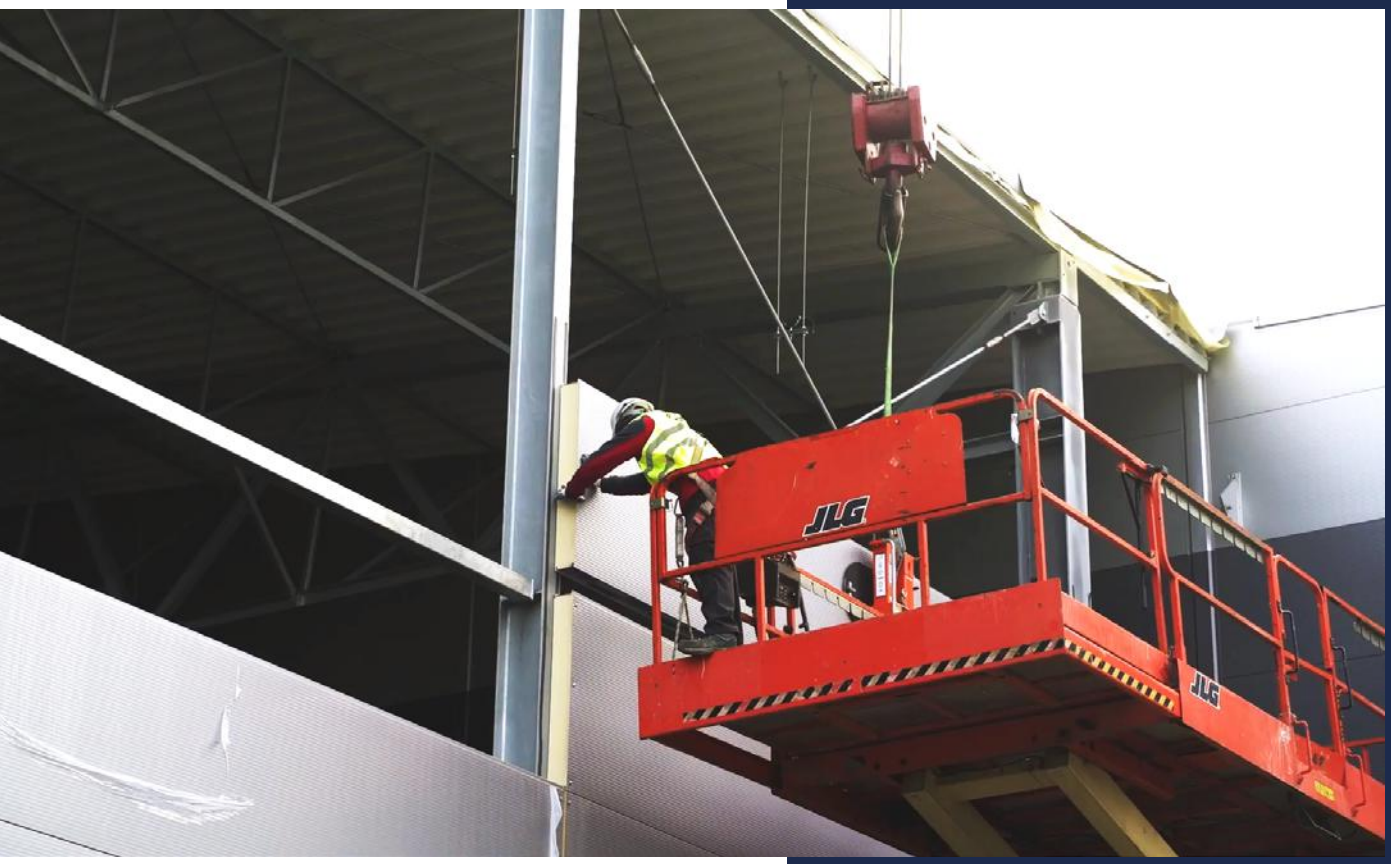
GÓR-STAL®
SANDWICH PANELS



Sandwich panels from Gór-Stal

insPIRe® SANDWICH PANELS

UNLOADING, INSTALLATION RECOMMENDATIONS, AND MAINTENANCE OF SANDWICH PANELS

insPIRe® sandwich panels

UNLOADING OF SANDWICH PANELS

Carefully inspect the condition of each sandwich panel package before unloading, and note any damage on the bill of lading.

