

<b>DECLARATION OF PERFORMANCE</b>		
<b>NR. 0101/001</b>		<b>Rel. 0</b>
Product Identification Code	Welded tube made of structural steel S235JRH in accordance with EN10219	
Identification	According to the information stated on the ID label with barcode and/or bundle number and in the inspection certificate.	
Intended use of the construction product	Cold formed welded structural hollow sections of circular, square, or rectangular shape without subsequent heat treatment.	
Manufacturer (registered office)	<b>Marcegaglia S.p.A.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) – Italia	
Production Plant	<b>Gazoldo d.l.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) - Italia	
System of assessment and verification of the continuity of performance of the construction product	<b>2+</b>	
Name and ID number of the notified Body	RINA Service S.p.A. – Via Corsica, 12 – 16128 Genova - Italia <b>0474</b>	
Certificates of Conformity for the control of the plant production have been issued for the following elements: <ul style="list-style-type: none"> <li>• starting inspection of the production plant and of the factory production control.</li> <li>• surveillance, evaluation and regular audits of the factory production control.</li> </ul>		
<b>DECLARED PERFORMANCE</b>		
Main Features	Performance	Harmonised specification
Dimensional Tolerances	As per Table 2	EN10219-2:2006
Elongation	As per Table 1	EN10219-1:2006
Tensile strength		
Yield strength		
Impact strength		
Weldability (CEV)	0.35% max	
Durability	N.P.D.	
This declaration of performance is issued under the sole responsibility of the manufacturer identified above.		
Signed for and on behalf of Marcegaglia S.p.A. by:		
<b>Arnaldo Ing. Barini</b> Gazoldo D.l. Plant Manager		Gazoldo D.l. 01/07/2013
This declaration of performance is valid only in presence of the product identification label and delivery document or of the inspection certificate issued after delivery.		

**Table 1 – Mechanical properties**

Steel grade		Minimum yield strength R <sub>0H</sub>	Tensile strength R <sub>m</sub>		Minimum elongation % <sup>(e)</sup>	Minimum impact energy		
Steel name	Steel number	[MPa]	[MPa]		Lo=5.65√So	KV in J <sup>(d)</sup>		
		Nominal thickness in mm					Test temperature	impact energy
		≤ 16	< 3	≥ 3 ≤ 40	≤ 40	20°		
S235JRH <sup>(e)</sup>	1.0039	235	360+510	360+510	24 <sup>(b)</sup>	20°	27	

a. Impact properties are verified only when option 1.3 is specified in the Order.  
 b. See below exceptions:  
 For thickness > 3 mm and D/T section sizes < 15 (round) and (B+H)/2T < 12,5 (square and rectangular) the minimum elongation is reduced by 2.  
 For thickness ≤ 3,0 mm the minimum value for elongation is 17%  
 c. For thickness < 3,0 mm the percentage elongation may be reported for a length of 80 mm or 50 mm  
 d. Impact test, when applicable or required, shall be carried out in accordance with EN10219-1. Impact test are not required for nominal thickness < 6 mm.

**Table 2 – Dimensional Tolerances**

Outside dimensions (D, B and H) <sup>(4)</sup>	Circular hollow sections	Square and rectangular hollow sections
		± 1% with a minimum of ± 0,5 mm and a maximum of ± 10 mm
Thickness (T)	For D ≤ 406,4 mm: T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5mm per D > 406,4 mm ± 10% with a maximum ± 2mm	T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5 mm
Out of roundness (O)	2% for hollow sections having a D/T ≤ 100 <sup>(1)</sup> using the formula: $O(\%) = \frac{D_{max} - D_{min}}{D} * 100$	
Concavity/Convexity (x <sub>1</sub> , x <sub>2</sub> ) <sup>(2)</sup>	-	Max. 0,8% with a minimum of 0,5% using the formula: $\frac{x1}{B} * 100\%$ ; $\frac{x1}{H} * 100\%$ ; etc.
Squareness of side (θ)	-	90° ± 1°
External corner profile (C <sub>1</sub> , C <sub>2</sub> or R)	-	T ≤ 6 mm ⇒ 1,6T + 2,4T 6 < T ≤ 10mm ⇒ 2,0T + 3,0T T > 10mm ⇒ 2,4T + 3,6T
Twist (V)	-	2mm plus 0,5 mm/m length
Straightness (e)	0,20 % of total length and 3 mm over any 1 m length	0,15 % of total length and 3 mm over any 1 m length
Mass (M)	± 6 % on individual delivered lengths	
Tolerances on length <sup>(3)</sup>	Exact lengths	< 6000mm ⇒ 0; + 5 mm
		≥ 6000mm e ≤ 10000mm ⇒ 0; + 15 mm
		> 10000mm ⇒ 0; + 5 mm + 1mm/m
	Approximate length	> 4000mm ⇒ 0; + 50 mm
T > 14,2 mm	4,8 mm max.	

