

X7Ni9 Chemical Composition Reference

This reference summarizes publicly published chemical-composition limits for **X7Ni9 / 1.5663** under the **EN 10028-4** route and explains how each element contributes to the low-temperature pressure-vessel performance of the grade.

Element	Published requirement / range	Technical reading
C	max 0.10%	Low carbon helps protect toughness and supports workable fabrication and welding in cryogenic pressure-vessel plate service.
Si	max 0.35%	Controlled deoxidation element; not the main driver of cryogenic performance.
Mn	0.30-0.80%	Supports strength balance and general metallurgical control within the plate route.
Ni	8.5-10.0%	The defining alloy addition behind the 9% nickel steel designation and the grade's low-temperature service capability.
P	max 0.015%	Strictly controlled to protect low-temperature toughness and cleanliness.
S	max 0.005%	Strictly controlled for the same reason; especially important in plate intended for cryogenic welded equipment.
Mo	max 0.10%	Limited residual/alloy allowance in public EN-oriented summaries.
V	max 0.01%	Very low residual allowance in public composition data.

Interpretation Notes

The published **X7Ni9 chemical composition** is built around a **9% nickel design** with low carbon and very low phosphorus and sulfur. That chemistry is what gives the grade its place in the **low-temperature pressure-vessel** family. In engineering use, **X7Ni9 / 1.5663** is not treated as a broad nickel-steel category; it is specified as a cryogenic plate route under **EN 10028-4**.

Public materials-property databases also show the broader mass-fraction picture of the alloy, including approximately **Fe 88.6-91.2%** as balance, with the same **Ni 8.5-10.0%**, **Mn 0.3-0.8%**, **Si up to 0.35%**, **C up to 0.10%**, **Mo up to 0.10%**, **P up to 0.015%**, **V up to 0.010%**, and **S up to 0.0050%**. These values are useful as a cross-check, but project work should still follow the governing standard and mill documentation.

Reference Basis

Source	Used here for
SteelNumber public EN summary for X7Ni9 / 1.5663	Primary composition limits under the EN route; identifies X7Ni9 as EN 10028-4 plate with low-temperature properties.

Source	Used here for
MakeltFrom EN 1.5663 materials-property page	Cross-check of mass-fraction composition and balance-iron estimate for general engineering reading.

Source note: Published values summarized from public EN-oriented material references for **X7Ni9 / 1.5663**. Use project specification, test certificate, and applicable EN documentation as the controlling basis for order acceptance and design review.