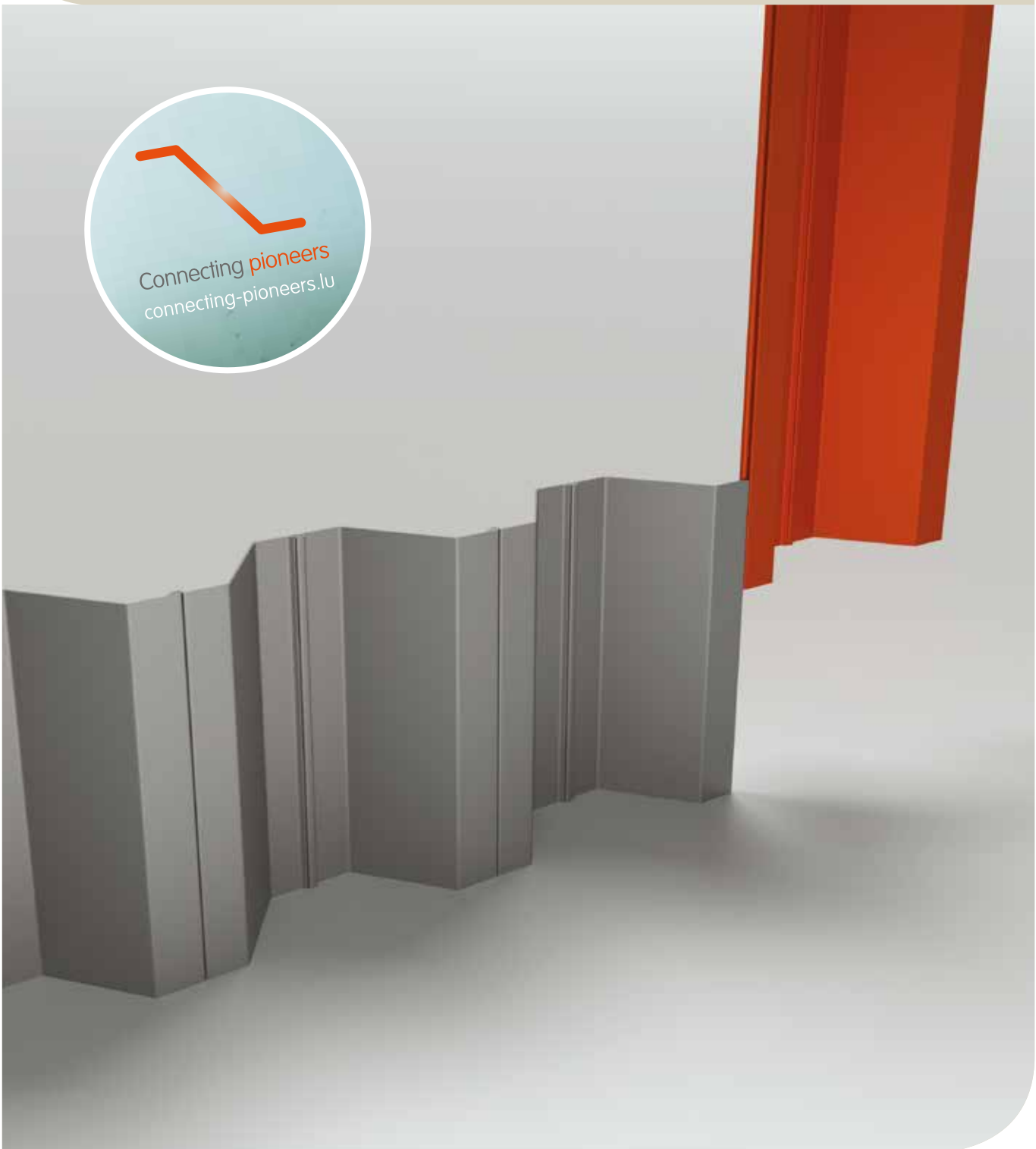




# The next generation of AZ<sup>®</sup> sheet piles





## Going wider! The new AZ<sup>®</sup> sheet piling series by ArcelorMittal

As the world leader in the production of hot-rolled sheet piles, ArcelorMittal makes it a priority to pass on the benefits of its research to its customers. Innovation is key to maintaining ArcelorMittal's position as the partner of choice for products that continuously raise the standard of performance and response to real market needs.

