



# GUIDELINES FOR THE USE OF SANDWICH PANELS WITH STAINLESS STEEL FACINGS

• **Contents**

<b>About stainless steel</b>	<b>3</b>
<b>Selection of stainless steel grade</b>	<b>3</b>
<b>Transportation, handling and storage</b>	<b>3</b>
1. Contact with iron or carbon steel.	
2. Handling and lifting.	
3. Moisture condensation.	
4. Contact with chemicals.	
<b>Installation</b>	<b>3</b>
1. Tools.	
2. Stainless steel fasteners.	
3. Protective film.	
<b>Corrosion examples on sandwich panel stainless steel facings</b>	<b>6</b>

• **About stainless steel**

Stainless steel is an iron alloy which contains chromium at least 10.5 %. Chromium improves the corrosion resistance of steel. Corrosion resistance is increased with higher chromium levels and additionally, by adding molybdenum to the alloy. Chromium reacts with oxygen and forms an invisible passive layer on the steel surface, which protects the steel. If this protective chromium oxide layer is damaged, it will be recurred spontaneously by the effect of oxygen (self-healing layer).

Main properties of stainless steel:

- Corrosion resistance,
- Heat resistance,
- Low life cycle cost,
- Full recyclability,
- Biological neutrality,
- Ease of fabrication and cleaning,
- Strength-to-weight ratio.

Surface of the stainless steel faced sandwich panels may not look completely flat due to nature of the material, high gloss level shows even small (within tolerance) indentations in panel surfaces.

• **Selection of stainless steel grade**

The standard quality 1.4301 (AISI 304) stainless steel (Cr 18 % & Ni 8 %) is the mostly used grade for interior and mildly corrosive exterior applications in rural, city and light industrial areas.

Wherever noticeable amounts of chlorides or sulphur dioxides are to be expected in the atmosphere, the acid-resistant stainless steel (EN 1.4401 or similar grades, corresponding AISI 316) should be used. Acid-resistant stainless steel contains also molybdenum (Mo) which makes the corrosion resistance much better. Examples of climates are coastal areas, medium or heavy industrial atmospheres and locations exposed to deicing salts.

• **Transportation, handling and storage**

In order to maintain the surface quality accurate instructions for storage and handling are accompanied to Ruukki sandwich panels with stainless steel facings.

**1. Contact with iron or carbon steel.**

At all stages of fabrication, transportation, storage on site, it is necessary to avoid contamination of the surface

of stainless steel components by carbon steel and iron. This is to prevent carbon steel pick-up, which may subsequently rust and stain the surface. If dissimilar metal contact cannot be avoided, then it is general good practice to provide insulation between the materials.

**2. Handling and lifting.**

Care is necessary during all handling and lifting operations to ensure that the stainless steel is not mechanically damaged. All equipment used to carry stainless steel panels should be cleaned shortly before use.

**3. Moisture condensation.**

Corrosion damage may occur if moisture condenses on surfaces under plastic packaging especially if it remains in place for a long time and if the conditions are humid or in a salt-laden environment.

**4. Contact with chemicals.**

All handling equipment should be cleaned prior to its use with stainless steel components. Contact with chemicals, including dyes, glues, adhesive tape, undue amounts of oil and grease should be avoided. If it is necessary to use them, their suitability should be either checked with their manufacturer, or tested by applying them to a trial piece of equivalent stainless steel.

• **Installation**

**1. Tools.**

If work of a fabrication nature needs to be undertaken on site, it will be necessary to use quarantined work areas, tools or other devices which are dedicated only to stainless steel, and stainless steel wire brushes or wool, and to avoid using carbon steel lifting tackle and unprotected fork lift trucks.

**2. Stainless steel fasteners.**

It is recommended that the fasteners used to assembling of stainless steel panels should be manufactured also from stainless steel. Other fastener materials, if used, should be separated from the stainless steel by non-metallic washers and bushes. Fasteners dedicated for stainless steel facings which are stored on site should be kept in dry conditions, suitably packed and identifiable.

**3. Protective film.**

The use of strippable plastic film coatings on the stainless steel can help to avoid surface contamination. Protective film should be left on as long as practicable but no longer than for 2 months. Plastic film should not be exposed to sun radiation due to challenges related to its removal. a distance of 20 to 30 cm from the surface).

• **Corrosion examples on sandwich panel stainless steel facings**



**Photos 1–2**

Corrosion caused by usage of cleaning agents containing chlorine compounds.



**Photos 3– 4**

Corrosion appeared due to insufficiently frequent rinsing of stainless steel facing.



**Photos 5–6**

Corrosion next to the edge of protective film, caused by inaccurate removal of the cleaning agent.

**This publication is accurate to the best of our knowledge and understanding. Although every effort has been made to ensure accuracy, the company does not assume any responsibility for any errors or omissions, or any direct, indirect or consequential damage caused by incorrect application of the information. We reserve the right to make changes. Always use original standards for accurate comparison.**



Ruukki Construction Oy, Suolakivenkatu 1, FI-00810 Helsinki, +358 20 5911, [www.ruukki.com](http://www.ruukki.com)

Copyright© 2016 Ruukki Construction. All rights reserved.  
Ruukki and Ruukki's product names are trademarks or registered trademarks of Rautaruukki Corporation, a subsidiary of SSAB.