



ArcelorMittal

# Steel Sheet Piles

## GU Sections





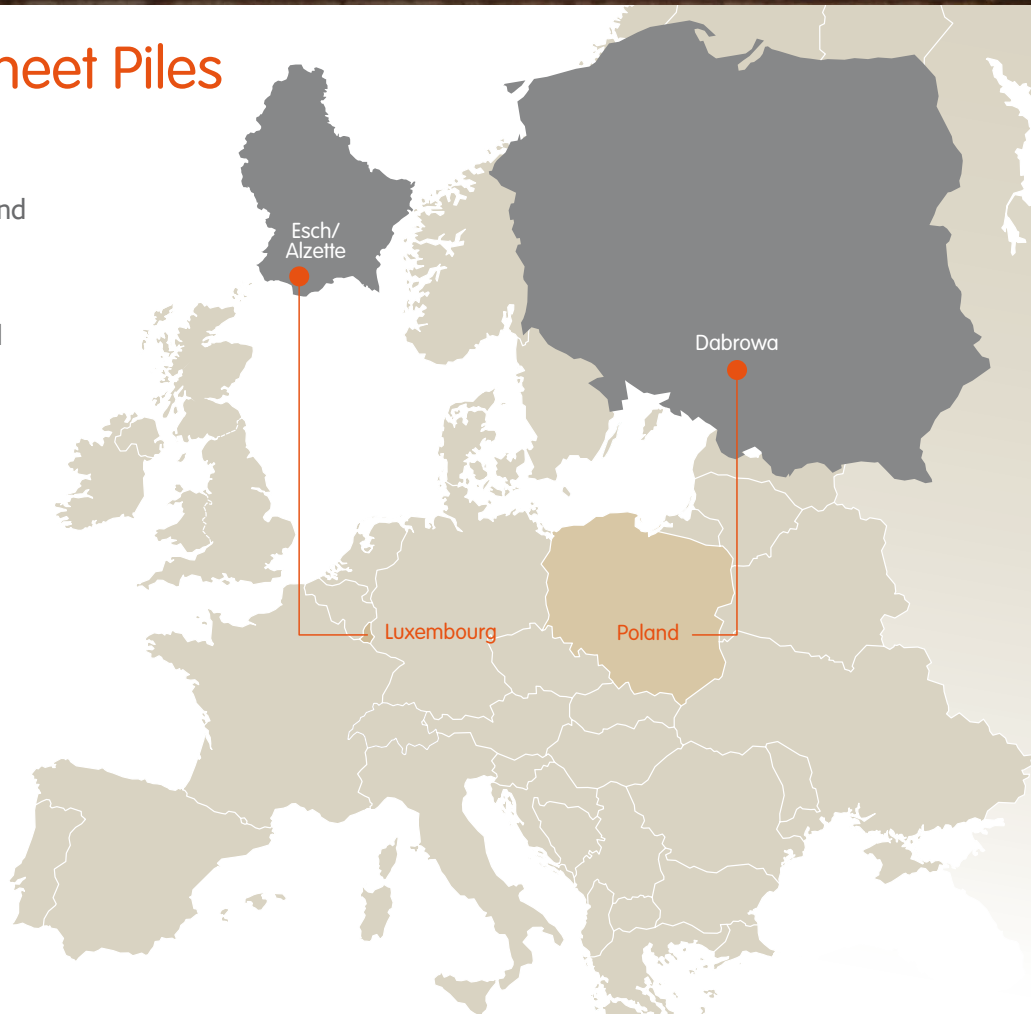
## Hot Rolled Steel Sheet Piles

Arcelor Mittal runs two mills manufacturing hot rolled steel sheet piles: Esch/Alzette in Luxembourg, and Dabrowa in Poland.

Formerly known as 'Huta Katowice', the mill in Poland produces hot rolled U-shaped steel sheet piles and other long products.