The panels can be unloaded using a crane, forklift or, in case of shorter boards, manually. The spacing of support points during unloading must not exceed half the length of the panel.

The bottom panel in the stack is protected by styrofoam, but to avoid crushing, the load forks of the forklift should be wide. The support distance from the edge of the stack should not exceed 3 linear metres. To avoid damage to the panels, the forklift carriage must be secured before unloading.

Panels up to 8 meters long can be unloaded with a forklift. Panels 8-16 meters long should be unloaded with a crane with a beam sling. When unloading by crane with linear slings, wooden spacers 1.3 m long should be used at the top of the stack to prevent crushing of the panels. The length of the sling's strut must enable the hooking of a stack of panels at a spacing of 3m.

Steel ropes or chains may not be used. Manoeuvres should be done carefully so as not to damage the panels of the stack being moved or the other stacks. The packages should be placed on a flat (each Styrofoam pad must be firmly supported) and dry surface to avoid tipping, bending or wetting the panels.

Immediately upon receipt, check the completeness of the shipment and verify that the stacks are intact. Each stack has a label with a statement of performance and a description of the contents. Any deficiencies or damage must be noted on the waybill and photographic documentation taken.

When moving boards to the construction site, keep in mind the limitations of the maximum weight per person. Avoid sliding the panels over each other or leaning them on their edges as there is a danger of damaging them. To avoid scratching, lift the panel first.

If you have any questions, please contact the Gór-Stal technical department. We also invite you to visit our website: www.gór-stal.pl where you can find catalogues, details and other necessary information in the section for designers.

Notice:
Roofing sandwich panels are packed in alternate packages.
Every second panel is turned face down.

insPIRe® sandwich panels

INSTALLATION OF SANDWICH PANELS

Sandwich panels are a commonly used building material for lightweight cladding of industrial halls, warehouses, production halls, pavilions and commercial buildings, office buildings, administrative buildings, freezers, cold stores. They are packed in stacks and protected with foil and polystyrene pads.

At the factory, the goods are loaded and secured so that they arrive intact. Place the packages on as flat and dry a surface as possible to avoid tipping, bending or wetting the panels. Immediately upon receipt, check the completeness of the shipment and verify that the stacks are intact. Each stack has a label with a statement of performance and a description of the contents. Any deficiencies or damage must be noted on the waybill and photographic documentation taken and reported to the supplier. Avoid sliding the panels over each other or leaning them on their edges as there is a danger of damaging them.

Installation of the lightweight cladding can be done in almost any weather conditions. Indications for stopping work may include high winds or extreme temperatures. Installation at temperatures between -5°C and +20°C is recommended. Installation at other temperatures is possible but the effects on panels, fasteners and sealants must be considered.

Before starting the work, check the correctness of the construction and its deviations. Columns should form a non-twisted, flat wall surface. Next, apply a level to all the columns, which will make it easier to install the panels horizontally. Be sure to maintain a minimum 15 mm expansion joint between panels on the column.

It is recommended to perform additional sealing of the foundation with self-adhesive polyethylene tape. It is permissible to seal the connection of successive flashing sections with a neutral silicone sealant.

Once the ground has been prepared, the first panel can be set on the foundation. The recommended gap between the panel and the sill flashing can be achieved with a properly adjusted wooden wedge. When fixing panels to concrete structures, use appropriate screws and drill a Ø 5 mm hole in the columns beforehand.

We recommend using specialized equipment to install the panels at height. Such machines work on the principle of vacuum suction cups and are a guarantee for fast and safe installation. They should be used in accordance with the accompanying instructions for use.

If it is necessary to cut panels or cut holes during the work, this should be done using band saws, circular saws or fine-toothed metal cutters. The use of angle grinders with friction discs is prohibited. When cutting the panels, special care must be taken to ensure that the filings do not damage other panels.

