



SIMPROLIT PREFABRICATED PANELS

SIMPROLIT SLABS (SMP)

Slab is one of the basic structural elements of a building. According to its application, a slab should fulfill numerous functions and must possess corresponding characteristics, such as:

- bearing ability
- satisfactory strength
- soundproofing ability
- thermo-insulation ability
- fire resistance
- seismic resistance, etc.

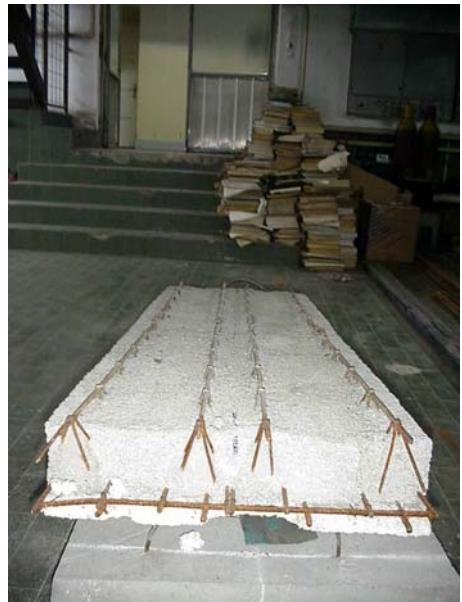
In the building's structural system, slabs should form a rigid plate, which is keeping the structural elements together and has direct influence on building's bearing ability.

The thickness of a slab is determined by its spans, according to which the static height is calculated - based on the requirements concerning allowed slab deflections. On the other hand, the increase of the slab's thickness has direct influence on its weight. Therefore, the weight of slabs very often represents the biggest part of the total weight of structure.

Taking into account the fact that the increased weight of slabs has negative influence on the structure's bearing ability (from the foundations to the seismic resistance of the building), which also means bigger dimensions and more concrete and steel reinforcement, the basic goal in solving the problem of prefabricated structures is to invent prefabricated slabs with necessary bearing ability and minimal weight.

There are different solutions to this problem in various structural systems, but basically the following classification can be made:

- prefabricated system
- semi-prefabricated system and
- monolith system of building lightweight or lightened slabs.



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SIMPROLIT SLABS (SMP)

SIMPROLIT ROOF PLATES (SKP)



Simprolit slabs (SMP) made of Simprolit polystyrene concrete represent a new member of Simprolit program. Three types of slabs are patented, tested and produced, which may be grouped according to the applied building system:

- prefabricated system (type «Monta», consisting of bearing ribs and filling blocks);
- semi-prefabricated system (type "Omnia", consisting of prefabricated Simprolit plates with bearing reinforcement in the tension zone and reinforced concrete layer in the compression zone; casting of concrete follows after plates' installation) and
- monolith system (with corrugated metal sheet, where Simprolit polystyrene concrete is casted over the metal sheets; these sheets have bearing function in the system, while Simprolit has soundproofing and thermo-insulation function, also serving as a base layer for flooring).

From the above mentioned systems, the most frequently applied is Simprolit semi-prefabricated system for slab construction.

Simprolit prefabricated panels, as a part of the semi-prefabricated system (serving as a permanent formwork for the casted concrete layer) are marked using following indications **«SMP d / l»** :

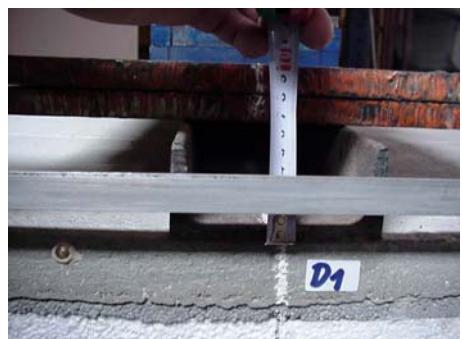
SMP – Simprolit prefabricated panel for semi-prefabricated slab construction,

d – thickness in cm,

l – length in cm;

For instance, **«SMP 13/425»** represents: Simprolit prefabricated panel with 13 cm thickness and 425 cm length for semi-prefabricated slab construction.

