Nickel Alloy Technical Datasheet

# Alloy 330 Plate, Bar, Coil, and Tube

### UNS N08330 / Specialty & High-Performance Alloys

Alloy 330 is a nickel-iron-chromium alloy used for carburization, oxidation, and thermal cycling resistance.

| | |
|---|---|
| **Grade** | Alloy 330 |
| **UNS / reference** | UNS N08330 |
| **Alloy family** | Specialty & High-Performance Alloys |
| **Available forms** | plate, bar, coil, tube |
| **Primary use** | RFQ preparation, grade comparison, product-form selection, certificate planning |
| **Revision** | 2026-06-11 |

## General Description

This document presents Alloy 330 in a concise technical format for nickel alloy raw material buyers. It follows the style of established alloy data bulletins: grade identity first, followed by standards, composition review, supply forms, engineering reference tables, fabrication notes, and RFQ checkpoints.

- Good oxidation and carburization resistance
- Useful strength and stability at elevated temperatures
- Selected for furnace and thermal processing raw material lists

## Standards and Specification References

Common references include ASTM B511, ASTM B535, ASTM B710, ASME equivalents, and customer heat service specifications.

Final chemistry, mechanical values, heat treatment, testing, and acceptance criteria must be confirmed against the active standard, mill certificate, and customer specification.

Composition and Product Forms

# Chemical Review and Supply Matrix

## Principal Alloying Elements

| Element | Level / role | Procurement meaning |
|---|---|---|
| Ni-Fe-Cr | Base system | Heat, oxidation, and process service matrix |
| Cr | Major | Oxidation and carburization resistance support |
| Mo / Cu / Ti / Al | Grade-specific | Corrosion or stability support where specified |
| C | Controlled | Carbon controlled by grade and heat treatment route |
| Mn, Si, S, P | Controlled minor | Confirmed by applicable specification |

## Raw Material Form Matrix

| Form | RFQ dimensions | Grade-specific review note |
|---|---|---|
| Plate | Thickness, width, length, surface, flatness, tolerance, piece quantity | Alloy 330 plate and sheet inquiries are checked by thickness, surface, tolerance, and heat treatment condition. |
| Bar | Diameter/section, length, straightness, condition, bundle quantity | Alloy 330 bar inquiries are checked by diameter or section size, delivery condition, and test certificate scope. |
| Coil | Thickness, width, edge, coil ID, coil weight, surface finish | Alloy 330 coil and strip inquiries are checked by width, thickness, edge, coil ID, and surface finish. |
| Tube | OD, wall thickness, length, route, end condition, NDE/test scope | Alloy 330 tube inquiries are checked by OD, wall thickness, length, standard, and test requirements. |

## Documents to Confirm

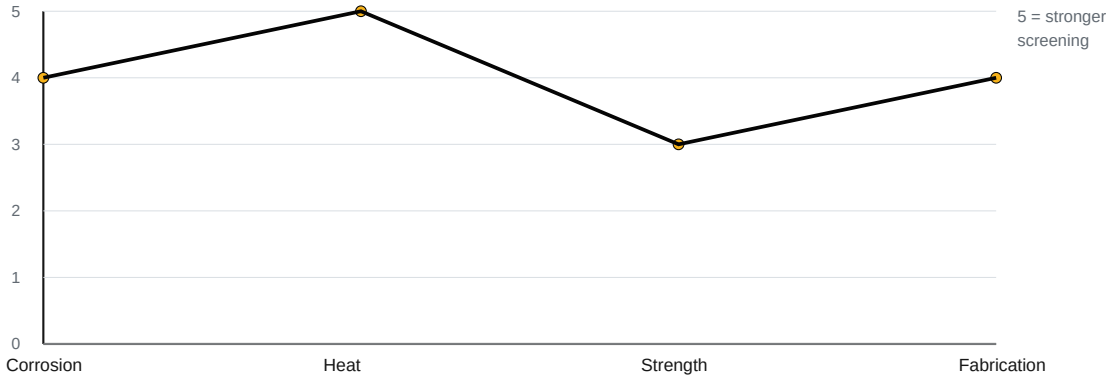
| Item | Typical record |
|---|---|
| MTC | EN 10204 3.1 / mill certificate when required |
| Traceability | Heat number, lot, size, product form, quantity, condition |
| Dimensional report | Thickness, OD/WT, diameter, width, length, tolerance as applicable |
| Additional tests | PMI, NDE, hydro, hardness, corrosion test, third-party inspection when specified |

Engineering Reference

# Properties, Temperature, and Screening Notes

## Relative Property Profile

**Figure 1 - Relative property profile for RFQ screening**




*Relative guide only; do not use as design allowable data.*

## Modulus / Elevated Temperature Data Format

The table below shows the recommended format for reviewing modulus and temperature-dependent data. Use certified grade-specific data from standards, producer bulletins, or project specifications for design calculations.