- Where D/T is > 100 the tolerances on out of roundness shall be subject to specific agreement.
- The tolerance on convexity and concavity is independent of the tolerance on outside dimensions.
- At the time of enquiry and order the manufacturer shall establish the type of required length and the range or lengths.
- All dimensions shall be measured at the minimum distance of 100 mm from the ends of the hollow section.

<b>DECLARATION OF PERFORMANCE</b>		
<b>NR. 0101/002</b>		<b>Rel. 0</b>
Product Identification Code	Welded tube made of structural steel S275J0H in accordance with EN10219	
Identification	According to the information stated on the ID label with barcode and/or bundle number and in the inspection certificate.	
Intended use of the construction product	Cold formed welded structural hollow sections of circular, square, or rectangular shape without subsequent heat treatment.	
Manufacturer (registered office)	<b>Marcegaglia S.p.A.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) – Italia	
Production Plant	<b>Gazoldo d.I.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) - Italia	
System of assessment and verification of the continuity of performance of the construction product	<b>2+</b>	
Name and ID number of the notified Body	RINA Service S.p.A. – Via Corsica, 12 – 16128 Genova - Italia <b>0474</b>	
Certificates of Conformity for the control of the plant production have been issued for the following elements: <ul style="list-style-type: none"> <li>• starting inspection of the production plant and of the factory production control.</li> <li>• surveillance, evaluation and regular audits of the factory production control.</li> </ul>		
<b>DECLARED PERFORMANCE</b>		
Main Features	Performance	Harmonised specification
Dimensional Tolerances	As per Table 2	EN10219-2:2006
Elongation	As per Table 1	EN10219-1:2006
Tensile strength		
Yield strength		
Impact strength		
Weldability (CEV)	0.40% max	
Durability	N.P.D.	
This declaration of performance is issued under the sole responsibility of the manufacturer identified above.		
Signed for and on behalf of Marcegaglia S.p.A. by:		
<b>Arnaldo Ing. Barini</b> Gazoldo D.I. Plant Manager		Gazoldo D.I. 01/07/2013
This declaration of performance is valid only in presence of the product identification label and delivery document or of the inspection certificate issued after delivery.		

**Table 1 – Mechanical properties**

Steel grade		Minimum yield strength R <sub>0,2H</sub>	Tensile strength R <sub>m</sub>		Minimum elongation % <sup>(c)</sup>	Minimum impact energy	
Steel name	Steel number	[MPa]	[MPa]		Lo=5.65√S <sub>0</sub>	KV in J <sup>(d)</sup>	
		Nominal thickness in mm				≤ 40	Test temperature
		≤ 16	< 3	≥ 3 ≤ 40			
S275J0H <sup>(a)</sup>	1.0149	275	430+580	410+580	20 <sup>(b)</sup>	0°	27

a. Impact properties are verified only when option 1.3 is specified in the Order.  
 b. See below exceptions:  
 For thickness > 3 mm and D/T section sizes < 15 (round) and (B+H)/2T < 12,5 (square and rectangular) the minimum elongation is reduced by 2.  
 For thickness ≤ 3,0 mm the minimum value for elongation is 17%  
 c. For thickness < 3,0 mm the percentage elongation may be reported for a length of 80 mm or 50 mm  
 d. Impact test, when applicable or required, shall be carried out in accordance with EN10219-1. Impact test are not required for nominal thickness < 6 mm.

