

# 1. General Description

TENAX Sandwich Panels, the same as any other construction material must comply with the requirements of CRL 006-00 Important Requirements for Buildings. Under normal circumstances, taking into consideration predictable impact on the buildings, sandwich panels should meet the following functional requirements during the lifetime of building:

- mechanical durability and stability
- fire safety
- hygienic circumstances with no harm to human health or the environment
- safety of usage
- protection against noise
- energy saving and heat insulation.

Requirements of EN 14509 Self-supporting Double Skin Metal Faced Insulating Sandwich Panels should be taken into consideration when producing or using sandwich panels.

The prepared material TENAX Sandwich Panels. Manual for Planners and Constructors provides information on how these panels meets the above-mentioned requirements.

## 1.1. Usage

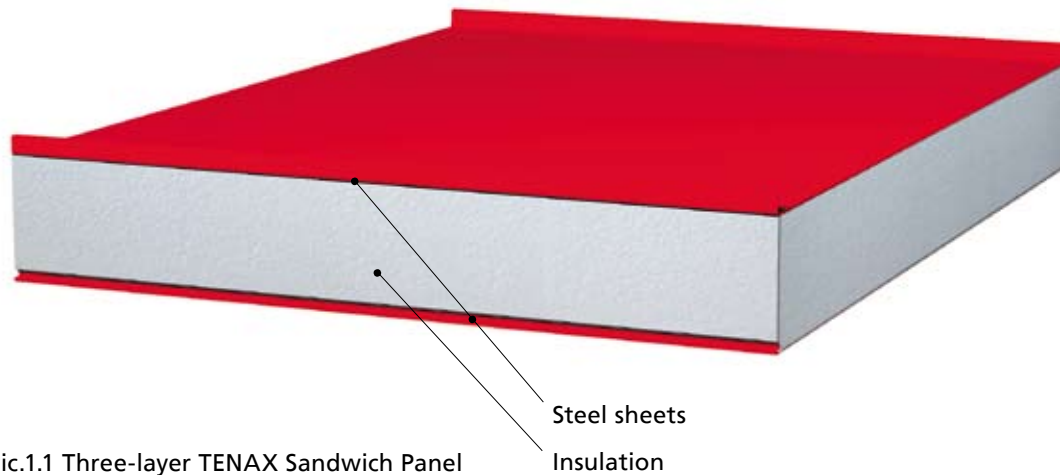
Sandwich panels are construction materials used for construction of public buildings (shops, warehouses, cold storage buildings, sports arenas, etc.) and industrial buildings, installing them on bearing constructions made of metal, concrete or wood.

## 1.2. Brief Description

Sandwich panel is an insulating, self-supporting (in roof coverings with a certain carrying capacity) multilayer construction material, made of insulating core covered from outside with metal plates in two parallel planes. Mineral wool, polyurethane foam and polystyrene foam are most often used as the insulating core. These materials serve both as heat and noise insulation material. The cores of TENAX Sandwich Panels are:

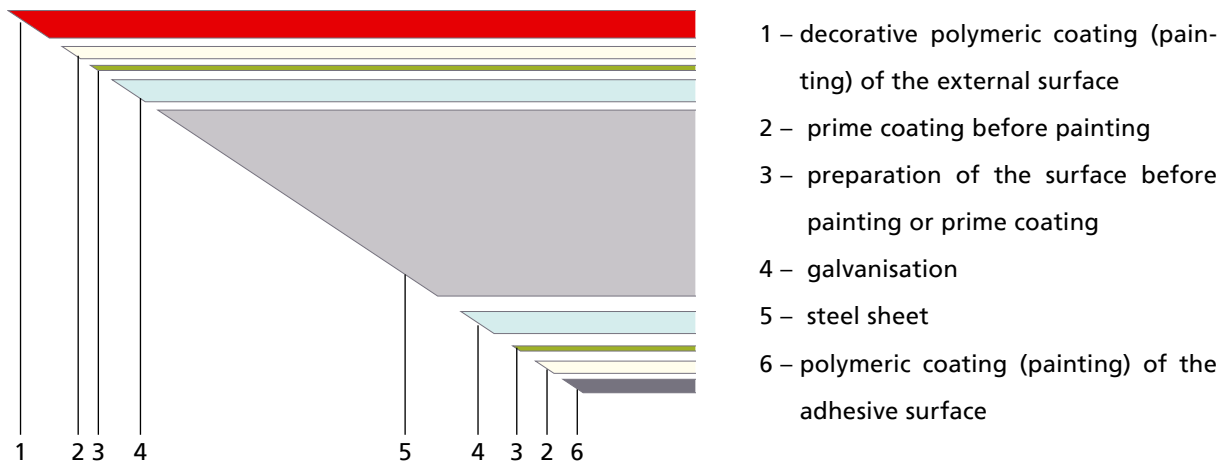
- mineral wool for use in cases with high fire resistance requirements
- polystyrene foam for use in cases with medium fire resistance requirements