The protective film of the panels shall be removed immediately upon completion of the work. Leaving the film exposed to the sun can cause difficulties when peeling it off later. The film must be removed no later than 60 days from the date of manufacture. If the protective film removal deadline is exceeded, claims related to the film and its removal will be denied. The recommended film stripping temperature should be no lower than 5 °C.

All details of wall panel connections with the roof and the sill, corners and finishing of window and door joinery openings should be made according to the detailed design, and if there is no such design, according to the guidelines from the Gór-Stal technical catalogue. Flashings shall be attached to the panels with rivets or screws.

In case of problems with joining the panel locks during the assembly stage, we recommend using spray silicone. This will make it easier for the lock to connect properly.

Maintenance and storage guidelines for sandwich panels also apply to flashings supplied with sandwich panels.

If you have any questions, please contact the Gór-Stal technical department. We also invite you to visit our website: www.gór-stal.pl where you can find catalogues, details and other necessary information in the section for designers.

Notice:

Installation of long panels (over 6.0 m) with colored exterior facing dark (3rd color group) is allowed provided that:

- Maintaining expansion joints min. 20 mm between the ends / the fronts of the sandwich panels and the elements that may limit their possibilities traffic.
- The absolute use of PES tapes between the sandwich panels, and the structure.
- Absolute use of PM-1 washers in the locks of sandwich panels (plates with U-type lock).
- Make sure the screw is properly tightened. Gasket under the washer it cannot be compressed, but should only rest on the washer / facing.
- Make sure that the elements to which the sandwich panels will be attached formed one plane. It is unacceptable that any of the them was retracted (moved to the center of the object) in relation to the the rest.

GUIDELINES FOR PERIODIC INSPECTIONS

Cladding made of insPIRe® sandwich panels

Ensuring proper life and durability of the panels requires control. Gór-Stal recommends inspecting the quality of the external and internal lining of the panels at least once a year in order to verify their quality and eliminate any possible risks to their durability.

It is recommended to carry out inspections starting from the construction completion, annually after the autumn-winter period (April – May), together with a representative of GÓR-STAL SP. Z O.O. to check the conditions of use and to confirm the conditions of the guarantee granted by GÓR-STAL SP. Z O.O. .

During the warranty period, each inspection should be performed in the presence of a representative of GÓR-STAL SP. Z O.O. and should be confirmed by a report, under pain of losing the warranty.

It is recommended that inspections be performed after the warranty period to accurately assess the condition of the cladding and possibly take action to extend its life and repair any damage.

During the inspection, inspect the condition of the cladding components each time as follows:

Component	Necessary actions
Drainage system – gutters: Any blockages can cause overflows and leakage inside the building	Remove debris and clean stagnant areas.
Construction waste: Any construction waste (garbage) not removed and in direct contact with the panels (especially on the roof) may cause moisture retention and local corrosion spots	Remove waste and clean contact areas.
Clusters of dust and dirt on the cladding in areas not washable by precipitation: Spots of dirt cause deterioration of the cladding aesthetics, and in case of prolonged occurrence may cause damage to the paint coating	Clean and wash the contaminated areas according to the instructions in "Cleaning the cladding".
Plant flora clusters: In exceptional situations, clusters of plant flora may occur in areas that are shaded and sheltered from precipitation.	Clean the overgrown areas and scrub as recommended in the "Fungus, Moss and Mold Remediation" section.
Minor mechanical damage: Minor mechanical damage that compromises the paint coating may result in corrosion spots on steel panels.	**Assess the extent of damage, in the case of:** ■ Minor scratches – touch up areas with touch-up paint as recommended in the "Touch-up painting" section ■ Surface damage – repaint the damaged surface as recommended in the "Surface Painting" section. ■ Severe damage to cladding sheets – replacement of sheathing or entire panels.
Filings from drilling and cutting boards: May cause minor edge corrosion	Gently clean the edges of the filings.
Condition of fasteners used: Poorly installed fasteners can cause small leaks or corrosion spots on fasteners.	Replace damaged or corroding connectors and replace masking caps (if necessary).
Corrosion on cut edges: Can occur on cut edges at overlaps and assembly joints – where the cut sheet comes in contact with the paint coating.	Treat edges in accordance with "Protecting cut edges"

SANDWICH PANEL MAINTENANCE

Washing the cladding

Precipitation (rain) is a sufficient cleaning agent to maintain the natural cleanliness of the exterior elements. If you want to extend the aesthetic life of the panels, you should take care of special cleanliness of the cladding, i.e. remove dirt accumulated on the panels to prevent the formation of the so-called corrosion of the paint coating.