The production ranges from 400 mm, 500 mm up to 600 mm wide U-shapes conforming to the existing European standards.

A large inventory of steel sheet pile sections is kept in countries all over the world.



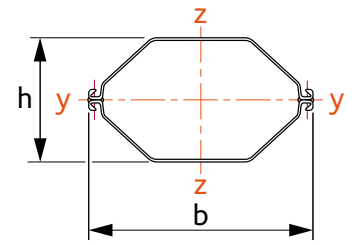
Name	Old name	Width	Height	Thickness		Sectional Area	Mass		Moment of Inertia	Elastic Section Modulus	Static Moment	Plastic section modulus	Class*			
		b	h	t	s		kg/m of single pile	kg/m <sup>2</sup> of wall					S 240 GP	S 270 GP	S 320 GP	S 355 GP
		mm	mm	mm	mm	cm <sup>2</sup> /m			cm <sup>4</sup> /m	cm <sup>3</sup> /m	cm <sup>3</sup> /m	cm <sup>3</sup> /m				
<b>GU 7-600</b>	G46	600	309.0	7.5	6.4	99.7	47.0	<b>78.3</b>	11 350	<b>735</b>	435	890	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>
<b>GU 8-600</b>	G46/P1	600	309.0	8.5	7.1	110.0	51.8	<b>86.4</b>	12 690	<b>820</b>	485	995	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>GU 9-600</b>	G46/P2	600	309.0	9.5	7.9	121.0	57.0	<b>95.0</b>	14 060	<b>910</b>	540	1 105	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>GU 12-500</b>	G61/C1	500	340.0	9.0	8.5	144.2	56.6	<b>113.2</b>	19 640	<b>1 155</b>	680	1 390	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>GU 13-500</b>	G61	500	340.0	10.0	9.0	155.0	60.8	<b>121.7</b>	21 390	<b>1 260</b>	740	1 515	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>GU 15-500</b>	G61/P2.1	500	340.0	12.0	10.0	176.5	69.3	<b>138.6</b>	24 810	<b>1 460</b>	855	1 755	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>GU 16-400</b>	G62	400	290.0	12.7	9.4	197.3	62.0	<b>154.9</b>	22 580	<b>1 560</b>	885	1 815	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>GU 18-400</b>	G62/P2	400	292.0	15.0	9.7	220.8	69.3	<b>173.3</b>	26 090	<b>1 785</b>	1 015	2 080	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>

The moment of inertia and section moduli values given assume correct shear transfer across the interlocks.

\* Classification according to EN 1993-5 (2006), chap. 5.2.1. & 5.2.2.

Class 1 is obtained by verification of the rotation capacity for a class-2 cross-section.

# CGU Box pile

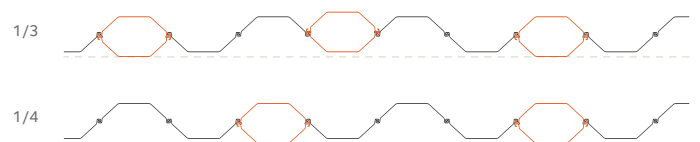
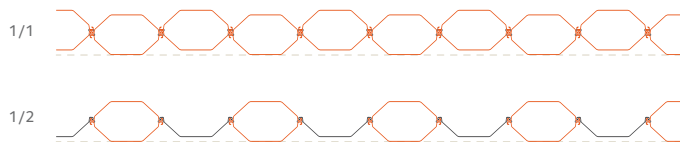