**Table 2 – Dimensional Tolerances**

Outside dimensions (D, B and H) <sup>(4)</sup>	Circular hollow sections	Square and rectangular hollow sections
		± 1% with a minimum of ± 0,5 mm and a maximum of ± 10 mm
Thickness (T)	For D ≤ 406,4 mm: T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5mm per D > 406,4 mm ± 10% with a max ± 2mm	T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5 mm
Out of roundness (O)	2% for hollow sections having a D/T ≤ 100 <sup>(1)</sup> using the formula: $O(\%) = \frac{D_{max} - D_{min}}{D} * 100$	
Concavity/Convexity (x <sub>1</sub> , x <sub>2</sub> ) <sup>(2)</sup>	-	Max. 0,8% with a minimum of 0,5% using the formula: $\frac{x_1}{B} * 100\%$ ; $\frac{x_2}{H} * 100\%$ ; etc.
Squareness of side (θ)	-	90° ± 1°
External corner profile (C <sub>1</sub> , C <sub>2</sub> or R)	-	T ≤ 6 mm ⇒ 1,6T + 2,4T 6 < T ≤ 10mm ⇒ 2,0T + 3,0T T > 10mm ⇒ 2,4T + 3,6T
Twist (V)	-	2mm plus 0,5 mm/m length
Straightness (e)	0,20 % of total length and 3 mm over any 1 m length	0,15 % of total length and 3 mm over any 1 m length
Mass (M)	± 6 % on individual delivered lengths	
Tolerances on length <sup>(3)</sup>	Exact lengths	< 6000mm ⇒ 0; + 5 mm
		≥ 6000mm e ≤ 10000mm ⇒ 0; + 15 mm
		> 10000mm ⇒ 0; + 5 mm + 1mm/m
	Approximate length	> 4000mm ⇒ 0; + 50 mm
	T > 14,2 mm	4,8 mm max.

1. Where D/T is > 100 the tolerances on out of roundness shall be subject to specific agreement.  
 2. The tolerance on convexity and concavity is independent of the tolerance on outside dimensions.  
 3. At the time of enquiry and order the manufacturer shall establish the type of required length and the range or lengths.  
 4. All dimensions shall be measured at the minimum distance of 100 mm from the ends of the hollow section.

<b>DECLARATION OF PERFORMANCE</b>		
<b>NR. 0101/003</b>		<b>Rel. 0</b>
Product Identification Code	Welded tube made of structural steel S275J2H in accordance with EN10219	
Identification	According to the information stated on the ID label with barcode and/or bundle number and in the inspection certificate.	
Intended use of the construction product	Cold formed welded structural hollow sections of circular, square, or rectangular shape without subsequent heat treatment.	
Manufacturer (registered office)	<b>Marcegaglia S.p.A.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) – Italia	
Production Plant	<b>Gazoldo d.l.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) - Italia	
System of assessment and verification of the continuity of performance of the construction product	<b>2+</b>	
Name and ID number of the notified Body	RINA Service S.p.A. – Via Corsica, 12 – 16128 Genova - Italia <b>0474</b>	
Certificates of Conformity for the control of the plant production have been issued for the following elements: <ul style="list-style-type: none"> <li>• starting inspection of the production plant and of the factory production control.</li> <li>• surveillance, evaluation and regular audits of the factory production control.</li> </ul>		
<b>DECLARED PERFORMANCE</b>		
Main Features	Performance	Harmonised specification
Dimensional Tolerances	As per Table 2	EN10219-2:2006
Elongation	As per Table 1	EN10219-1:2006
Tensile strength		
Yield strength		
Impact strength		
Weldability (CEV)	0.40% max	
Durability	N.P.D.	
This declaration of performance is issued under the sole responsibility of the manufacturer identified above.		
Signed for and on behalf of Marcegaglia S.p.A. by:		
<b>Arnaldo Ing. Barini</b> Gazoldo D.l. Plant Manager		<i>Gazoldo D.l. 01/07/2013</i>
This declaration of performance is valid only in presence of the product identification label and delivery document or of the inspection certificate issued after delivery.		

**Table 1 – Mechanical properties**

Steel grade		Minimum yield strength R <sub>eH</sub>	Tensile strength R <sub>m</sub>		Minimum elongation % <sup>(c)</sup>	Minimum impact energy	
Steel name	Steel number	[MPa]	[MPa]		Lo=5.65√So <sup>c</sup>	KV in J <sup>(d)</sup>	
		Nominal thickness in mm					Test temperature
		≤ 16	< 3	≥ 3 ≤ 40	≤ 40		
S275J2H <sup>(a)</sup>	1.0138	275	430+580	410+580	20 <sup>(b)</sup>	- 20°	27

a. Impact properties are verified only when option 1.3 is specified in the Order.  
 b. See below exceptions:  
 For thickness > 3 mm and D/T section sizes < 15 (round) and (B+H)/2T < 12,5 (square and rectangular) the minimum elongation is reduced by 2.  
 For thickness ≤ 3,0 mm the minimum value for elongation is 17%  
 c. For thickness < 3,0 mm the percentage elongation may be reported for a length of 80 mm or 50 mm  
 d. Impact test, when applicable or required, shall be carried out in accordance with EN10219-1. Impact test are not required for nominal thickness < 6 mm.