The following recommendations should be followed when cleaning insPIRe sandwich panels:

- Use pressurized running water for cleaning
- In case of stains that require the use of chemicals, it is recommended to use commonly available household cleaning detergents (car body washing products) prepared as 10% solutions or according to the manufacturer's recommendations
- The use of active foam is not recommended due to the formation of streaks and stains caused by uneven rinsing
- The use of detergents in too high a concentration can damage the protective paint film
- Always wash the panels from the top of the cladding downwards, and rinse with running water each time.
- In order to avoid streaks, it is recommended to wipe the panels dry with a towel after washing one vertical section. Be sure to thoroughly rinse areas washed with detergent
- Organic solvents and abrasive substances (pastes, powders) must not be used for cleaning. If contaminated with sealants (silicones, butyls, etc.) or bituminous compounds, they should be removed with mineral solvents or as recommended by the compound manufacturer. Always rinse these areas thoroughly with running water.
- We do not recommend frequent washing of the panels as this may cause undesirable effects
- Washing or cleaning too often can do more harm than good.

For panel cleaning, we recommend hiring a company that specializes in façade cleaning because of their greater access to tools, cleaning agents and water softening systems.

At the customer's request, GÓR-STAL SP. Z O.O. can provide a manufacturer of specialist washing agents.

Cleaning of fungi, moss and mildew

Some especially shady and moist places are conducive to the growth of plant flora. In such places, the occurrence of lichen, fungi and mould is inevitable even on materials that are not susceptible to plant growth, such as zinc coated sheet.

If the above cited contamination occurs, use a cleaner according to the following recipe. Prepare the mixture by weight using commercially acceptable ingredients from chemical suppliers. Before mixing the first three ingredients, be sure to read the precautions recommended by the manufacturers of those ingredients.

Ingredients	Parts/Proportions
Good quality home detergent	0.5 cz.m.
Trisodium phosphate	3.0 cz.m.
5% sodium hypochlorite solution	25.0 cz.m.
Water for dilution	71.5 cz.m.
	100.0 cz.m.

Before applying the solution, it is recommended to wash the infected area as recommended for cleaning and then apply the solution to the surface by low pressure spray or brush application.

Leave the treated surfaces under the influence of the agent for 1 to 22 hours, after this period wash the cleaned surfaces with cold running water before 24 hours.

Touch-up painting

In case of small scratches on the paint surface, but not reaching the steel sheet (the depth of the scratch reaches the primer), there is no need for any touch-up painting. It is only permitted if aesthetic requirements dictate it.

In case the scratches reach the steel sheet, they should be painted with a paint of appropriate color and composition. In the case of polyester coatings (PES varnish), commercially available polyester varnishes used in the automotive industry or paints designed for application to galvanised coatings are used as touch-up paints.

Paints used must be designed to dry outdoors, not "oven varnishes". Cellulose paints are not recommended. In the case of specialist coatings, it is recommended to contact a selected touch-up paint manufacturer to obtain the appropriate paint.
To avoid visible differences in shade or coating quality, it is recommended to apply touch-up paints with a soft brush with a "sharp" end. We do not recommend the use of aerosol or pressure sprayed paints. We recommend applying paint only to the surface of the crack and not beyond the edges. For aesthetic reasons, we do not recommend repainting larger areas.

Surface painting

If it is necessary to repaint a section of the board or cladding, prepare the substrate accordingly.

Surface painting requires preparation of the original coating for repainting. The surface must be thoroughly matted and degreased, which will damage the original coating and result in the loss of warranty for the original paint coating.
We recommend that this type of painting is carried out by a specialist company and using both the appropriate paints and under optimal conditions.

