



Certificate No : MD00/1825/0012/1

**THYSSENKRUPP STEEL EUROPE AG**  
**Works Duisburg-Süd**  
**Kaiser-Wilhelm-Straße 100**  
**D-47166 Duisburg**  
**Germany**

has been approved as a manufacturer in accordance with the requirements of Lloyd's Register for :-

**Steel Plates and Plates from coils**

This approval is subject to compliance with the Rules for the Manufacture, Testing and Certification of Materials. The full details of the processes and grades to which this approval applies are given in the Appendices 1 to 3 of this certificate.

Lloyd's Register is to be notified of any change that may affect the validity of this Certificate.

This Certificate is issued to the above manufacturer and is valid until the date given below.

**Valid Until : 17 August 2020**  
**Date of Issue : 30 August 2017**

A blue ink handwritten signature, appearing to read "Lili Hou", is written over a horizontal line.

**Lili Hou**  
Senior Specialist to Lloyd's Register EMEA  
A member of the Lloyd's Register group



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Appendix 1

THYSSENKRUPP STEEL EUROPE AG  
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Plates	Normal Strength	Grades	mm thickness Maximum
As Rolled	Fine Grain Al	D	35.0
As Rolled	Fine Grain Al	A, B	150.0
Normalized	Fine Grain Al	A, B, D, E	150.0
Normalizing Rolled	Fine Grain Al	A, B, D	80.0
Plates	Higher Strength	Grades	mm thickness Maximum
As Rolled	Fine Grain Al	DH27S, DH32, DH36	25.0
As Rolled	Fine Grain Al	AH27S, AH32, AH36	35.0
Normalized	Fine Grain Al	FH27S, FH32, FH36	50.0
Normalized	Fine Grain Al	AH27S, AH32, AH36, DH27S, DH32, DH36, EH27S, EH32, EH36	100.0
Normalizing Rolled	Fine Grain Al+Nb+Ti	AH27S, AH32, AH36, DH27S, DH32, DH36, EH27S, EH32, EH36	55.0
Normalizing Rolled	Fine Grain Al	AH27S, AH32, AH36, DH27S, DH32, DH36	50.0
TM+Acc	Fine Grain Al+Nb+Ti	AH27S, AH32, AH36, AH40, DH27S, DH32, DH36, DH40, EH27S, EH32, EH36, EH40	60.0
TM+Acc	Fine Grain Al	AH27S, AH32, AH36, DH27S, DH32, DH36, EH27S, EH32, EH36	70.0
Thermo Mechanical	Fine Grain Al+Nb+Ti	AH27S, AH32, AH36, AH40, DH27S, DH32, DH36, DH40, EH27S, EH32, EH36, EH40	35.0
Thermo Mechanical	Fine Grain Al	AH27S, AH32, AH36, DH27S, DH32, DH36, EH27S, EH32, EH36	31.0
Plates	Boiler & Pressure Vessel	Grades	mm thickness Maximum
As Rolled	Killed	360AR, 410AR	40.0
Normalized	Fine Grain Al	360FG, 410FG, 460FG, 490FG, 510FG	100.0

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Appendix 2

THYSSENKRUPP STEEL EUROPE AG  
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			mm thickness Maximum
<b>Plates</b>	<b>Boiler &amp; Pressure Vessel</b>	<b>Grades</b>	
Normalized	Killed	360, 410	100.0
Normalizing Rolled	Fine Grain Al+Nb+Ti	360FG, 410FG, 460FG, 490FG, 510FG	55.0
Normalizing Rolled	Fine Grain Al	460FG, 490FG, 510FG	50.0
Normalizing Rolled	Fine Grain Al	360FG, 410FG	80.0
<b>Plates</b>	<b>Ferritic Low Temperature</b>	<b>Grades</b>	<b>mm thickness Maximum</b>
Normalized	Fine Grain Al	LTAH27S, LTAH32, LTAH36, LTDH27S, LTDH32, LTDH36, LTEH27S, LTEH32, LTEH36, LTFH27S, LTFH32, LTFH36	50.0
Quenched and Tempered	Fine Grain Al	5Ni	50.0
Quenched and Tempered	-	9Ni	50.0
<b>Plates</b>	<b>Duplex Stainless</b>	<b>Grades</b>	<b>mm thickness Maximum</b>
Solution Treated	-	UNS S31803	35.0
<b>Plates from coils</b>	<b>Normal Strength</b>	<b>Grades</b>	<b>mm thickness Maximum</b>
As Rolled	Fine Grain Al	A, B, D, E	20.0
Normalizing Rolled	Fine Grain Al	A, B, D, E	20.0
<b>Plates from coils</b>	<b>Higher Strength</b>	<b>Grades</b>	<b>mm thickness Maximum</b>
As Rolled	Fine Grain Al	AH27S, DH27S, AH32, DH32, AH36, DH36	20.0
Normalized	Fine Grain Al	EH27S, EH32, EH36	20.0
Normalizing Rolled	Fine Grain Al	AH27S, DH27S, AH32, DH32, AH36, DH36	20.0
<b>Plates from coils</b>	<b>Boiler and Pressure Vessel</b>	<b>Grades</b>	<b>mm thickness Maximum</b>
Normalizing Rolled	Fine Grain Al	360 FG, 460 FG, 410 FG, 490FG, 510FG	20.0
Normalizing Rolled	Killed	360, 410	20.0

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Appendix 3  
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Note: Specified through thickness properties on all normal and higher strength steel grade plates.  
Duplex stainless steel grade UNS S31803 minimum PREN 34

For 9Ni the allowable maximum welding heat input is 2.5 kJ/mm

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