Simprolit prefabricated panels for semi-prefabricated slabs are made upon request and have standard width of 0,6 m or 1,0 m. They are usually produced for spans under 4,0 m, spans between 4,0-5,0 m or spans between 5,0-6,0 m. Upon special request, plates with other dimensions can be produced according to the specific design.



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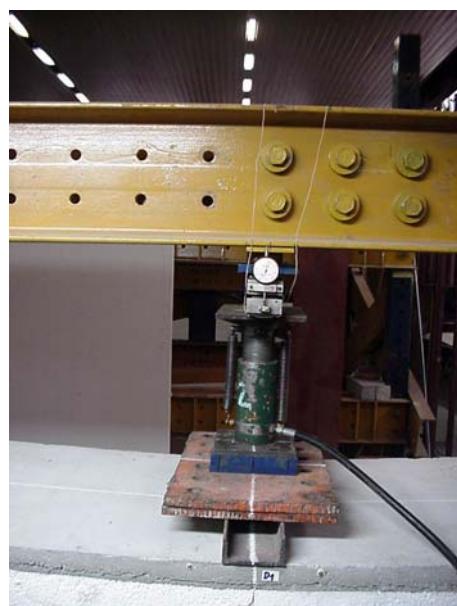
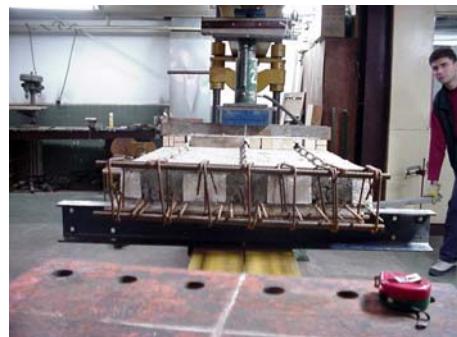
SIMPROLIT ROOF PLATES (SKP)



- Simprolit slabs with length smaller than 4,0 m have total thickness of 150 mm (together with concrete layer) and total weight of 175 kg/m²; herein Simprolit prefabricated panel is 100 mm thick and weighs together with reinforcement 50 kg/m² (standard Simprolit prefabricated panel for «SMP10» slab is 10 cm thick and 60 cm wide and weighs 30 kg/m²); on the top of the panel the upper zone reinforcement net is installed and finally a 50 mm thick and 125 kg/m² heavy concrete layer is casted;
- Simprolit slabs with length between 4,0 - 5,0 m have total thickness of 180 mm (together with concrete layer) and total weight of 215 kg/m²; herein Simprolit prefabricated panel is 130 mm thick and weighs together with reinforcement 65 kg/m² (standard Simprolit prefabricated panel for «SMP13» slab is 13 cm thick and 60 cm wide and weighs 39 kg/m); on the top of the panel the upper zone reinforcement net is installed and finally a 60 mm thick and 150 kg/m² heavy concrete layer is casted;
- Simprolit slabs with length between 5,0 - 6,0 m have total thickness of 230 mm (together with concrete layer) and total weight of 255 kg/m²; herein Simprolit prefabricated panel is 160 mm thick and weighs together with reinforcement 80 kg/m² (standard Simprolit prefabricated panel for «SMP16» slab is 16 cm thick and 60 cm wide and weighs 48 kg/m); on the top of the panel the upper zone reinforcement net is installed and finally a 70 mm thick and 175 kg/m² heavy concrete layer is casted;

In comparison with standard slab building systems, Simprolit slabs have a lot of advantages, such as:

- easy transport;
- simple installation;
- lesser building complexity;
- no formwork;
- good thermo-insulation;
- good soundproofing;
- extended building season (possibility to work under very low temperatures);
- easy conduction of electrical installations;
- possibility to just skim Simprolit slabs using cement-based glue over glass-plastic net or applying a thin plaster layer made with fine sand;
- significant reduction of working tact's;
- significant decrease of building deadlines.