There are two types of TENAX Sandwich Panels: three layer panels with fire-proof mineral wool core and combustible, fire resistant polystyrene foam core.



Pic.1.1 Three-layer TENAX Sandwich Panel

Covering steel sheets must ensure sandwich panels with atmospheric and climatic tolerance and mechanical endurance. They must be corrosion-proof and must provide the external surface with excellent decorative qualities in a long run. In order to ensure this, the steel sheets are specially processed.



Pic.1.2 Coating layers of sandwich panel steel sheets

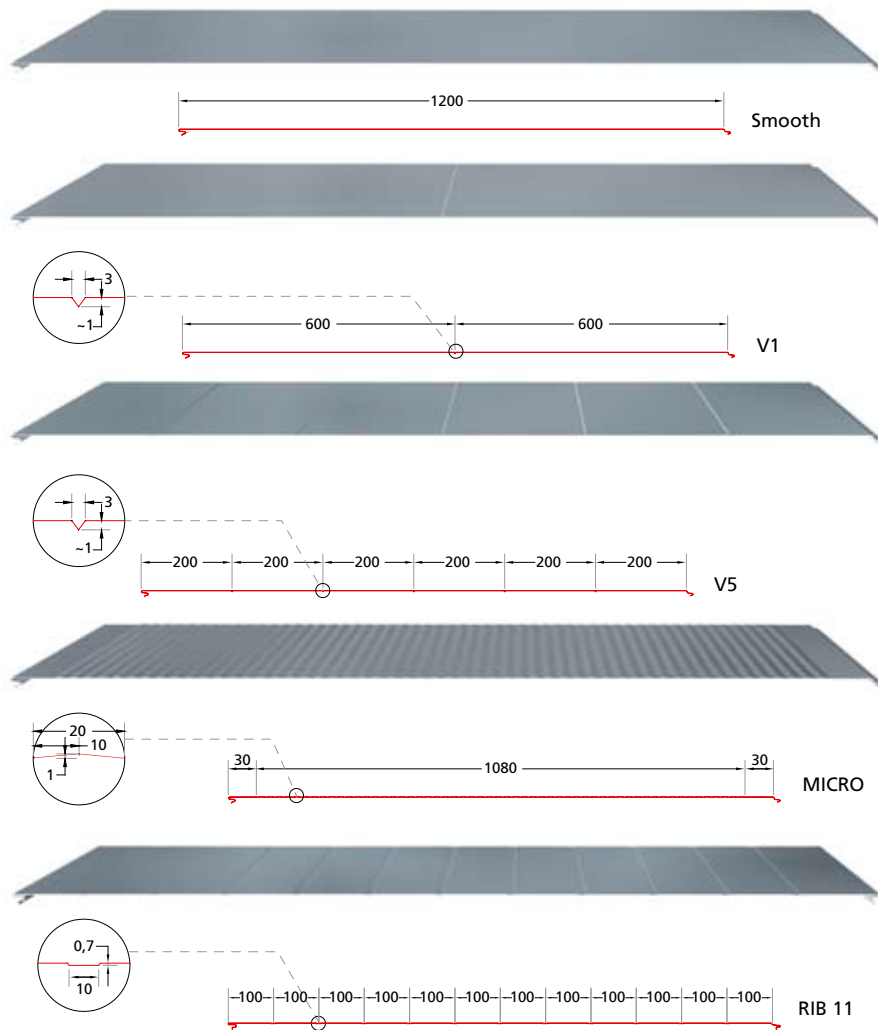
Mechanical endurance is determined by the composition of steel. Corrosion strength is ensured by the galvanisation, its thickness, as well as polymeric coatings. The used polymeric coatings are: polyester (PE), polyurethane (PU), polyvinyl chloride plastisol (PVC), polyvinylidene fluoride (PVDF or PVF2) and other coatings; they determine the usage in different operational circumstances: aggressive, medium and non-aggressive. The surface of steel sheet facing the adhesive substance and the surface of steel sheet facing the interior of the building are covered only with polyester coatings. If sandwich panels are used in the construction of buildings intended for food industry, only polyester coatings with adequate permit for usage in food industry with the symbol FS (Food Safe) should be used. TENAX Sandwich Panels are produced with polyester, incl. FS and PVDF coatings, which are suitable for the weather conditions in Latvia. When ordering TENAX Sandwich Panels, you should specify the type and colour of the coating, taking into consideration both the operational circumstances and lifetime.