Since 2004, ArcelorMittal has observed a steady increase in demand for sheet piles with a width of 700 mm. This is why, after extensive finite element simulations, optimisations and driving tests under real conditions, we are proud to introduce a new generation of even more cost-efficient, extra-wide sheet piles up to 800 mm wide!

Tested by  
our customers!

Eric Leemans  
Technical Director  
Soetaert n.v.

My overall experience with **the new AZ<sup>®</sup>-800 generation** is very positive. Our first driving test with these wider sheet piles showed that we can achieve a smoother and quicker installation with our existing equipment. I see a bright future for the AZ<sup>®</sup>-800 range as it can be used in a more time and cost-efficient manner with no additional investments needed.

## The 4 elements of success



### 1. Research & Development

The new AZ® series is the result of ArcelorMittal's extensive experience and ongoing commitment to developing new products. Building on the Group's steelmaking know-how, research was carried out into optimising to a maximum the weight, dimensions and general properties of the sheet piles. This was only possible through a great effort in stretching the technical limits of the mill's equipment. The complex theoretical design aspects were handled by the R&D department in collaboration with the University of Stuttgart.



### 2. Investments

State-of-the-art sheet piles require state-of-the-art production facilities. In order to further improve its product range, ArcelorMittal has invested substantially in the highly specialized rolling mill in Belval, Luxembourg. Thus maintaining it as the world's leading production site for hot-rolled sheet piles. New straightening equipment is the key element of this investment.



### 3. Production

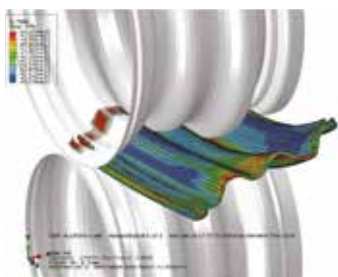
Roll pass design activities are concentrated at the R&D Center in Esch-sur-Alzette. Their main mission is to determine the geometry of the rolls in order to be able to produce a correct shape within the allowed tolerances. During the development phase R&D used finite element software to perform numerical simulations of the rolling process, showing the step by step deformation from the semi-product into the finished product. Reduced-scale tests in a laboratory were then carried out to confirm the numerical results. Finally, prior to the industrial production phase, rolling trials have been carried out in order to set up a stable manufacturing process.



### 4. Sales Feedback

In light of the continuous improvement of our products, ArcelorMittal relies on the detailed information provided by our customers based on their experience in the field. The launch of the lighter, wider and more cost-efficient AZ® series was decided due to encouraging feedback from customers that will join us in this new adventure.

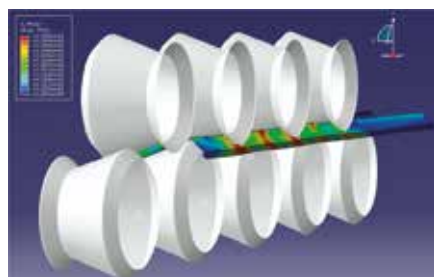
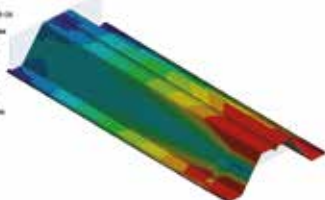
## Numerical simulations



Load step 2: maximum load step

4: AZ® 26-400 Sheet Structure  
Type: Eigenwert (non-linear, static, Transition, Layer 1)  
Load: 100kN  
Time: 1,000000  
20.00.0000 00.00

4: AZ® 26-400 Sheet  
200.0  
274.25  
300.0  
333.20  
333.75  
366.500  
400.000  
4: 10000 N/m

