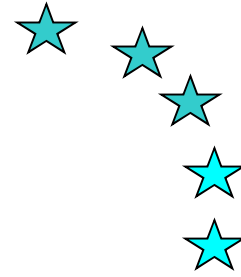


# GRISPE



**Guidelines and Recommendations for Integrating Specific Profiled steel sheets in the Eurocodes (GRISPE)**

**WP4 Doc 2 Version 02**

**Test program definition**

**Working Package 4**

**Deliverable D 4.2**

**Guidelines and Recommendations for Integrating Specific Profiled Steels sheets in the Eurocodes (GRISPE)**

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**Dissemination Level**

<i>PU</i>	<i>Public</i>	
<i>PP</i>	<i>Restricted to the Commission Services, the Coal and Steel Technical Groups and the European Committee for Standardisation (CEN)</i>	
<i>RE</i>	<i>Restricted to a group specified by the Beneficiaries</i>	
<i>CO</i>	<i>Confidential, only for Beneficiaries (including the Commission services)</i>	<b>X</b>

**Verification and Approval**

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**Deliverable**

<b><i>D 4.2 Test program definition</i></b>	<b><i>Due date : 31<sup>th</sup> Dec. 13</i></b> <b><i>Completion date:</i></b>
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## 1. General objectives

Objectives are different function of the type of considered wind load.

Under wind pressure load, the goal is to verify the Eurocodes formulas across the method analyzed in deliverable D4.1 part 2.

Under wind suction, as no formulas are available, the goal is to present new formulas specifically for the behaviour of the longitudinal hidden joint.

## 2. Selected products

We have distinguished 2 types of products representative of 2 types of technology of longitudinal hidden joint:

- CLADEO 300: plank made by Bacacier with a bottom flange avoiding dislocation (Figure 1),
- ZEPHIR 300: plank made by Joris Ide Group with geometry of joint avoiding dislocation (Figure 2).



Figure 1: CLADEO 300

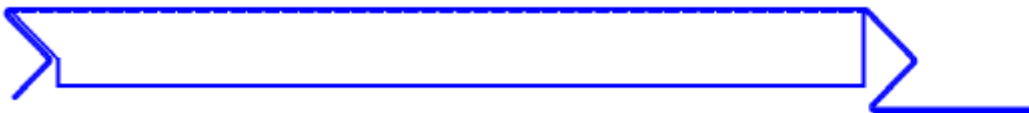


Figure 2: ZEPHIR 300

These products are in 2 thicknesses: 0.75mm and 1.00 mm.

## 3. Type of tests

3 types of tests will be performed:

- Type 1: 2 support flexion tests: to evaluate bending moment resistance in span
- Type 2: End support tests
- Type 3: 3 supports flexion tests: to evaluate interaction between moment and reaction on intermediate support

Flexion tests (both on 2 and 3 supports) will be performed in a vacuum chamber.

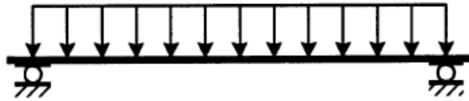


Figure 3: 2 supports test

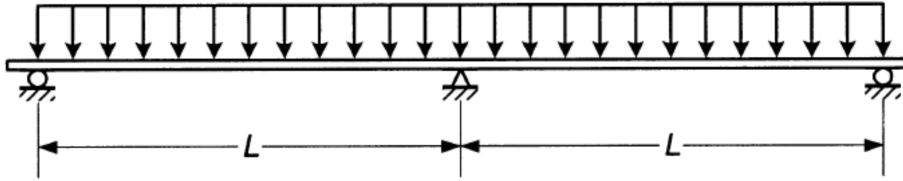


Figure 4: 3 supports test

For both of these flexion tests, vertical and horizontal displacement will be measured to evaluate transversal deformation (Figure 5).