### 1.3. Technical Data of Sandwich Panels

Table 1.1

1. Facing of the panel	Tērauda loksne ar biezumu 0,5 vai 0,6 mm
2. Heat insulation	<ul style="list-style-type: none"> <li>• Polystyrene Tenapors EPS, according to LVS EN 13163</li> <li>• Mineral wool (glass or rock fibre), according to LVS EN 13162</li> </ul>
3. Internal surface of panel	• Steel sheet with the thickness of 0.5 or 0.6 mm
4. Coating of steel sheet surface	<ul style="list-style-type: none"> <li>• Atmospheric tolerance PE, PVDF</li> <li>• Suitable for use with food products FS (food safe)</li> </ul>
5. Glue	Binary polyurethane
6. Surface	Smooth; V1; V5; MICRO; RIB 11

The thickness of panels is 50, 80, 100, 120, 150, 200 mm. Length: 2.0 – 12.0 m. There are four types of panels according to their appearance: smooth, V1, V5, MICRO and RIB 11.



Pic.1.3 Types of sandwich panel surfaces

The colour of panels can be selected from a RAL colour catalogue.

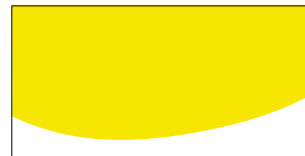
The printed colours can differ from the colours in RAL colour catalogue.



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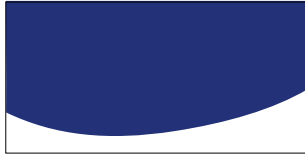
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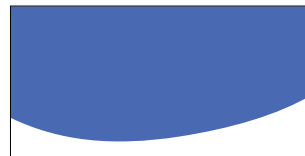
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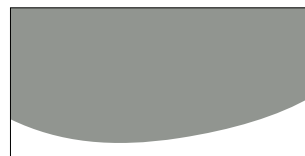
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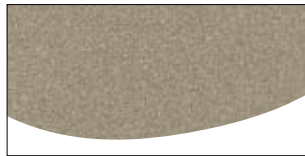
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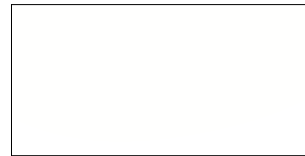
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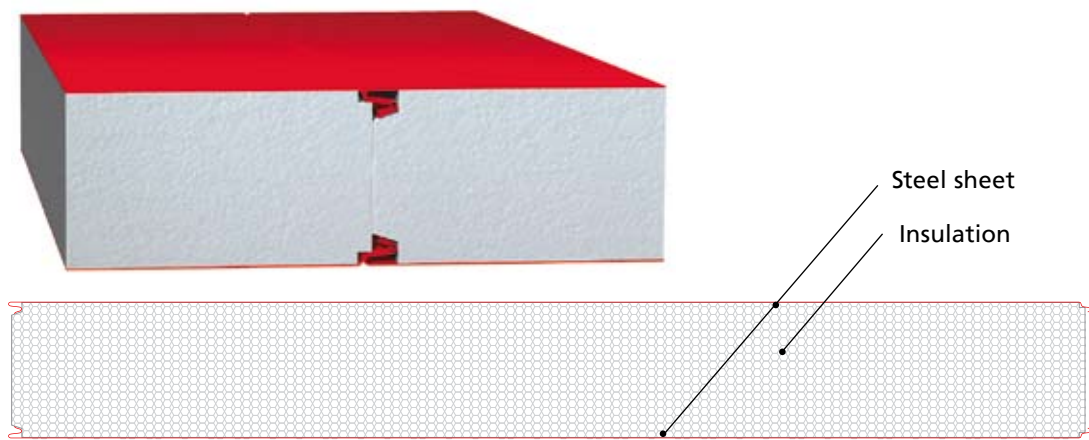