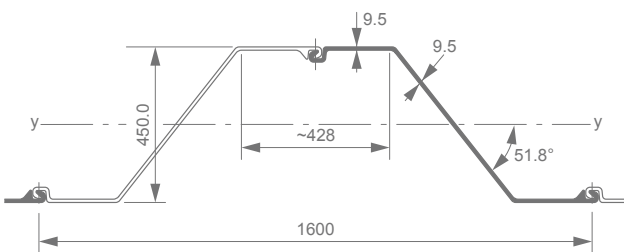


# Section properties

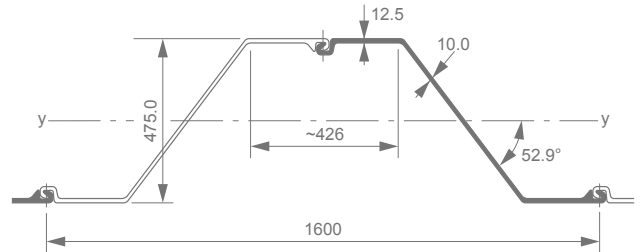
Section	Width		Height		Thickness		Sectional area cm <sup>2</sup> /m	Mass single pile kg/m	wall kg/m <sup>2</sup>	Moment of inertia cm <sup>4</sup> /m	Elastic section modulus cm <sup>3</sup> /m	Static moment cm <sup>3</sup> /m	Plastic section modulus cm <sup>3</sup> /m	Class*							
	b mm	h mm	t mm	s mm	S 240 GP	S 270 GP								S 320 GP	S 355 GP	S 390 GP	S 430 GP	S 460 AP			
<b>AZ<sup>®</sup>-800</b>																					
AZ 18-800	800	449	8.5	8.5	129	80.7	<b>100.9</b>	41 320	<b>1 840</b>	1 065	2 135	3	3	3	3	3	4	4			
AZ 20-800	800	450	9.5	9.5	141	88.6	<b>110.7</b>	45 050	<b>2 000</b>	1 165	2 330	3	3	3	3	3	3	3			
AZ 22-800	800	451	10.5	10.5	153	96.4	<b>120.5</b>	48 790	<b>2 165</b>	1 260	2 525	2	2	3	3	3	3	3			
AZ 23-800	800	474	11.5	9.0	151	94.6	<b>118.2</b>	55 260	<b>2 330</b>	1 340	2 680	2	2	2	3	3	3	3			
AZ 25-800	800	475	12.5	10.0	163	102.6	<b>128.2</b>	59 410	<b>2 500</b>	1 445	2 890	2	2	2	2	2	3	3			
AZ 27-800	800	476	13.5	11.0	176	110.5	<b>138.1</b>	63 570	<b>2 670</b>	1 550	3 100	2	2	2	2	2	2	2			
<b>AZ<sup>®</sup>-750</b>																					
AZ 28-750	750	509	12.0	10.0	171	100.8	<b>134.4</b>	71 540	<b>2 810</b>	1 620	3 245	2	2	2	2	3	3	3			
AZ 30-750	750	510	13.0	11.0	185	108.8	<b>145.0</b>	76 670	<b>3 005</b>	1 740	3 485	2	2	2	2	2	2	3			
AZ 32-750	750	511	14.0	12.0	198	116.7	<b>155.6</b>	81 800	<b>3 200</b>	1 860	3 720	2	2	2	2	2	2	2			
<b>AZ<sup>®</sup>-700</b>																					
AZ 48-700	700	503	22.0	15.0	288	158.5	<b>226.4</b>	119 650	<b>4 755</b>	2 745	5 490	2	2	2	2	2	2	2			
AZ 50-700	700	504	23.0	16.0	303	166.3	<b>237.5</b>	124 890	<b>4 955</b>	2 870	5 735	2	2	2	2	2	2	2			
AZ 52-700	700	505	24.0	17.0	317	174.1	<b>248.7</b>	130 140	<b>5 155</b>	2 990	5 985	2	2	2	2	2	2	2			

\*Classification according to EN 1993-5. Class 1 is obtained by verification of the rotation capacity for a class-2 cross-section. A set of tables with all the data required for design in accordance with EN 1993-5 is available from our Technical Department. Steel grade S 460 AP following specifications of the mill is available on request.

