

# CORTEN STEEL

## DETAILED SPECIFICATIONS

### THE EXTERIOR WALL SYSTEM

The Limeparts exterior wall cladding is an architectural exterior wall that is constructed according to the cassette system. Our cassette system is extremely well-ventilated.

The entire manufacturing process - from design to final product - complies with procedures that are part of the ISO9001 quality management system.

### THE SUBSTRUCTURE

#### Materials

- . omega profiles: AlMg3 thickness 2 mm; cross section height 60 mm x total width 66 mm.
- . brackets: AlMg3 thickness 3 mm.

#### Characteristics

The omega profiles are made to measure lengthwise according to the plan of the building and are attached to the supporting structure with U-shaped brackets.

The attachment of the substructure is completely invisible after the cassette exterior wall is finished. In special notches of the omega profiles, plastic suspension mounts are placed.

### THE CASSETTE

#### Materials

- . cassettes: Cor-ten A: cold rolled with a thickness of 2 mm or warm rolled with a thickness of 3 mm.
  - specific gravity for Corten steel: 7.85 kg/dm<sup>3</sup>
  - linear expansion coefficient:  $12 \times 10^{-6} \text{ K}^{-1}$
  - tensile strength:  $R_m \geq 485 \text{ N/mm}^2$
  - elasticity limit:  $R_e \geq 345 \text{ N/mm}^2$
- . mounting pins: stainless steel class A2, length 35 mm and  $\varnothing 8 \text{ mm}$ .

#### Characteristics

The cassettes can vary in height and in width. They are always made to measure and are entirely invisibly mounted and fastened to a supporting substructure.

The maximum dimensions are:

- . 3000x1350 mm for cassettes of 2 mm.
- . 3800x1350 mm for cassettes of 3 mm.

The cassettes are folded on 4 sides:

- . on the 2 sides: standard 50 mm;
- . on the top: double folded to the outside, 50x40 mm;
- . on the bottom: double folded to the inside, 40x20 mm.

On the back there are special openings for drainage of condensation water to the front of the cassette exterior wall.

Any reinforcements in the cassettes and accessory structures for mounting the cassettes are glued in and attached mechanically.

On the inside of the cassettes there are at least 4 suspension pins that – after the cassettes are mounted in the plastic suspension mounts – are elastically wedged in the omega profiles of the substructure.

Horizontal areas such as eaves, weathering, ... are made of aluminium.

After mounting, the suspension pins have a head that is barely visible and are provided with a locknut on the inside of the cassettes. Each pen is fastened with a torque wrench.

## **SURFACE FINISHING**

### **Cassettes**

none

### **Substructure**

The enamelling of the substructure and the finishing profiles is done after formation and is carried out according to the Qualicoat standards.

This means that the following procedures are carried out as described by Qualicoat: staining, rinsing, chroming, rinsing thoroughly again, drying, powdering and enamelling.

For normally affected exterior walls, the layer thickness is an average 80 µm and at least 60 µm; for heavily affected exterior walls (in the vicinity of the sea and industry) the layer thickness is an average of 100 µm and at least 80 µm.

## **MOUNTING THE SYSTEM**

The omega shaped substructure is mounted on the supporting structure and aligned with U-shaped brackets. Between the aluminium U-profile and the inner cavity sheeting, neoprene is placed to reduce heat transfer. In the continuous omega shaped substructure, polyethylene suspension mounts are placed that prevent contact sounds and prevent the raising up of the cassettes to a force of 450 N. After that the cassettes are wedged in.

At the eaves and on high buildings, special plastic suspension mounts made of polyamide are placed in the notches of the omega profiles, which also prevents contact sounds and the raising up of the cassettes to a force of 1000 N.

Vertical expansion is kept under control by interrupting the substructure at least every 4 metres.

The substructure is off-set as needed (next to windows, in corner situations, ...). The substructure is asymmetric in corner situations to prevent the corner cassettes from being deformed when they are wedged in.

In the eaves area, the substructure is only mounted on the front of the exterior wall to prevent water infiltration because of boring through the roofing seal. For this Limeparts uses a self-bearing substructure to support both the exterior cassette and the horizontal roofing. This system can only be applied for eaves up to 500 mm in depth.

## **CHARACTERISTICS OF THE WHOLE**

The open seam between the cassettes is nominally 16 mm wide and at least 47 mm deep.

The ventilated exterior wall system meets the desired characteristics with regard to hygroscopics, acoustics, thermal insulation and aesthetics.

The cassettes do not touch each other or the metal of the substructure.

The system is constructed in such a way that a galvanic separation is created between the Corten steel portion, the substructure and the other parts of the building.

This reduces the effect of galvanic corrosion and the quality of the system is guaranteed for a longer time.

The standard cassettes can be mounted without tools.

All the pins of the cassettes are elastically wedged in the suspension mounts. The expansion of the whole is provided for by the specific design of the suspension mounts and the relatively flexible substructure.

The expansion occurs in a way that is relatively tension free and sound free.

Horizontal movement of the cassettes is avoided.

The weight of the total system amounts to approximately 24 kg/m<sup>2</sup> for a thickness of 2 mm and approximately 35 kg/m<sup>2</sup> for a thickness of 3 mm.

The whole is adjustable on 3 axes. After the alignment of the substructure it is secured with rivets.

The whole is placed on the axes and the levels according to the project drawings.

The whole is developed and produced ready to mount so that only alignment is required during the mounting. Cutting and bending at the site are not required.