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## 1. Window Information

**Profile System:**

**Framing Profile:**

**Transom Profile:**

**Mullion Profile:**

**Glass:**

Glass ID      Make up

## 2. Applied Load

<b>Wind pressure (W):</b>	kN/m <sup>2</sup>	
<b>Horizontal live load (L):</b>	--	
<b>Dead load (D):</b>	Density of glass	2500 kg/m <sup>3</sup>
	Density of aluminum	2700 kg/m <sup>3</sup>
	Density of thermal break	1270 kg/m <sup>3</sup>
	(the weight of all other accessories is assumed to be 20% of the weight of thermal break)	
<b>Climatic conditions:</b>	Indoor-outdoor temperature difference in summer	K°
	Indoor-outdoor temperature difference in winter	K°
<b>Part security factors:</b>	For external loads	$\Phi_w =$
	For temperature difference	$\Phi_T =$
<b>Reduction factor (A<sub>2</sub>)</b>	For aging and behavior under long period stressing	A <sub>2</sub> = 1.2

## 3. Codes and Specifications

- [1] **DIN EN 1991-1-1**, Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings, 2010-12.
- [2] **DIN EN 1991-1-1**, National Annex – Nationally determined parameters, Actions on structures – Part 1-1: General actions – Densities, self-weight, imposed loads for buildings, 2010-12.
- [3] **DIN EN 1991-1-4**, Actions on structures – Part 1-4: General actions – Wind actions, 2010-12.
- [4] **DIN EN 1991-1-4**, National Annex – Actions on structures – Part 1-4: General actions – Wind actions, 2010-12.
- [5] **DIN EN 1999-1-1**, Design of aluminum structures – Part 1-1 General structural rules, 2014-03
- [6] **DIN EN 13830**, Curtain wall product standard, 2015-07

## 4. Allowable Deflection

In out-of-plane direction (z-direction), allowable deflection  $d$

In in-plane direction (y-direction), allowable deflection is the lower value of  $L/300$  and 3mm.

## 5. Materials

### 5.1 Aluminum - AW-6060 T66, standard: EC 9-1-1

Young's modulus	$E = 70 \text{ GPa}$
Poisson's ratio	$\nu = 0.3$
0.2% apparent limit of elasticity of Al Mg Si 0.5F22	$\beta_{0.2} = 160 \text{ MPa}$
Coefficient of thermal expansion	$\alpha = 23\text{e-}06 \text{ 1/K}$

### 5.2 Thermal break - Polythermide (PT)

Shear strength at $-20^{\circ}\text{C}$	$R_{USV_{20}} = 93 \text{ N/m}$	Elastic constant at $-20^{\circ}\text{C}$	$C_{-20} = 132 \text{ N/mm}^2$
Shear strength at $+80^{\circ}\text{C}$	$R_{USV_{80}} = 53 \text{ N/m}$	Elastic constant at $+20^{\circ}\text{C}$	$C_{20} = 112 \text{ N/mm}^2$
Tensile strength at $-20^{\circ}\text{C}$	$R_{UST_{20}} = 170 \text{ N/m}$	Elastic constant at $+80^{\circ}\text{C}$	$C_{80} = 90 \text{ N/mm}^2$
Tensile strength at $+80^{\circ}\text{C}$	$R_{UST_{80}} = 100 \text{ N/m}$		