingle over the gap in a straight line. TANGO, TRIO, DELTA and SONATA hip-ridge shingles can be cut out of their regular shingles (fig. 21). Apply bitumen mastic No. 23 (FIXER) all-over the bottom side of the cut out shingles before placement. For SONATA shingles: the invisible part is (B), the visible (A). Installed from the bottom upward. SONATA, ACCORD, CONTINENT, WESTERN, JAZZ, COUNTRY, RANCHO shingles can be delivered with universal hip-ridge shingles.

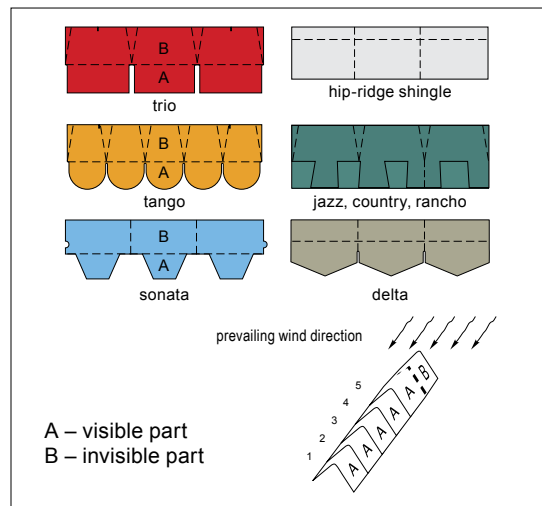


Fig. 21

Hip-ridge tiles should be divided into 3 parts at the perforation points and laid in a straight line with a 3–5 cm overlapping, and fastened by two nails on each side of the slope. Shingles should be laid against the prevailing direction of wind (fig. 21).

Warning: to avoid the breaking of shingles when installing them in cold weather (temperature lower than +6°C), it's recommended to bend hip-ridge shingles on a heated pipe (diameter – 10 cm) (fig. 22).

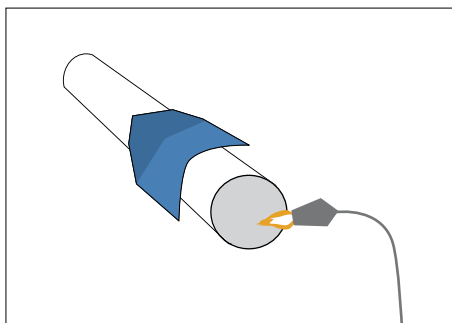


Fig. 22

5. Installation of cupola and cone-shaped roofs

Two methods are recommended to lay a cone-shaped roof: segment-based and seamless. First of all, lay a hydro-insulating underlayment over the roof area. Before starting installation by the first method, divide the cupola or cone-shaped surface into equal segments using a length of twine. Each segment shall be covered by bitumen shingles separately, overlaying the seams with ridge-hip shingles, in the same way as the edge or ridge of the roof. Remember to maintain the scale between the width of segments and ridge-hip shingles.

If the seamless method is applied to lay the roofing (fig. 23), slope trimming requires a higher precision of work. Divide the roof deck on the bottom edge of the slope into intervals, equal to half of the width of a bitumen shingle tab. Connect the marked dots with the top of the roof. Prepare bitumen shingles for installation by cutting them into the particular parts as needed. Start with the first row. Fasten each next row over the lower one shifting it for a half of shingle sheet, keeping the set scale.

Cut shingle sheets to fit the lines marked on the slope surface. During installation, as soon as the width of a shingle sheet narrows twice, return to the initial geometrical size of a shingle. Place shingles in the same pattern to the top of the slope where they come under a tin cap.

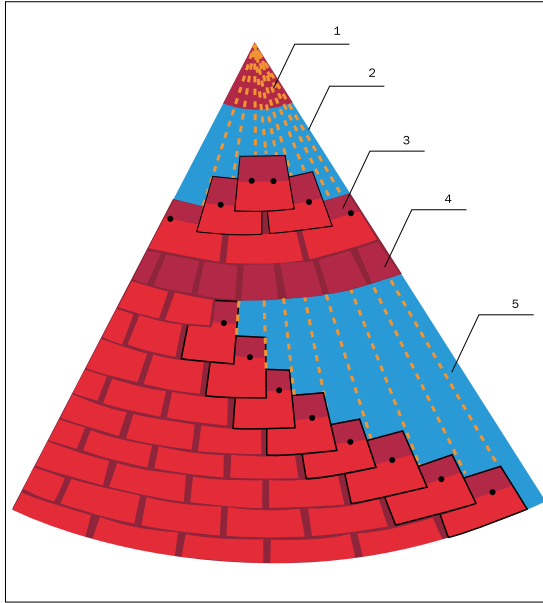


Fig. 23

- 1) Tin cap
- 2) Vertical lines
- 3) Full shingle sheet
- 4) 1/2 of a shingle sheet
- 5) Hydro-insulating underlayment



Recommendations for roof maintenance

1. Check the roof in the spring and autumn seasons.
2. Remove leaves, branches and other small debris only by a soft broom. Do not use any sharp tools.
3. Gather sharp objects by hand.
4. Clean gutters and rain downspouts.
5. Clean large deposits of accumulated snow using blunt wooden shovels. Not more than a 10 cm-thick snow build-up may be left on the roof.
6. Make regular preventive check-ups of the roof, however, even upon minor damage, the roof must be repaired.

Follow this instruction to install shingle roofing. Failure to comply with these instructions, approved norms and standards of construction and design, use of unauthorised completing elements or improper workmanship make the product warranty null and void.

If you have any queries during installation, contact MIDA LT experts who are always ready to give you technical support and advice.

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