STALKOR

STEEL. CHARACTER. FUTURE. /

EN 10204 — TYPE 3.1 / INSPECTION CERTIFICATE

MILL TEST CERTIFICATE

MATERIAL QUALITY & COMPLIANCE RECORD

Document ID: STK-QMS-MTC-001 **Standard:** EN 10025-2 / ASTM A36 / GOST 27772 **Revision:** [Rev. No.]

01 / CERTIFICATE & TRACEABILITY DATA

ORDER & HEAT IDENTIFICATION

PRODUCTION, ORDER & CAST TRACEABILITY RECORDS			
CERTIFICATE NO.	[Certificate No.]	**ISSUE DATE**	[DD.MM.YYYY]
CUSTOMER / BUYER	[Customer Legal Name]	**ORDER / CONTRACT NO.**	[Order No.]
PRODUCT DESCRIPTION	[Hot-Rolled Structural Section / Plate]	**STEEL GRADE**	[S235JR / S275JR / S355J2]
HEAT / CAST NO.	[Heat No.]	**BATCH / LOT NO.**	[Batch No.]
DELIVERY CONDITION	[+AR / +N / +M]	**TOTAL QUANTITY / MASS**	[Pieces / Metric Tons]

02 / CHEMICAL COMPOSITION ANALYSIS (LADLE ANALYSIS — %)

MASS FRACTION ELEMENT LIMITS

HEAT NO. (CAST ID)	STEEL GRADE	C	SI	MN	P	S	CR	NI	CU	CEV
		% MAX	% MAX	% MAX	% MAX	% MAX	% MAX	% MAX	% MAX	% MAX
S235JR (Spec)	EN 10025-2	0.17	—	1.40	0.035	0.035	—	—	0.55	0.35
S355J2 (Spec)	EN 10025-2	0.20	0.55	1.60	0.025	0.025	—	—	0.55	0.45
[Heat No.-01]	[Grade]	[0.00]	[0.00]	[0.00]	[0.000]	[0.000]	[0.00]	[0.00]	[0.00]	[0.00]
[Heat No.-02]	[Grade]	[0.00]	[0.00]	[0.00]	[0.000]	[0.000]	[0.00]	[0.00]	[0.00]	[0.00]

03 / MECHANICAL PROPERTIES & IMPACT TESTS

TENSILE & CHARPY V-NOTCH VERIFICATION

SAMPLE / HEAT	THICKNESS (MM)	YIELD STRENGTH R_{EH} (MPA)	TENSILE STRENGTH R_M (MPA)	ELONGATION A_5 (%)	IMPACT TEST TEMP. (°C)	CHARPY KV_2 AVG. (J)	BEND / VISUAL INSPECTION
S235JR Min.	t ≤ 16	≥ 235	360 – 510	≥ 26	+20 °C	≥ 27	Pass
S355J2 Min.	t ≤ 16	≥ 355	470 – 630	≥ 22	-20 °C	≥ 27	Pass
[Sample-01]	[t mm]	[MPa]	[MPa]	[%]	[°C]	[J]	[OK]
[Sample-02]	[t mm]	[MPa]	[MPa]	[%]	[°C]	[J]	[OK]

STATEMENT OF COMPLIANCE: We hereby certify that the material described above has been manufactured, sampled, tested, and inspected in full accordance with the referenced international standards and purchase order specifications under EN 10204 Type 3.1 independent quality assurance.

PREPARED BY (LABORATORY SPECIALIST)	APPROVED BY (QUALITY CONTROL MANAGER)	OFFICIAL STAMP & VERIFICATION CODE
METALLURGICAL & MATERIALS ENGINEER --- [Full Name / Signature]	**AUTHORIZED INSPECTION REPRESENTATIVE** --- [Full Name / Signature]	**STALKOR QUALITY ASSURANCE** --- [Company Seal / Verification ID]

ALLOY RATIOS & STEEL GRADE REFERENCE MATRIX

Standard chemical limits for structural, high-strength low-alloy (HSLA), and pressure vessel steels

TECHNICAL HANDBOOK /

The alloy reference matrix below specifies maximum mass percentage (%) elemental limits and Carbon Equivalent Value (**CEV = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15**) thresholds governing weldability across core structural and alloy grades produced at **STALKOR** facilities.