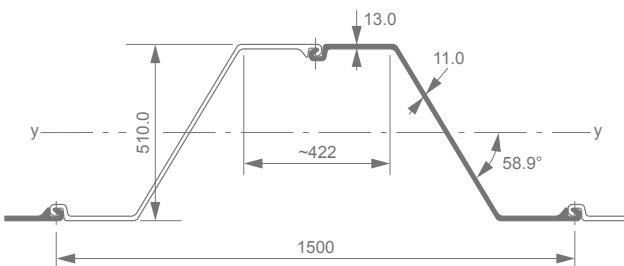
**AZ 20-800**



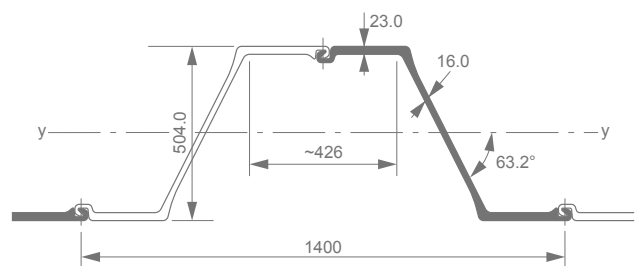
**AZ 25-800**



**AZ 30-750**

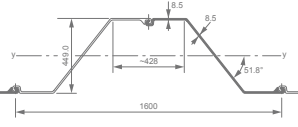
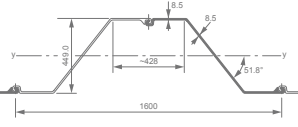
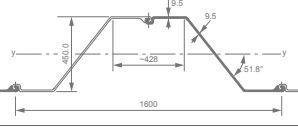
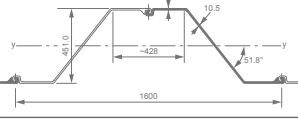
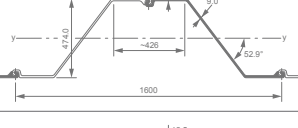
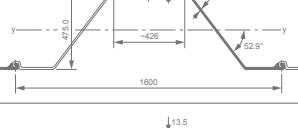
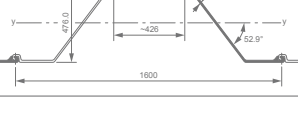
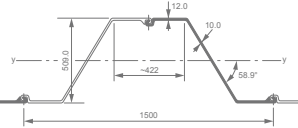
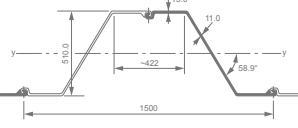
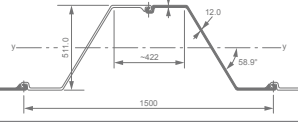
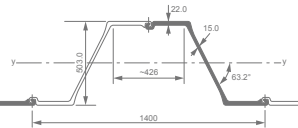
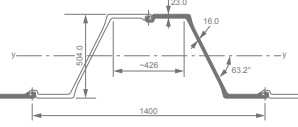
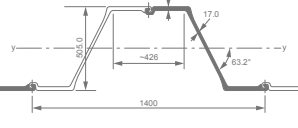


