



# Welding & Machining Specification Sheet

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**Purpose:** Define welding and machining requirements for quotation and production planning.

Fill in what applies to your project. Leave blank if standard/default is acceptable.

## Welding Requirements

### Execution Class (EN 1090)

Class	Risk Level	Typical Application	
EXC1	Low	Non-structural, secondary members	■
EXC2	Medium	General structural steelwork	■
EXC3	High	Bridges, cranes, offshore, fatigue-loaded	■
EXC4	Very high	Nuclear, special structures	■

If unsure: EXC2 is the most common for industrial structures. EXC3 for critical/fatigue applications.

### Welding Process

Process		Typical Use
GMAW (MIG/MAG)	■	General structural, medium thickness
FCAW (Flux-cored)	■	Heavy structural, outdoor, high deposition
SAW (Submerged arc)	■	Long straight seams, thick plate
GTAW (TIG)	■	Stainless, thin material, root passes
No preference	■	We select based on joint type

### WPS Qualification Standard

Standard	
ISO 15614 (European — our default)	■
AWS D1.1 (American)	■
Other: _____	■

## Weld Quality Level (ISO 5817)

Level	Description	■
B	Stringent — for fatigue-loaded, critical joints	■
C	Intermediate — general structural (most common)	■
D	Moderate — non-structural, secondary	■

## Post-Weld Heat Treatment (PWHT)

Item	Your Requirement
PWHT required?	■ Yes ■ No ■ Per code requirement
Temperature	°C
Hold time	hours
Method	■ Furnace ■ Local heating ■ Either

**Note:** PWHT adds significant cost and lead time. Only specify if required by code or design.

## Machining Requirements

### Tolerance Grade (ISO 286)

Grade	Typical Tolerance (for Ø50mm)	Application	■
IT7	±0.012mm	Precision fits, bearings	■
IT8	±0.020mm	General precision machining	■
IT9	±0.030mm	Standard machining	■
IT11	±0.080mm	Rough machining, structural	■
Per drawing	—	Tolerances marked on drawing	■

### Surface Finish

Ra Value	Description	Typical Use	■
Ra 0.8	Mirror-like	Sealing surfaces, hydraulic	■
Ra 1.6	Fine	Bearing seats, precision fits	■
Ra 3.2	Standard	General machined surfaces	■
Ra 6.3	Rough	Mounting faces, non-critical	■
Per drawing	—	Specified on drawing	■

## Machining Scope

Item	Required?
Milling (flat surfaces, pockets)	■
Boring (large holes, bearing seats)	■
Drilling & tapping	■
Turning (cylindrical parts)	■
Grinding	■

## Dimensional Tolerance for Fabrication (ISO 13920)

Class	Linear Tolerance (1-2m)	Angular	Typical Use	■
A	±1mm	±15'	Precision fabrication	■
B	±2mm	±20'	Standard structural	■
C	±3mm	±30'	General fabrication (default)	■
D	±4mm	±45'	Rough fabrication	■

## Stress Relief

Method	When Used	■
Thermal (furnace)	Before final machining of welded assemblies	■
Vibration	Alternative to thermal, lower cost	■
Not required	Simple structures, no precision machining	■

## Notes

(Any additional welding or machining requirements)

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