STEEL GRADE	STANDARD / EQUIVALENT	C MAX	SI MAX	MN MAX	P MAX	S MAX	CR / MO / V	CEV MAX
S235JR	EN 10025-2 / St3sp	0.17%	—	1.40%	0.035%	0.035%	—	0.35%
S275JR	EN 10025-2 / St4sp	0.21%	—	1.50%	0.035%	0.035%	—	0.40%
S355J2+N	EN 10025-2 / 09G2S	0.20%	0.55%	1.60%	0.025%	0.025%	V ≤ 0.12%	0.45%
S420M	EN 10025-4 (TMCP)	0.16%	0.50%	1.70%	0.025%	0.020%	Nb+V+Ti ≤ 0.22%	0.43%
S460M	EN 10025-4 (TMCP)	0.16%	0.60%	1.70%	0.025%	0.020%	Cr ≤ 0.30%, Mo ≤ 0.20%	0.45%
P265GH	EN 10028-2 (Pressure Vessel)	0.20%	0.40%	0.80–1.40%	0.025%	0.015%	Cr ≤ 0.30%, Mo ≤ 0.08%	0.41%
16Mo3	EN 10028-2 (Elevated Temp.)	0.12–0.20%	0.35%	0.40–0.90%	0.025%	0.010%	Mo: 0.25–0.35%	0.44%
42CrMo4	EN ISO 683-2 (Quenched & Temp.)	0.38–0.45%	0.40%	0.60–0.90%	0.025%	0.035%	Cr: 0.90–1.20%, Mo: 0.15–0.30%	—

04 / TECHNICAL PRODUCT CATALOG — HOT-ROLLED IPE / HEA SECTIONS

EN 10365 / EN 10034 TOLERANCES

Geometric dimensions, unit mass per meter, and sectional inertia properties for **STALKOR** hot-rolled parallel-flange I and H structural sections engineered for heavy industrial facilities, bridge girders, power infrastructure, and steel construction projects.

SECTION DESIGNATION	UNIT MASS G (KG/M)	SECTION AREA A (CM^2)	GEOMETRIC DIMENSIONS (MM)				MOMENTS OF INERTIA (CM^4)		SECTION MODULI (CM^3)	
			H	B	T_W	T_F	I_Y	I_Z	$W_{EL,Y}$	$W_{EL,Z}$
IPE 200	22.4	28.5	200	100	5.6	8.5	1 943	142	194.3	28.5
IPE 240	30.7	39.1	240	120	6.2	9.8	3 892	284	324.3	47.3
IPE 300	42.2	53.8	300	150	7.1	10.7	8 356	604	557.1	80.5
IPE 360	57.1	72.7	360	170	8.0	12.7	16 270	1 043	903.6	122.8

SECTION DESIGNATION	UNIT MASS G (KG/M)	SECTION AREA A (CM^2)	GEOMETRIC DIMENSIONS (MM)				MOMENTS OF INERTIA (CM^4)		SECTION MODULI (CM^3)	
			H	B	T_W	T_F	I_Y	I_Z	$W_{EL,Y}$	$W_{EL,Z}$
IPE 400	66.3	84.5	400	180	8.6	13.5	23 130	1 318	1 156.0	146.4
HEA 200	42.3	53.8	190	200	6.5	10.0	3 692	1 336	388.6	133.6
HEA 240	60.3	76.8	230	240	7.5	12.0	7 763	2 769	675.1	230.7
HEA 300	88.3	112.5	290	300	8.5	14.0	18 260	6 310	1 260.0	420.6

DIMENSIONAL TOLERANCES & DELIVERY STANDARDS (EN 10034)

INSPECTION PARAMETER	NOMINAL RANGE	PERMISSIBLE DEVIATION	VERIFICATION / TESTING METHOD
Section Depth (h)	180 mm < h ≤ 400 mm	+4.0 mm / -2.0 mm	Calibrated Laser / Caliper Gauge
Flange Width (b)	110 mm < b ≤ 210 mm	± 2.0 mm	EN 10034 Dimensional Inspection
Web Thickness (t_w)	t_w < 7.0 mm / ≥ 7.0 mm	± 0.7 mm / ± 1.0 mm	Ultrasonic Thickness Testing (UT)
Standard Bar Length	6 000 mm / 12 000 mm / 18 000 mm	+100 mm / 0 mm (Fixed Length)	End-of-Line Optical Length Gauge
Surface Condition	EN 10163-3 Class C1	Free of cracks, seams, and scale defects	100% Visual Surface Inspection (VT)