**AZ 50-700**



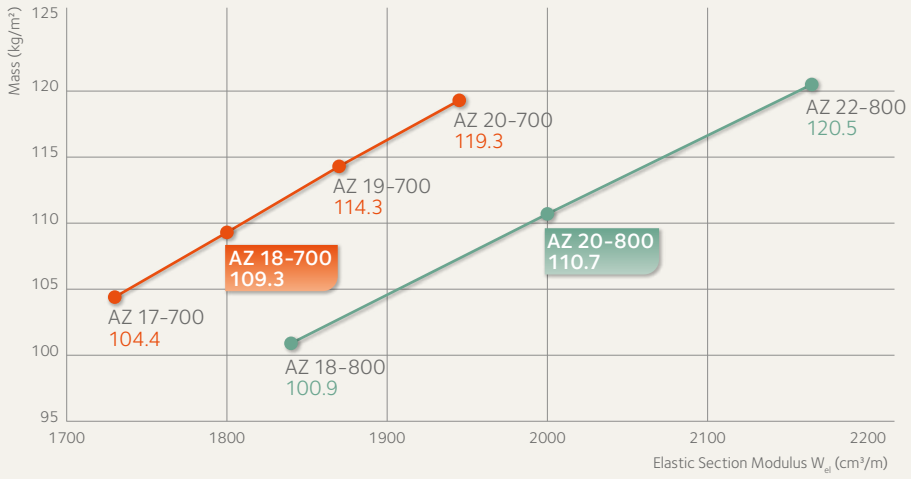


# Section properties

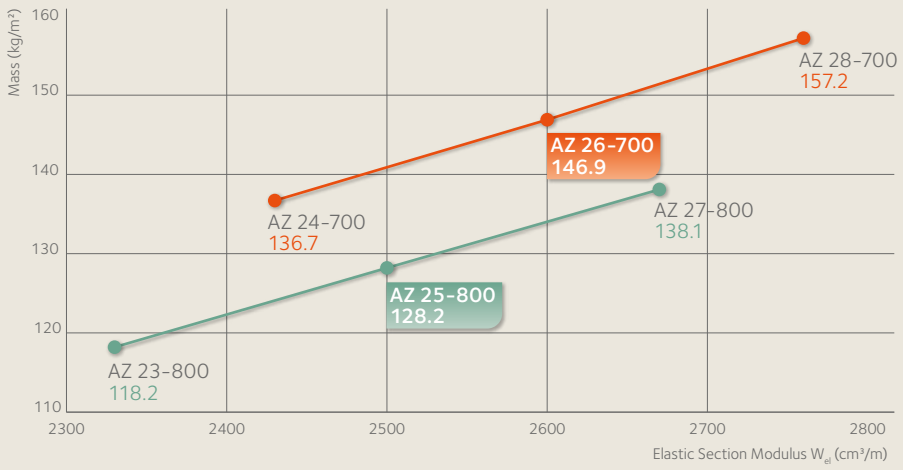
Section		S = Single pile D = Double pile	Sectional area	Mass	Moment of inertia	Elastic section modulus	Radius of gyration	Coating area*
			cm <sup>2</sup>	kg/m	cm <sup>4</sup>	cm <sup>3</sup>	cm	m <sup>2</sup> /m
<b>AZ<sup>®</sup>-800</b>								
<b>AZ 18-800</b>		Per S	102.9	<b>80.7</b>	33 055	<b>1 470</b>	17.93	1.04
		Per D	205.7	<b>161.5</b>	66 110	<b>2 945</b>	17.93	2.08
		Per m of wall	128.6	<b>100.9</b>	41 320	<b>1 840</b>	17.93	1.30
<b>AZ 20-800</b>		Per S	112.8	<b>88.6</b>	36 040	<b>1 600</b>	17.87	1.04
		Per D	225.6	<b>177.1</b>	72 070	<b>3 205</b>	17.87	2.08
		Per m of wall	141.0	<b>110.7</b>	45 050	<b>2 000</b>	17.87	1.30
<b>AZ 22-800</b>		Per S	122.8	<b>96.4</b>	39 035	<b>1 730</b>	17.83	1.04
		Per D	245.6	<b>192.8</b>	78 070	<b>3 460</b>	17.83	2.08
		Per m of wall	153.5	<b>120.5</b>	48 790	<b>2 165</b>	17.83	1.30
<b>AZ 23-800</b>		Per S	120.5	<b>94.6</b>	44 200	<b>1 865</b>	19.15	1.06
		Per D	241.0	<b>189.2</b>	88 410	<b>3 730</b>	19.15	2.11
		Per m of wall	150.6	<b>118.2</b>	55 260	<b>2 330</b>	19.15	1.32
<b>AZ 25-800</b>		Per S	130.6	<b>102.6</b>	47 530	<b>2 000</b>	19.07	1.06
		Per D	261.3	<b>205.1</b>	95 060	<b>4 005</b>	19.07	2.11
		Per m of wall	163.3	<b>128.2</b>	59 410	<b>2 500</b>	19.07	1.32
<b>AZ 27-800</b>		Per S	140.8	<b>110.5</b>	50 860	<b>2 135</b>	19.01	1.06
		Per D	281.6	<b>221.0</b>	101 720	<b>4 275</b>	19.01	2.11
		Per m of wall	176.0	<b>138.1</b>	63 570	<b>2 670</b>	19.01	1.32
<b>AZ<sup>®</sup>-750</b>								
<b>AZ 28-750</b>		Per S	128.4	<b>100.8</b>	53 650	<b>2 110</b>	20.44	1.06
		Per D	256.8	<b>201.6</b>	107 310	<b>4 215</b>	20.44	2.11
		Per m of wall	171.2	<b>134.4</b>	71 540	<b>2 810</b>	20.44	1.41
<b>AZ 30-750</b>		Per S	138.5	<b>108.8</b>	57 500	<b>2 255</b>	20.37	1.06
		Per D	277.1	<b>217.5</b>	115 000	<b>4 510</b>	20.37	2.11
		Per m of wall	184.7	<b>145.0</b>	76 670	<b>3 005</b>	20.37	1.41
<b>AZ 32-750</b>		Per S	148.7	<b>116.7</b>	61 350	<b>2 400</b>	20.31	1.06
		Per D	297.4	<b>233.5</b>	122 710	<b>4 805</b>	20.31	2.11
		Per m of wall	198.3	<b>155.6</b>	81 800	<b>3 200</b>	20.31	1.41
<b>AZ<sup>®</sup>-700</b>								
<b>AZ 48-700</b>		Per S	201.9	<b>158.5</b>	83 760	<b>3 330</b>	20.37	1.02
		Per D	403.8	<b>317.0</b>	167 510	<b>6 660</b>	20.37	2.04
		Per m of wall	288.4	<b>226.4</b>	119 650	<b>4 755</b>	20.37	1.46
<b>AZ 50-700</b>		Per S	211.8	<b>166.3</b>	87 430	<b>3 470</b>	20.32	1.02
		Per D	423.6	<b>332.5</b>	174 850	<b>6 940</b>	20.32	2.04
		Per m of wall	302.6	<b>237.5</b>	124 890	<b>4 955</b>	20.32	1.46
<b>AZ 52-700</b>		Per S	221.7	<b>174.1</b>	91 100	<b>3 610</b>	20.27	1.02
		Per D	443.5	<b>348.1</b>	182 200	<b>7 215</b>	20.27	2.04
		Per m of wall	316.8	<b>248.7</b>	130 140	<b>5 155</b>	20.27	1.46