Name	Old name	b	h	Perimeter	Steel section	Total section	Mass *	Moment of Inertia		Elastic Section Modulus		i **	Coating Area ***
								y - y	z - z	y - y	z - z		
		mm	mm	cm	cm <sup>2</sup>	cm <sup>2</sup>	kg/m	cm <sup>4</sup>	cm <sup>4</sup>	cm <sup>3</sup>	cm <sup>3</sup>	cm	m <sup>2</sup> /m
<b>CGU 7-600</b>	G46	632	350.0	184	119.7	1 613	94.0	18 320	50 470	1 045	1 595	12.37	1.60
<b>CGU 8-600</b>	G46/P1	632	352.0	184	132.0	1 625	103.6	20 760	54 520	1 180	1 725	12.54	1.60
<b>CGU 9-600</b>	G46/P2	632	354.0	184	145.2	1 638	114.0	23 330	58 990	1 320	1 865	12.68	1.60
<b>CGU 12-500</b>	G61/C1	538	381.3	178	144.3	1 514	113.2	25 800	44 790	1 355	1 665	13.37	1.54
<b>CGU 13-500</b>	G61	538	383.3	179	155.0	1 525	121.7	28 420	47 370	1 485	1 760	13.54	1.54
<b>CGU 15-500</b>	G61/P2.1	538	387.3	180	176.5	1 546	138.6	33 750	52 570	1 740	1 955	13.83	1.54
<b>CGU 16-400</b>	G62	436	336.0	169	157.9	1 170	123.9	25 270	31 900	1 505	1 465	12.65	1.40
<b>CGU 18-400</b>	G62/P2	436	340.0	169	176.7	1 187	138.7	29 520	34 560	1 735	1 585	12.93	1.40

- \* The mass of the welds is not taken into account
- \*\* Minimum radius of gyration
- \*\*\* Outside surface, excluding inside of interlocks

## Combined walls

### CGU box piles – GU sheet piles



Section		1/1			1/2			1/3			1/4		
Name	Old name	Mass	Moment of Inertia	Elastic Section Modulus	Mass	Moment of Inertia	Elastic Section Modulus	Mass	Moment of Inertia	Elastic Section Modulus	Mass	Moment of Inertia	Elastic Section Modulus
		kg/m <sup>2</sup>	cm <sup>4</sup> /m	cm <sup>3</sup> /m	kg/m <sup>2</sup>	cm <sup>4</sup> /m	cm <sup>3</sup> /m	kg/m <sup>2</sup>	cm <sup>4</sup> /m	cm <sup>3</sup> /m	kg/m <sup>2</sup>	cm <sup>4</sup> /m	cm <sup>3</sup> /m
<b>GU 7-600</b>	G46	156.6	30 540	1 745	117.4	17 300	990	104.4	17 750	1 015	97.9	15 540	850
<b>GU 8-600</b>	G46/P1	172.7	34 600	1 965	129.5	19 520	1 110	115.1	19 990	1 135	107.9	17 480	955
<b>GU 9-600</b>	G46/P2	189.9	38 880	2 195	142.4	21 850	1 235	126.6	22 340	1 260	118.7	19 500	1 060
<b>GU 12-500</b>	G61/C1	226.5	51 590	2 705	169.9	29 390	1 540	151.0	30 290	1 590	141.5	26 590	1 325
<b>GU 13-500</b>	G61	243.3	56 830	2 965	182.5	32 290	1 685	162.2	33 200	1 730	152.1	29 110	1 445
<b>GU 15-500</b>	G61/P2.1	277.1	67 490	3 485	207.9	38 160	1 970	184.8	39 040	2 015	173.2	34 150	1 695
<b>GU 16-400</b>	G62	309.8	63 180	3 760	232.3	35 270	2 100	206.5	36 110	2 150	193.6	31 460	1 805
<b>GU 18-400</b>	G62/P2	346.7	73 800	4 340	260.0	41 010	2 410	231.1	41 990	2 470	216.7	36 530	2 075

# Delivery conditions

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## Steel grades

Steel grades	Yield point	Tensile strength
EN 10248 – Part 1	$f_{yk}$ (MPa)	$f_u$ (MPa)
<b>S 240 GP</b>	240	340
<b>S 270 GP</b>	270	410
<b>S 320 GP</b>	320	440
<b>S 355 GP *</b>	355	480

\* steel grade S 355 GP available upon request only.

