




Manufacturer logo	<b>Qualification Test Record (QTR) NORSOK M-650</b>			QTR. No.: 2304-2012	
				Rev. No.:7	
<b>Manufacturer name/address/ Web page:</b>	Outokumpu Stainless AB, Avesta Works, P.O. Box 74, SE 77422 Avesta, Sweden www.outokumpu.com				
<b>Reference standard</b>	NORSOK M-650, Edition 4/ ISO 17782:2018				
<b>Material designation and MDS No.:</b>	ASTM A240: UNS S32340; EN 10088-2 & 10028-7: 1.4362 Outokumpu MDS D35 rev 4, NORSOK M-120 MDS YD35 rev 0				
<b>Manufacturing Summary doc. No.:</b>	MS NORSOK 23-2304			Rev. No.:1	
<b>Products and manufacturing process(es):</b>	Hot and cold rolled stainless steel plate, sheet and strip.  <b>Hot rolled:</b> Melting – Casting – Hot rolling – Annealing and pickling – Finishing and testing <b>Cold rolled:</b> Melting – Casting – Hot rolling – Annealing and pickling – Cold rolling – Annealing and pickling – Finishing and testing				
<b>Mandatory conditions and sub-contractors:</b>					
<b>Other information:</b>	<p>1 Norsok M650 has no MDS for lean duplex SS. The qualification has therefore been carried out to the Outokumpu MDS D35 rev 4, allowing max 35 ppm Boron in the chemical composition, resulting in some nitride precipitates; see section 4 of the QTR.</p> <p>A supplementary test programme with SS 316L as reference was carried out on base and weld material. The test programme shows that toughness and weldability are not adversely affected by the precipitates. The corrosion resistance (CPT) of UNS S32304 base material is better than SS 316L. The corrosion resistance (CPT) of the welds match that of SS 316L.</p> <p>The test programme shows that UNS S32304 meets the requirements in Outokumpu MDS D35 rev 4. The suitability of the material for a specific application should be evaluated for the relevant service conditions by the end user.</p> <p>2 Temperature of quenching medium in AP-line is 50-55 C.</p> <p>3 Yearly TUS according to internal procedure 6613 "Verification of HTP".</p>				
<b>Qualification expires:</b>	February 2028				
<b>Tested and qualified thickness and weight</b>					
<b>Products and manufacturing process(es):</b>	<b>Test record No.</b>	<b>Tested thickness mm</b>	<b>Qualified thickness mm</b>	<b>Test piece weight kg</b>	<b>Qualified weight kg</b>
Hot rolled plate and strip	UNS S32304 HR Qualification test report	10	Max 12,5	N/A	N/A
Cold rolled plate and strip	UNS S32304 CR Qualification test report	6	Max 7,5	N/A	N/A
<b>Qualification/acceptance signatures</b>					
<b>Manufacturer:</b> Outokumpu Stainless AB, Avesta Works	<b>Prepared by/Date:</b> 2023-02-20 QC Specialist Kristina Wretstam  	<b>Checked by/Date:</b> 2023-02-20 QM Manager Maria Lindvall  			
<p>The manufacturer and this QTR are evaluated and found to be in compliance with the requirements of NORSOK M-650 for supply of the above listed products and materials.</p> <p><i>This acceptance does not exempt any purchaser from his responsibility to ensure that this qualification is valid for his products within the essential variables of NORSOK M-650.</i></p>					
<b>Qualified/Accepted by (company name /address):</b>  <b>AkerSolutions</b> Fornebu, Norway NO 929 877 950 VAT			<b>Signature/Date:</b> 28/02/2023 