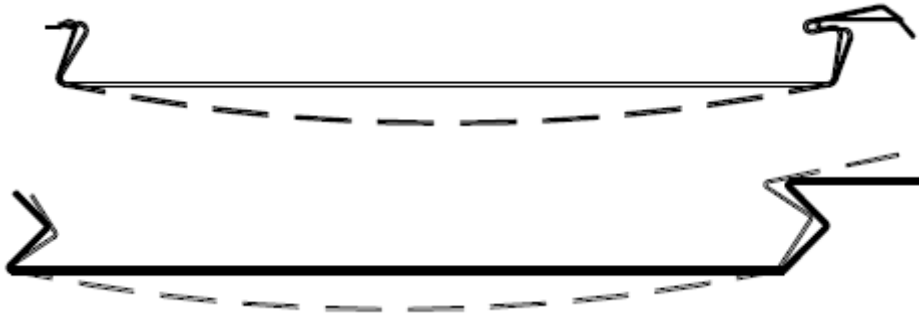


Figure 5: Transversal deformation of the plank

End support tests will be performed as recommended in EN 1993-1-3

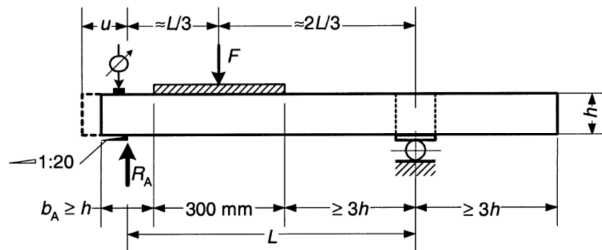


Figure 6: End support test

## 4. Geometry and material specifications of selected products

### 4.1. ZEPHIR 300

Dimensions of cross section of ZEPHIR 300 are as following:



Figure 7: Geometry of ZEPHIR 300

The transversal edges are not made in order to allow the establishment of blocks in the plank used to maintain the product on support (like Figure 8) and for applied wind suction load.

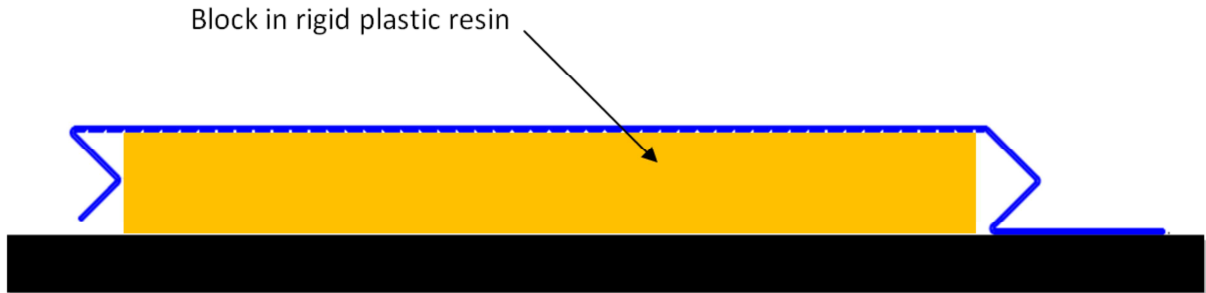
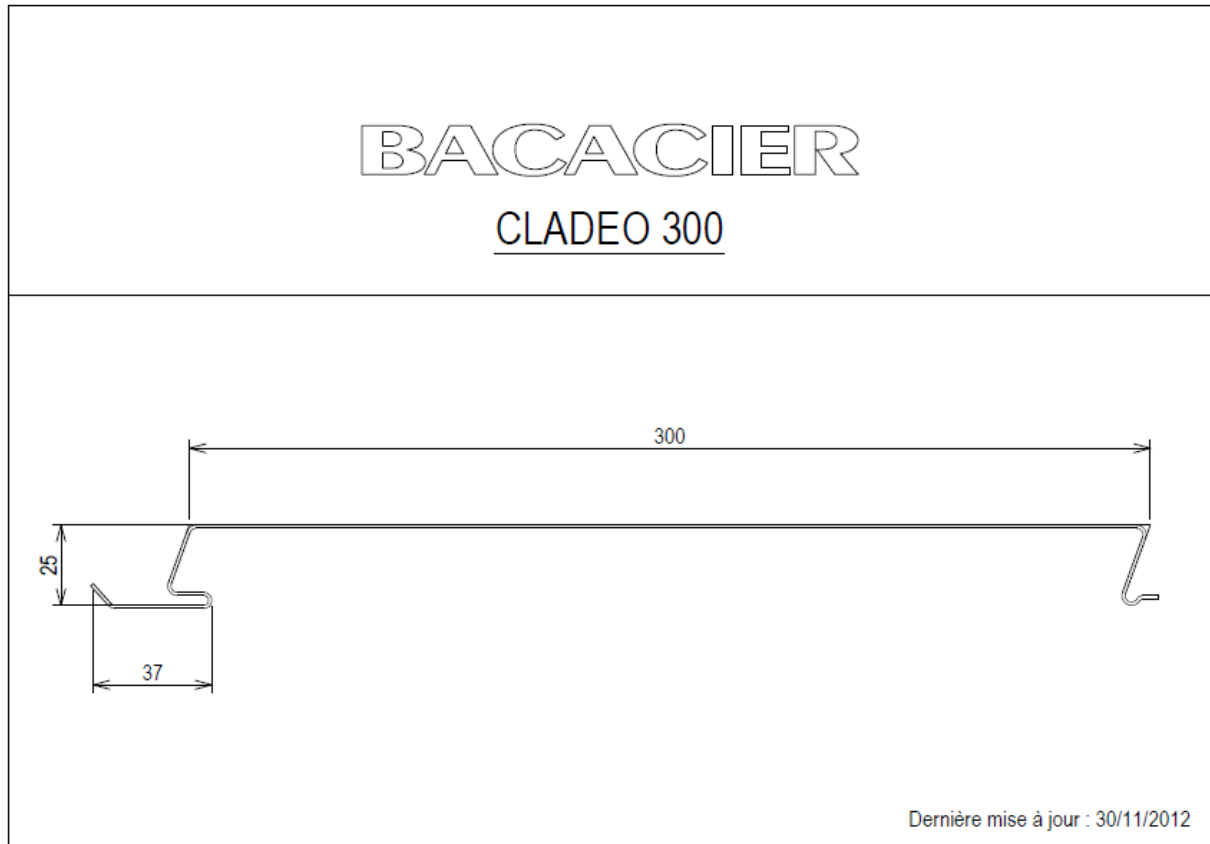