Protection of cut edges

The cut edges of the panels are subject to small corrosion spots. This is a normal phenomenon and does not threaten the durability of the plating as long as the corrosion occurs only on the edge of the sheet. The steel sheets used as cladding are protected with a galvanic coating in addition to a varnish coating, which forms a surface electrochemical shield against corrosion.

In the case of panels with a thickness of 1 mm or less, the cut edge is subjected to the principles of electrochemistry, corroding only to a certain extent (in the thickness of the cut edge), and then the process stops – hence the natural corrosion of the edge. If the corrosion extends beyond the edge to include parts of the near-edge surface, there is a danger that the corrosion will spread to the panel surface.

In most cases, this is due to the use of inappropriate cutting equipment or secondary mechanical damage to the paint finish near the edges.

In such cases, when an increase in the surface area of corroded areas is observed, it is recommended to protect the edges of the panels, following the instructions as below:

01. Cut away and remove metal filings and paint residue within the corroded area to an intact area.
02. Remove rust and corrosion in a mechanical way – by gentle sandblasting, brushing or abrasive treatment until the metal surface becomes metallic shiny, leaving the metal surface roughened. Thoroughly wash and degrease the surface according to the protective coating manufacturer's guidelines.
03. Apply the first coat of primer to the cleaned and prepared surface as recommended by the manufacturer.
04. After the first coat of primer has dried, apply a second coat of primer in such a way that it overlaps the intact areas of the original paint
05. After the primers have dried, paint the treated area with a topcoat according to the manufacturer's guidelines.

While implementing the aforementioned protections, it is possible to use generally available protective measures (priming coats and topcoats) intended for zinc coated steel sheets (polyester varnishes), or contact GÓR-STAL SP. Z O.O. to obtain information on suppliers of those materials.

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STORAGE OF SANDWICH PANELS

Sandwich panels can be stored for short or long term

Long-term

Long-term storage, i.e. more than 30 days after delivery, requires additional protection.

The sandwich panels should be removed from their packages and the protective film peeled off both sides. After 60 days, the film loses its elasticity and removal is difficult. The same goes for the glue the film is stuck on. It may lose its performance and remain on the surface of the cladding when the protective film is removed.

Be sure to thoroughly clean the surface of the panels from dust, filings, or other debris before stacking them back together. If you leave them behind, you risk damaging the paint protection layer.

To prevent water from penetrating the package, insPIRe sandwich panels should be stored with a slight slope along the long side of the panel. We recommend a slope of more than 3% so that any water can run off freely and not pile up on the panels. Panel supports should be spaced apart at a maximum of 1.5 m.

During long-term outdoor storage, sandwich panels should be protected against weather conditions and ultraviolet radiation. For this purpose, the panel packs should be covered with a tarpaulin. The front of the package should be uncovered to drain any accumulated water vapour under the tarp.

NOTE: Do not cover panels with plastic sheeting

To protect the panels from damage, do not allow water to accumulate between them. With prolonged periods of time and lack of ventilation, the panels may become damaged.

Stacking more than 2 packages is not recommended, as impressions or dents may result. Please remember to protect partially unpacked packages from strong wind, precipitation and sunlight.

Consult with the facility designer for any temporary storage of roof panels on the roof.

For safety reasons, stacking of panel packages on the roof structure is prohibited. Protect panels stored on the Roof from possible sliding off.

Short-term

Depending on the time, the storage area should be properly prepared and secured according to the following recommendations:

- The surface for storing the panels should be properly paved and level. This will prevent panels from collapsing or bending. This will avoid the possibility of deformation and damage to the panels.
- Ensure proper drainage of the panel storage area to avoid ponding of rainwater under the panels
- Stacking more than 2 packages is not recommended.
- We recommend storing the panels away from traffic routes to avoid the possible risk of damage.
- Walking on the panels is prohibited, so do not place the panels on circulation paths.
- In order to secure the stored material, the storage area should be fenced, properly marked and protected from access of unauthorized persons.

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