**Table 2 – Dimensional Tolerances**

Outside dimensions (D, B and H) <sup>(4)</sup>	Circular hollow sections	Square and rectangular hollow sections
		± 1% with a minimum of ± 0,5 mm and a maximum of ± 10 mm
Thickness (T)	For D ≤ 406,4 mm: T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5mm	T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5 mm
	per D > 406,4 mm ± 10% with a max ± 2mm	
Out of roundness (O)	2% for hollow sections having a D/T ≤ 100 <sup>(1)</sup> using the formula: $O(\%) = \frac{D_{max} - D_{min}}{D} * 100$	
Concavity/Convexity (x <sub>1</sub> , x <sub>2</sub> ) <sup>(2)</sup>	-	Max. 0,8% with a minimum of 0,5% using the formula: $\frac{x_1}{B} * 100\%$ ; $\frac{x_1}{H} * 100\%$ ; etc.
Squareness of side (θ)	-	90° ± 1°
External corner profile (C <sub>1</sub> , C <sub>2</sub> or R)	-	T ≤ 6 mm ⇒ 1,6T + 2,4T
		6 < T ≤ 10mm ⇒ 2,0T + 3,0T
		T > 10mm ⇒ 2,4T + 3,6T
Twist (V)	-	2mm plus 0,5 mm/m length
Straightness (e)	0,20 % of total length and 3 mm over any 1 m length	0,15 % of total length and 3 mm over any 1 m length
Mass (M)	± 6 % on individual delivered lengths	
Tolerances on length <sup>(3)</sup>	Exact lengths	< 6000mm ⇒ 0; + 5 mm
		≥ 6000mm e ≤ 10000mm ⇒ 0; + 15 mm
		> 10000mm ⇒ 0; + 5 mm + 1mm/m
	Approximate length	> 4000mm ⇒ 0; + 50 mm
T > 14,2 mm	4,8 mm max.	

1. Where D/T is > 100 the tolerances on out of roundness shall be subject to specific agreement.  
 2. The tolerance on convexity and concavity is independent of the tolerance on outside dimensions.  
 3. At the time of enquiry and order the manufacturer shall establish the type of required length and the range or lengths.  
 4. All dimensions shall be measured at the minimum distance of 100 mm from the ends of the hollow section.

<b>DECLARATION OF PERFORMANCE</b>		
<b>NR. 0101/004</b>		<b>Rel. 0</b>
Product Identification Code	Welded tube made of structural steel S355J0H in accordance with EN10219	
Identification	According to the information stated on the ID label with barcode and/or bundle number and in the inspection certificate.	
Intended use of the construction product	Cold formed welded structural hollow sections of circular, square, or rectangular shape without subsequent heat treatment.	
Manufacturer (registered office)	<b>Marcegaglia S.p.A.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) – Italia	
Production Plant	<b>Gazoldo d.l.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) - Italia	
System of assessment and verification of the continuity of performance of the construction product	<b>2+</b>	
Name and ID number of the notified Body	RINA Service S.p.A. – Via Corsica, 12 – 16128 Genova - Italia <b>0474</b>	
Certificates of Conformity for the control of the plant production have been issued for the following elements: <ul style="list-style-type: none"> <li>• starting inspection of the production plant and of the factory production control.</li> <li>• surveillance, evaluation and regular audits of the factory production control.</li> </ul>		
<b>DECLARED PERFORMANCE</b>		
Main Features	Performance	Harmonised specification
Dimensional Tolerances	As per Table 2	EN10219-2:2006
Elongation	As per Table 1	EN10219-1:2006
Tensile strength		
Yield strength		
Impact strength		
Weldability (CEV)	0.45% max	
Durability	N.P.D.	
This declaration of performance is issued under the sole responsibility of the manufacturer identified above.		
Signed for and on behalf of Marcegaglia S.p.A. by:		
<i>Arnaldo Ing. Barini</i> Gazoldo D.l. Plant Manager		Gazoldo D.l. 01/07/2013
This declaration of performance is valid only in presence of the product identification label and delivery document or of the inspection certificate issued after delivery.		