Figure 8: Rigid block to maintain ZEPHIR on support

For each flexion test, ZEPHIR will be tested both with and without transversal edge. This will allow us to evaluate the influence of this edge.

## 4.2. CLADEO 300

Dimensions of cross section of CLADEO 300 are:



*Figure 9: Geometry of CLADEO 300*

## 4.3. Material properties and thicknesses

CLADEO 300 and ZEPHIR 300 are made of galvanized steel S 320 GD in two nominal thicknesses: 0.75 and 1.00 mm.

For each type of tests, a tensile test will be performed to evaluate real thickness and yield strength.

## 4.4. Experimental dispositions

The selected span range is 1.00 to 2.50 m.

For 2 supports flexion tests, the dispositions are:

- Tested span:  $L = 1.50$  m positive and negative bending
- Number of planks / test : 5 planks,
- Number of test/span : 3 tests,
- Test performed on both thicknesses,
- 5 tensile specimens/test,
- Width of supports : 40 mm for both products

For end support tests:

- Tested span :  $L = 0.41$  m for both products,
- Number of plank / test : 3 planks,
- Values for  $u$ :  $u = 40$  mm and  $u = 80$  mm,
- Number of test/ $u$  value : 3 tests,
- Test performed on both thicknesses,
- 3 tensile specimens/test,
- $b_A = 40$  mm for both products,
- Width of the block used for apply load on top of profile: 40 mm for both products

For 3 supports flexion tests, the dispositions are:

- Tested span:  $L = 1.00 / 2.00 / 2.50$  m positive and negative bending
- Number of planks / test : 5 planks,
- Number of test/span : 3 tests,
- Test performed on both thicknesses,
- 5 tensile specimens/test,
- Width of supports : 40 mm for both products

## 5. Test program and length of products

### 5.1. Test program for CLADEO 300

CLADEO 300						
0.75 mm	Type 1	Type 2		Type 3		
	1.50 m	U 40	U 80	1.00 m	2.00 m	2.50 m
Length mm	1580	540	540	2080	4080	5080
Number	6	3	3	6	6	6
Tensile specimens	6	3	3	6	6	6

CLADEO 300						
1.00 mm	Type 1	Type 2		Type 3		
	1.50 m	U 40	U 80	1.00 m	2.00 m	2.50 m
Length mm	1580	540	540	2080	4080	5080
Number	6	3	3	6	6	6
Tensile specimens	6	3	3	6	6	6



## 5.2. Test program for ZEPHIR 300 (without transversal edges)

ZEPHIR 300 (without transversal edges)						
0.75 mm	Type 1	Type 2		Type 3		
	1.50 m	U 40	U 80	1.00 m	2.00 m	2.50 m
Length mm	1580	540	540	2080	4080	5080
Number	6	3	3	6	6	6
Tensile specimens	6	3	3	6	6	6

ZEPHIR 300 (without transversal edges)						
1.00 mm	Type 1	Type 2		Type 3		
	1.50 m	U 40	U 80	1.00 m	2.00 m	2.50 m
Length mm	1580	540	540	2080	4080	5080
Number	6	3	3	6	6	6
Tensile specimens	6	3	3	6	6	6

## 5.1. Test program for ZEPHIR 300 (with transversal edges)

ZEPHIR 300 (with transversal edges)				
0.75 mm	Type 1	Type 3		
	1.50 m	1.00 m	2.00 m	2.50 m
Length mm	1580	2080	4080	5080
Number	6	6	6	6
Tensile specimens	6	6	6	6

ZEPHIR 300 (with transversal edges)				
1.00 mm	Type 1	Type 3		
	1.50 m	1.00 m	2.00 m	2.50 m
Length mm	1580	2080	4080	5080
Number	6	6	6	6
Tensile specimens	6	6	6	6