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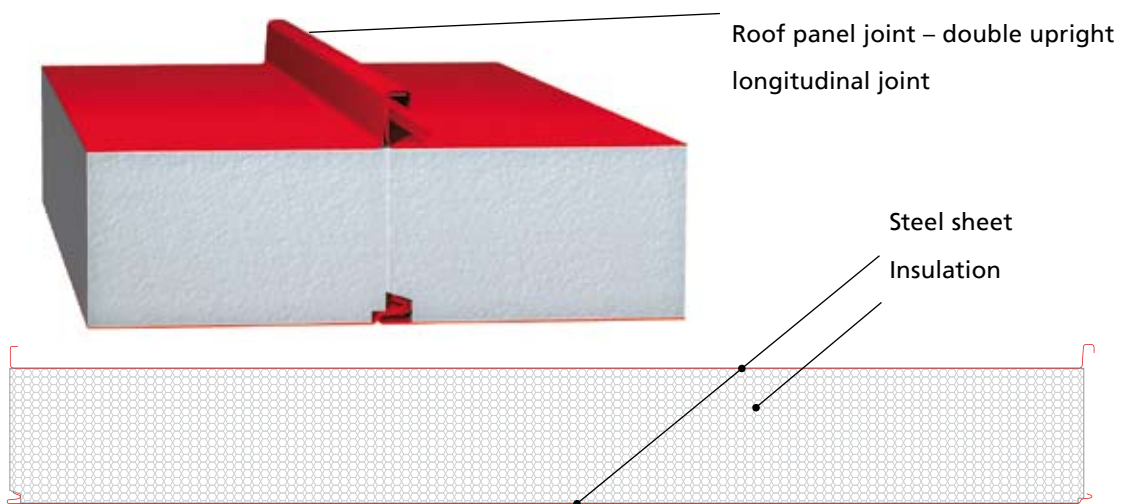
### 1.4. Types of Panels

There are several types of TENAX Sandwich Panels: TENAX W wall and ceiling panels; TENAX R roof panels  
TENAX W wall and ceiling panels are designed for construction of external and partition walls, as well as hanging ceilings. Their advantages are:

- Fast installation
- Simple installation
- High heat insulation
- High acoustic qualities
- Low construction costs
- Good aesthetic appearance



Pic.1.4 TENAX W wall, ceiling panel



Pic.1.5 TENAX R roof panel

TENAX R roof panels are offered with a high longitudinal joint. During the installation of panels, the edges of adjacent panels are joined with an upright double longitudinal joint. Such a roof is especially suitable for our weather conditions, where high wind impact and various kinds of precipitation are possible: rain, hail, snow and icing. Such roof junction is also suitable for severe temperature fluctuations.

## 1.5. Dimensions and Weight of Panels

Table 1.2

Sandwich panels thickness, mm	SP with EPS filling materials				SP with MW filling materials			
	Wall	Ceiling	Weight, kg/m <sup>2</sup>	Heat penetrability ratio U W/m <sup>2</sup> K	Wall	Roof	Weight, kg/m <sup>2</sup>	Heat penetrability ratio U W/m <sup>2</sup> K
50	2 – 6 m	2 – 6 m	9,6	0,662	2 – 6 m	*****	*****	*****
80	2 – 10 m	2 – 10 m	10,2	0,428	2 – 6 m	*****	20	0,46
100	2 – 10 m	2 – 10 m	10,6	0,347	2 – 9 m	2 – 8 m	22	0,38
120	2 – 12 m	2 – 12 m	11	0,292	2 – 9 m	2 – 9 m	25	0,32
150	2 – 12 m	2 – 12 m	11,6	0,236	2 – 9 m	2 – 9 m	29	0,26
200	2 – 12 m	2 – 12 m	12,6	0,179	2 – 8 m	2 – 8 m	35	0,19

Length 2,0 – 12 m

Width 1200 mm – wall panel

Width 1180 mm – ceiling panel