SIMPROLIT ROOF PLATES (SKP)

Simprolit roof plates (SKP) are produced in two basic types:

- **standard**, monolith and
- **lightened**, with styrofoam layers.

STANDARD SIMPROLIT ROOF PLATES

The thickness of standard Simprolit roof plates is calculated in order to fulfill the required deflection value at the middle of the given span. Standard Simprolit roof plates are marked using following indications :

«**SKP d / l**», where the given letters stand for

- **SKP** – Simprolit roof plate,
- **d** – thickness in cm,
- **l** – length in cm;

For instance, the indication «**SKP 22/425**» stands for Simprolit standard roof plate with total thickness of 22 cm and length of 425 cm.

Simprolit roof plates are made upon request and basically they are produced for following spans:

- **less than 4,0m** – thickness 140mm and weight 70 kg/m²
- **from 4,0-5,0m** – thickness 180mm and weight 90 kg/m²
- **from 5,0-6,0m** – thickness 220mm and weight 130 kg/m²

Upon special request and design these plates can also be produced in other dimensions.



SIMPROLIT LIGHTENED ROOF PLATES WITH STYROFOAM LAYERS

If the thickness of Simprolit roof plate is insufficient to fulfill the thermo-technical requirements in severe climate conditions, a styrofoam layer of necessary thickness can be put inside the Simprolit roof plate. These lightened Simprolit roof plates are marked using following indications:

«**SKP d / I – P/s**», where the given letters stand for

- **SKP** – Simprolit roof plate,
- **d** – thickness in cm,
- **I** – length in cm,
- **P/s** – styrofoam layers **P** with required thickness **s**.

For instance, «**SKP30/425-P4**» stands for Simprolit roof plate with total thickness of 30 cm and length of 425 cm, with 4 cm thick styrofoam layer.

Basic characteristics of Simprolit roof plates are the same as those of Simprolit slabs:

- easy transport;
- simple installation;
- satisfactory physical-mechanical properties;
- good thermo-insulation;
- satisfactory soundproofing;
- several times smaller load acting upon the bearing structure and foundations, when compared to similar systems;
- possible installation in all seasons, using small derricks, or even bare hands ;
- easy conduction of electrical installations;
- possibility to just skim Simprolit slabs using cement-based glue over glass-plastic net or applying a thin plaster layer made with fine sand;
- significant reduction of working tact's;
- significant decrease of building deadlines.



SIMPROLIT ISOLATION PANELS (SIP)

Simprolit isolation panels for floors and lavatories (**SIP**) have three-layered structure, with outer layers made of Simprolit polystyrene concrete and middle layer made of hydro-isolation material. The whole set consists of basic panels and pads, which are installed at joints.



The hydro-isolation layer is completely protected from any damage during installation or finishing works (which happens very often when the isolation is done separately). It is not the only advantage of this system: beside the hydro-isolation function, Simprolit isolation panels also have good thermo-insulating and soundproofing characteristics.



Simprolit isolation panels can be used as flooring elements instead of cement screed. They can be placed over the leveling layer made of fine sand or expanded clay and cement paste, or over the ceramic-tile glue. Also, they may be installed using «dry procedure» - over the previously leveled substructure.



Simprolit isolation panels can easily be glued to the wall using ceramic-tile glue and (or) fastened with plugs. They are also applied as a base layer for ceramics or as a supplement for plastering – in combination with Simprolit SOP single-layered plates.

Immediately after Simprolit panels' installation it is possible to lay any type of floor or wall covering, even those kinds that require low humidity of the base layer (such as parquet, floor boards, laminate, etc).

All the above stated facts are making the work with Simprolit easier, reducing or even completely eliminating «wet» procedures and giving us the possibility to work under low temperatures. At the same time, the execution of finishing works is accelerated, which as a consequence significantly reduces final building deadlines.