**Table 1 – Mechanical properties**

Steel grade		Minimum yield strength R <sub>eH</sub>	Tensile strength R <sub>m</sub>		Minimum elongation % <sup>(c)</sup>	Minimum impact energy	
Steel name	Steel number	[MPa]	[MPa]		Lo=5.65√So <sup>a</sup>	KV in J <sup>(d)</sup>	
		Nominal thickness in mm					Test temperature
≤ 16	< 3	≥ 3 ≤ 40	≤ 40				
S355J0H <sup>(a)</sup>	1.0547	355	510+680	470+630	20 <sup>(b)</sup>	0°	27

a. Impact properties are verified only when option 1.3 is specified in the Order.  
 b. See below exceptions:  
 For thickness > 3 mm and D/T section sizes < 15 (round) and (B+H)/2T < 12,5 (square and rectangular) the minimum elongation is reduced by 2.  
 For thickness ≤ 3,0 mm the minimum value for elongation is 17%  
 c. For thickness < 3,0 mm the percentage elongation may be reported for a length of 80 mm or 50 mm  
 d. Impact test, when applicable or required, shall be carried out in accordance with EN10219-1. Impact test are not required for nominal thickness < 6 mm.

**Table 2 – Dimensional Tolerances**

Outside dimensions (D, B and H) <sup>(4)</sup>	Circular hollow sections	Square and rectangular hollow sections
		± 1% with a minimum of ± 0,5 mm and a maximum of ± 10 mm
Thickness (T)	For D ≤ 406,4 mm: T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5mm	T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5 mm
	per D > 406,4 mm ± 10% with a max ± 2mm	
Out of roundness (O)	2% for hollow sections having a D/T ≤ 100 <sup>(1)</sup> using the formula: $O(\%) = \frac{D_{max} - D_{min}}{D} * 100$	
Concavity/Convexity (x <sub>1</sub> , x <sub>2</sub> ) <sup>(2)</sup>	-	Max. 0,8% with a minimum of 0,5% using the formula: $\frac{x_1}{B} * 100\%$ ; $\frac{x_1}{H} * 100\%$ ; etc.
Squareness of side (θ)	-	90° ± 1°
External corner profile (C <sub>1</sub> , C <sub>2</sub> or R)	-	T ≤ 6 mm ⇒ 1,6T + 2,4T
	-	6 < T ≤ 10mm ⇒ 2,0T + 3,0T
	-	T > 10mm ⇒ 2,4T + 3,6T
Twist (V)	-	2mm plus 0,5 mm/m length
Straightness (e)	0,20 % of total length and 3 mm over any 1 m length	0,15 % of total length and 3 mm over any 1 m length
Mass (M)	± 6 % on individual delivered lengths	
Tolerances on length <sup>(3)</sup>	Exact lengths	< 6000mm ⇒ 0; + 5 mm
		≥ 6000mm e ≤ 10000mm ⇒ 0; + 15 mm
		> 10000mm ⇒ 0; + 5 mm + 1mm/m
	Approximate length	> 4000mm ⇒ 0; + 50 mm
	T > 14,2 mm	4,8 mm max.

1. Where D/T is > 100 the tolerances on out of roundness shall be subject to specific agreement.  
 2. The tolerance on convexity and concavity is independent of the tolerance on outside dimensions.  
 3. At the time of enquiry and order the manufacturer shall establish the type of required length and the range or lengths.  
 4. All dimensions shall be measured at the minimum distance of 100 mm from the ends of the hollow section.



<b>DECLARATION OF PERFORMANCE</b>		
<b>NR. 0101/005</b>		<b>Rel. 0</b>
Product Identification Code	Welded tube made of structural steel S355J2H in accordance with EN10219	
Identification	According to the information stated on the ID label with barcode and/or bundle number and in the inspection certificate.	
Intended use of the construction product	Cold formed welded structural hollow sections of circular, square, or rectangular shape without subsequent heat treatment.	
Manufacturer (registered office)	<b>Marcegaglia S.p.A.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) – Italia	
Production Plant	<b>Gazoldo d.I.</b> Via Bresciani, 16 – 46040 Gazoldo degli Ippoliti (MN) - Italia	
System of assessment and verification of the continuity of performance of the construction product	<b>2+</b>	
Name and ID number of the notified Body	RINA Service S.p.A. – Via Corsica, 12 – 16128 Genova - Italia <b>0474</b>	
Certificates of Conformity for the control of the plant production have been issued for the following elements: <ul style="list-style-type: none"> <li>• starting inspection of the production plant and of the factory production control.</li> <li>• surveillance, evaluation and regular audits of the factory production control.</li> </ul>		
<b>DECLARED PERFORMANCE</b>		
Main Features	Performance	Harmonised specification
Dimensional Tolerances	As per Table 2	EN10219-2:2006
Elongation	As per Table 1	EN10219-1:2006
Tensile strength		
Yield strength		
Impact strength		
Weldability (CEV)	0.45% max	
Durability	N.P.D.	
This declaration of performance is issued under the sole responsibility of the manufacturer identified above.		
Signed for and on behalf of Marcegaglia S.p.A. by:		
<i>Arnaldo Ing. Barini</i> Gazoldo D.I. Plant Manager		<i>Gazoldo D.I. 01/07/2013</i>
This declaration of performance is valid only in presence of the product identification label and delivery document or of the inspection certificate issued after delivery.		