## Rolling tolerances

Rolling tolerances based on EN10248-2.

## Maximum rolling lengths

Sheet piles can be delivered in single or double piles.

	Maximum rolling length
	m
Single piles	24
Double piles	22

Longer lengths may be supplied on request.

## Product certification

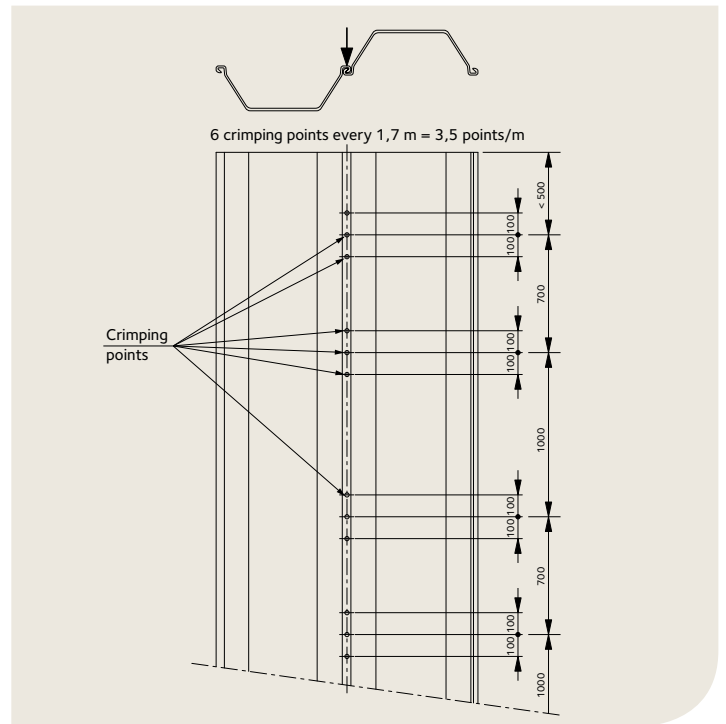
According to EN 10204.

The mill in Dabrowa is certified ISO 9001 and ISO 14001.



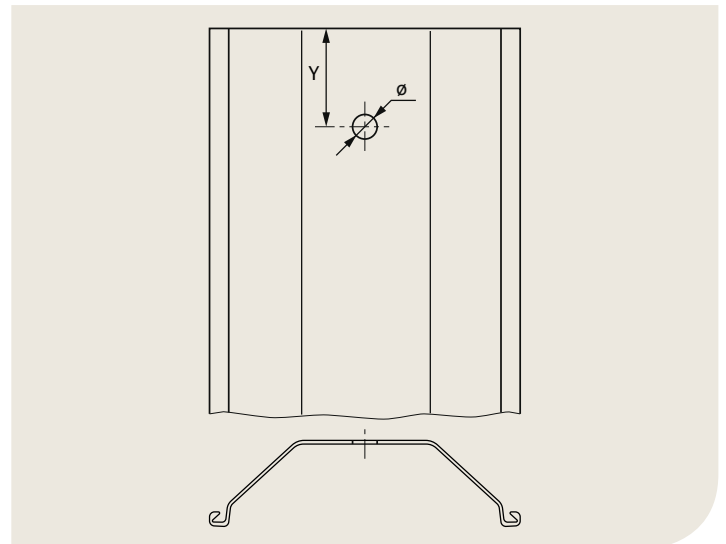
## Crimping

Double piles can be crimped on request. See sketch for details of standard crimping.