\* One side, excluding inside of interlocks.

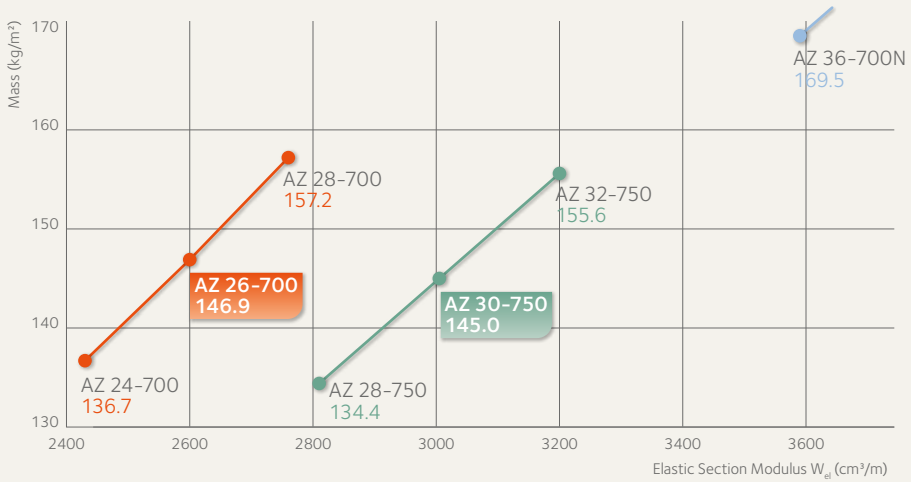
AZ 20-800



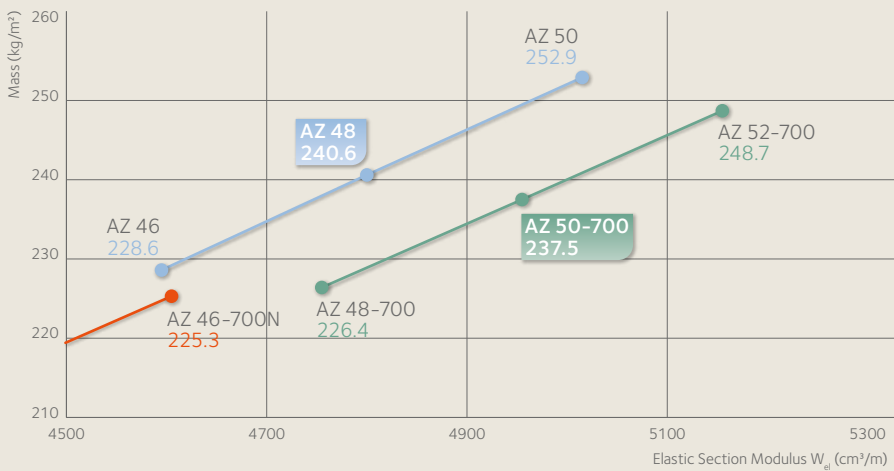
AZ 25-800



AZ 30-750



AZ 50-700



## Advantages of the new generation of AZ<sup>®</sup> profiles at a glance:

- Increased width reduces the required number of elements, handling and consequently leads to faster execution time
- Suitable for all types of soil conditions
- Excellent driveability
- Use of standard pile driving equipment
- Prefabricated elements that are quality-checked at the plant
- High strength steels enable the design of lighter sheet pile sections
- Higher moment of inertia reduces the overall deformations under loads
- Made from 100% recycled steel that can be re-used several times, and recycled
- “Made in Luxembourg” in a highly specialised sheet piling plant, which has been leading the way for over one hundred years