**Table 1 – Mechanical properties**

Steel grade		Minimum yield strength R <sub>eH</sub>	Tensile strength R <sub>m</sub>		Minimum elongation % <sup>(c)</sup>	Minimum impact energy	
Steel name	Steel number	[MPa]	[MPa]		Lo=5.65√So	KV in J <sup>(d)</sup>	
		Nominal thickness in mm				≤ 40	Test temperature
		≤ 16	< 3	≥ 3 ≤ 40			
S355J2H <sup>(a)</sup>	1.0576	355	510+680	470+630	20 <sup>(b)</sup>	- 20°	27

a. Impact properties are verified only when option 1.3 is specified in the Order.  
 b. See below exceptions:  
 For thickness > 3 mm and D/T section sizes < 15 (round) and (B+H)/2T < 12,5 (square and rectangular) the minimum elongation is reduced by 2.  
 For thickness ≤ 3,0 mm the minimum value for elongation is 17%  
 c. For thickness < 3,0 mm the percentage elongation may be reported for a length of 80 mm or 50 mm  
 d. Impact test, when applicable or required, shall be carried out in accordance with EN10219-1. Impact test are not required for nominal thickness < 6 mm.

**Table 2 – Dimensional Tolerances**

Outside dimensions (D, B and H) <sup>(4)</sup>	Circular hollow sections	Square and rectangular hollow sections
		± 1% with a minimum of ± 0,5 mm and a maximum of ± 10 mm
Thickness (T)	For D ≤ 406,4 mm: T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5mm	T ≤ 5 mm ⇒ ± 10% T > 5 mm ⇒ ± 0,5 mm
	per D > 406,4 mm ± 10% with a max ± 2mm	
Out of roundness (O)	2% for hollow sections having a D/T ≤ 100 <sup>(1)</sup> using the formula: $O(\%) = \frac{D_{max} - D_{min}}{D} * 100$	
Concavity/Convexity (x <sub>1</sub> , x <sub>2</sub> ) <sup>(2)</sup>	-	Max. 0,8% with a minimum of 0,5% using the formula: $\frac{x_1}{B} * 100\%$ ; $\frac{x_1}{H} * 100\%$ ; etc.
Squareness of side (θ)	-	90° ± 1°
External corner profile (C <sub>1</sub> , C <sub>2</sub> or R)	-	T ≤ 6 mm ⇒ 1,6T + 2,4T
	-	6 < T ≤ 10mm ⇒ 2,0T + 3,0T
	-	T > 10mm ⇒ 2,4T + 3,6T
Twist (V)	-	2mm plus 0,5 mm/m length
Straightness (e)	0,20 % of total length and 3 mm over any 1 m length	0,15 % of total length and 3 mm over any 1 m length
Mass (M)	± 6 % on individual delivered lengths	
Tolerances on length <sup>(3)</sup>	Exact lengths	< 6000mm ⇒ 0; + 5 mm
		≥ 6000mm e ≤ 10000mm ⇒ 0; + 15 mm
		> 10000mm ⇒ 0; + 5 mm + 1mm/m
	Approximate length	> 4000mm ⇒ 0; + 50 mm
	T > 14,2 mm	4,8 mm max.

1. Where D/T is > 100 the tolerances on out of roundness shall be subject to specific agreement.  
 2. The tolerance on convexity and concavity is independent of the tolerance on outside dimensions.  
 3. At the time of enquiry and order the manufacturer shall establish the type of required length and the range or lengths.  
 4. All dimensions shall be measured at the minimum distance of 100 mm from the ends of the hollow section.