| Temp | Tension modulus | Shear modulus | Poisson ratio | Use note |
|---|---|---|---|---|
| Room | High / grade dependent | High / grade dependent | Verify | Baseline for procurement screening |
| Moderate | Reduced vs. room temp | Reduced vs. room temp | Verify | Check code allowables and condition |
| Elevated | Further reduction | Further reduction | Verify | Use design standard, not this guide |

## Room-Temperature Mechanical Data Review

| Data item | How it should be handled |
|---|---|
| Tensile strength | Confirm by form, size, condition, and applicable ASTM/ASME/EN/AMS standard |
| Yield strength | Confirm 0.2% offset or specified method in the purchase standard |
| Elongation | Confirm gauge length, test direction, and product form |
| Hardness | Use only when required by standard, order, or project inspection plan |

Fabrication and Corrosion Review

# Fabrication Notes and Service Screening

## Welding / Joint Preparation

**Figure 2 - Typical weld preparation review points**

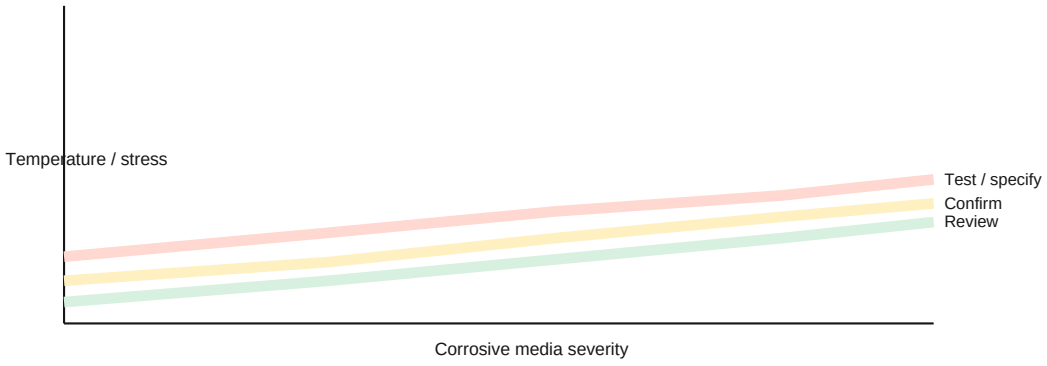

*Joint design must follow qualified WPS/PQR, applicable code, and customer specification.*

## Fabrication Notes

- Cleanliness, filler metal selection, heat input, interpass temperature, and post-weld requirements must be controlled by qualified procedure.
- Cold work, solution treatment, annealing, or age-hardening response depends on the exact alloy grade and product form.
- For plate, bar, coil, and tube RFQs, include surface condition, tolerance, straightness or flatness, and inspection scope.

## Corrosion Selection Map

**Figure 3 - Corrosion service screening map**




*Use corrosion testing, published alloy data, and project media details for final selection.*

Applications and RFQ Checklist

# Alloy 330 Application Review

## Common Application Areas

| Application area | Typical material question |
|---|---|
| Industrial furnace systems | Confirm grade, product form, standard, condition, dimensions, and document package. |
| Heat treating baskets and fixtures stock | Confirm grade, product form, standard, condition, dimensions, and document package. |
| Petrochemical thermal equipment | Confirm grade, product form, standard, condition, dimensions, and document package. |
| High-temperature sheet and bar programs | Confirm grade, product form, standard, condition, dimensions, and document package. |
| Project-specific raw material procurement | Confirm grade, product form, standard, condition, dimensions, and document package. |
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## RFQ Checklist

| Step | RFQ field | Required detail |
|---|---|---|
| 1 | Alloy grade | Alloy 330 plus UNS / ASTM / EN / AMS reference if available |
| 2 | Product form | Plate, bar, coil, tube, or another published product form |
| 3 | Dimensions | Thickness, width, length, diameter, OD, wall thickness, edge, tolerance |
| 4 | Condition | Annealed, solution treated, aged, cold worked, pickled, polished, or project-specific |
| 5 | Quantity and logistics | Pieces, weight, delivery term, destination, packaging, project schedule |
| 6 | Documents | MTC, inspection scope, third-party inspection, and customer specification |

## Use Limitation

This datasheet is a sourcing and quotation aid. It is not a controlled design standard and does not replace producer data, engineering code requirements, customer specifications, or mill-issued certificates.

| | |
|---|---|
| **Website** | www.nickelcasting.com |
| **Inquiry** | Send grade, form, dimensions, standard, quantity, destination, and certificate requirements. |
| **Grade URL** | /nickel-alloys/specialty-high-performance-alloys/alloy-330/ |