

**NIMONIC 80a (UNS N07080)**  
**Alloy 80a**

Nickel-Chromium Alloy

Nimonic Data Sheet

### Introduction

Nimonic 80a is a nickel chromium alloy with age hardening properties. This alloy is produced by precipitation hardening with addition of titanium & aluminum. Alloy 80a has good corrosion resistance with high tensile & creep rupture properties. It also has good resistance to oxidation.

### Chemical Composition ( Typical )

| Element   | Limits    |        |
|-----------|-----------|--------|
|           | min       | max    |
| Carbon    | --        | 0.100  |
| Chromium  | 18.000    | 21.000 |
| Silicon   | --        | 1.000  |
| Copper    | --        | 0.200  |
| Iron      | --        | 3.000  |
| Manganese | --        | 1.000  |
| Titanium  | 1.800     | 2.700  |
| Aluminium | 1.000     | 1.800  |
| Cobalt    | --        | 2.000  |
| Boron     | --        | 0.008  |
| Zirconium | --        | 0.150  |
| Lead      | --        | 0.0025 |
| Sulphur   | --        | 0.015  |
| Nickel    | remainder |        |

### Mechanical Properties ( Typical )

| Parameter                                 | Value |
|---|-------|
| Yield 0.2 % ( Mpa/Nmm <sup>2</sup> ), Min | 780   |
| Tensile ( Mpa/Nmm <sup>2</sup> ), Min     | 1250  |
| Elongation (% in 50MM ), Min              | 30    |

### Physical Properties ( Typical )

| Parameter                 | Value       |
|---------------------------|-------------|
| Density g/cm <sup>3</sup> | 8.19        |
| Melting Range °C          | 1320 - 1365 |
| Specific Heat J/Kg °C     | --          |

### Heat Treatment

These high strength alloys can be heat treated & cooled in air to produce required results. Annealing should be carried out at 1040°C (1904°F), followed by water quenching or air cooling for Nimonic 80a.

## Working Instructions

**Hot Working** - Nimonic 80a can be hot worked between temperature range of 1050- 1200°C (1920-2190°F).

**Forging** - Nimonic alloys can be forged within their respective allowable hot working temperature followed by heat treatment to produce forgings, forged fittings, flanges, rings, disc, blocks, etc.

**Cold working** - Nimonic alloys can be cold worked using standard tooling while the alloy tool steels and high-speed steels give good results.

**Welding** - NIMONIC alloy 80A sheet is readily joined by any of the resistance welding processes, welding should be carried out on solution treated material. Nimonic alloys can be welded by the MMA, TIG, MIG welding methods.

## Manufactured Product Forms

|                     |                 |
|---------------------|-----------------|
| Round Bars          | Fittings        |
| Plate, Sheet, Strip | Fasteners       |
| Pipes & Tubes       | Filler Metal    |
| Forgings            | Component Parts |
| Wire Rods           | Flanges         |

## Relevant Specifications

|                |            |
|----------------|------------|
| BS 3076 & HR 1 | ASTM B 637 |
| BS HR 201      | BS HR 601  |
| BS HR 401      | DIN 17742  |

## Certifications & other Compliance

Product manufactured under Nimonic 80a are certified in conformance to En 10204 Type 3.1 Certificate as well as 3.2 with third party inspection. Products with Nace Mr0175 compliance are also offered.

## Applications & Industries

Aerospace Industry  
High Temperature Springs  
Thermal Processing Equipments  
Industrial furnace structural parts  
Heat treatment equipments

## Related Keywords

Nimonic 80a Plates, Nimonic 80a Bars, Nimonic 80a Wire, Nimonic 80a Filler Wire, Nimonic 80a Sheet, Nimonic 80a Strip, Nimonic 80a Component Parts, Nimonic 80a Fittings, Nimonic 80a Forgings, Nimonic 80a Pipes, Nimonic 80a Tubes, Nimonic 80a Fasteners, Nimonic 80a Flanges.

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