EH32 Steel Plate

OMEGA STEEL CO.
Istanbul · Dilovası plant

EH32 is the −40 °C grade of the 315 MPa series: the same 315 MPa yield and 440–570 MPa tensile, but normalised or thermo-mechanically rolled to a fine grain that guarantees 31 J at −40 °C in every plate. It is required by the class rules for the most critical hull members above about 25–30 mm, for ice-belt plating of ice-class vessels, for Arctic and sub-Arctic tonnage and for offshore structures with a −40 °C design temperature. Supplied 10–80 mm from class-approved mills, stamped, certified, optionally primed, cut and bevelled at Dilovası; through-thickness (Z35) and UT-tested plate on request.

Yield ≥ 315 MPa | 31 J at −40 °C | N or TM | Z35 / UT available | 10–80 mm

Nothing in the hull is allowed to start a brittle crack at −40 °C — the E grade is the plate the rules put where the stress is highest, the plate thickest and the water coldest.

CHEMICAL COMPOSITION

Element	C	Si	Mn	P	S	Al	Nb	V	Ti	Cu	Cr	Ni	Mo
max. % (ladle)	≤ 0.18	≤ 0.50	0.90–1.60	≤ 0.035	≤ 0.035	≥ 0.015 (total)	0.02–0.05	0.05–0.10	≤ 0.02	≤ 0.35	≤ 0.20	≤ 0.40	≤ 0.08

As for the H32 series; for EH32 the mills typically run C 0.10–0.14 %, S ≤ 0.010 % and Nb + Ti fine-grain practice to reach the −40 °C toughness at thickness. CEV ≤ 0.36 (TM) / ≤ 0.40 (N).

MECHANICAL PROPERTIES

Property	Requirement	Typical value	Note
Yield strength ReH	≥ 315 MPa	335–380 MPa	
Tensile strength Rm	440–570 MPa	460–520 MPa	
Elongation A5	≥ 22 %	26–32 %	
Charpy V, longitudinal	≥ 31 J at −40 °C	60–120 J	t ≤ 50 mm; 22 J transverse
Charpy V, t 50–70 mm	≥ 38 J at −40 °C	—	50 J above 70 mm
Bend test	180°, 3 t	passes	transverse

EQUIVALENT GRADES

System	Grade	Note
ASTM A131	EH32	identical
LR	EH32	
DNV	NV E32	
BV	EH32	
ABS	EH32	
GL (legacy)	GL-E32	
EN 10025-3 (approx.)	S275NL	normalised structural, −50 °C; no class certificate
EN 10225 (offshore)	S355G-series	higher strength, offshore certified

THROUGH-THICKNESS AND ULTRASONIC OPTIONS

Option	Standard	What it guarantees	When to specify
Z35 through-thickness	EN 10164 / society rules	reduction of area ≥ 35 % in the thickness direction	plates ≥ 20 mm loaded through thickness at cruciform and T joints
Ultrasonic testing	EN 10160 class S2/E3 or society UT	freedom from laminations and internal defects	all E-grade plates in primary structure; offshore
Extra Charpy at −60 °C	society / project	toughness margin below the grade minimum	Polar class, Arctic offshore
CTOD testing	BS 7910 / project spec	fracture toughness of plate and HAZ	offshore primary structure
Shop primer	class-approved zinc silicate	Sa 2½ + 15–20 µm	yard delivery, stamps preserved

STANDARDS

IACS UR W11 · LR / BV / DNV / ABS / RINA / TL rules · ASTM A131 Grade EH32 · EN 10164 Z35 (through-thickness) on request · Society certificate (3.2 equivalent)

Updated 22 September 2026 · figures are nominal; the mill certificate governs