## Handling holes

On request:  $\phi = 50$  mm / Y = 200 mm



# Hot Rolled Steel Sheet Piles - Dabrowa, Poland

## Section properties

Name	Old name	S = Single pile D = Double pile T = Triple 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>GU 7-600</b>	<b>G 46</b>	Per S	59.8	<b>47.0</b>	2 440	<b>230</b>	6.39	0.76
		Per D	119.7	<b>94.0</b>	13 620	<b>880</b>	10.67	1.51
		Per T	179.5	<b>140.9</b>	18 980	<b>1 035</b>	10.28	2.27
		Per m of wall	99.7	<b>78.3</b>	11 350	<b>735</b>	10.67	1.26
<b>GU 8-600</b>	<b>G 46/P1</b>	Per S	66.0	<b>51.8</b>	2 670	<b>245</b>	6.36	0.76
		Per D	132.0	<b>103.6</b>	15 230	<b>985</b>	10.74	1.51
		Per T	198.0	<b>155.4</b>	21 190	<b>1 155</b>	10.35	2.27
		Per m of wall	110.0	<b>86.4</b>	12 690	<b>820</b>	10.74	1.26
<b>GU 9-600</b>	<b>G 46/P2</b>	Per S	72.6	<b>57.0</b>	2 900	<b>265</b>	6.32	0.76
		Per D	145.2	<b>114.0</b>	16 880	<b>1 090</b>	10.78	1.51
		Per T	217.8	<b>170.9</b>	23 470	<b>1 280</b>	10.38	2.27
		Per m of wall	121.0	<b>95.0</b>	14 060	<b>910</b>	10.78	1.26
<b>GU 12-500</b>	<b>G 61/C1</b>	Per S	72.1	<b>56.6</b>	3 600	<b>315</b>	7.06	0.73
		Per D	144.3	<b>113.2</b>	19 640	<b>1 155</b>	11.67	1.44
		Per T	216.4	<b>169.9</b>	27 390	<b>1 365</b>	11.25	2.16
		Per m of wall	144.3	<b>113.2</b>	19 640	<b>1 155</b>	11.67	1.44
<b>GU 13-500</b>	<b>G 61</b>	Per S	77.5	<b>60.8</b>	3 870	<b>335</b>	7.07	0.73
		Per D	155.0	<b>121.7</b>	21 390	<b>1 260</b>	11.75	1.44
		Per T	232.5	<b>182.5</b>	29 810	<b>1 480</b>	11.32	2.16
		Per m of wall	155.0	<b>121.7</b>	21 390	<b>1 260</b>	11.75	1.44
<b>GU 15-500</b>	<b>G 61/P2.1</b>	Per S	88.3	<b>69.3</b>	4 420	<b>370</b>	7.07	0.73
		Per D	176.5	<b>138.6</b>	24 810	<b>1 460</b>	11.86	1.44
		Per T	264.8	<b>207.9</b>	34 550	<b>1 715</b>	11.42	2.16
		Per m of wall	176.5	<b>138.6</b>	24 810	<b>1 460</b>	11.86	1.44
<b>GU 16-400</b>	<b>G 62</b>	Per S	78.9	<b>62.0</b>	2 950	<b>265</b>	6.11	0.65
		Per D	157.9	<b>123.9</b>	18 060	<b>1 245</b>	10.70	1.28
		Per T	236.8	<b>185.9</b>	25 060	<b>1 440</b>	10.29	1.92
		Per m of wall	197.3	<b>154.9</b>	22 580	<b>1 560</b>	10.70	1.60
<b>GU 18-400</b>	<b>G 62/P2</b>	Per S	88.3	<b>69.3</b>	3 290	<b>290</b>	6.10	0.65
		Per D	176.7	<b>138.7</b>	20 870	<b>1 430</b>	10.87	1.28
		Per T	265.0	<b>208.0</b>	28 920	<b>1 645</b>	10.45	1.92
		Per m of wall	220.8	<b>173.3</b>	26 090	<b>1 785</b>	10.87	1.60

Neutral axis: Single pile: y' - y'  
 Double piles & wall: y - y  
 Triple piles: y'' - y''

ArcelorMittal

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