

Procurement Quality Clauses and Specifications

This document describes the Quality Clauses and Specifications applicable to Lynch Purchase Orders for materials and outsourced processes. The specific items that apply will be noted on the Purchase Order.

Suppliers to Lynch are contractually obligated to comply with all Quality Clauses and Specifications noted on the purchased order. Inability to comply with these clauses and specifications must meet with the acceptance of Lynch prior to product shipment or service completion.

1) Quality Clauses

a) General Requirements

- 1) The supplier shall confirm with Lynch the qualification of personnel involved in processing the order, in respect to the following disciplines:
 - a) Raw Material Inspection
 - b) Calibration Control
 - c) Machine Set-up & Operation
 - d) Metrology
 - e) In-Process Inspection
 - f) First-Article Inspection
- 2) The supplier shall comply with our quality management system requirements.
- 3) The supplier shall ensure the requirements of this Purchase Order flow down to sub-tier suppliers the applicable requirements in the purchasing documents, including special requirements, critical items and key characteristics where required.
- 4) The supplier shall implement or comply with a Quality Management System.
- 5) The supplier shall use customer-designated or approved sub-tier suppliers, including process sources (ex: special processes).

b) Product & Process Compliance

- 1) The supplier shall comply with requirements for design, test, examination, inspection, and related instructions for acceptance of product (verification and validation).
- 2) The supplier is subject to an on-site inspection (verification) of the work performed, prior to delivery of product to Lynch.
- 3) The supplier shall provide test specimens (production method, number, storage conditions) for design approval, inspection, investigation or auditing purposes.
- 4) Lynch retains the right of access by Lynch, our customer, and/or regulatory authorities to all facilities involved in the order and to all applicable supplier records.

c) Product & Process Changes

- 1) The supplier shall provide written notification to Lynch of nonconforming product, before and after delivery. Where applicable, Lynch will be required to obtain approval from our customer to supply the same, prior to acceptance of product in question.
- 2) The supplier shall provide written notification to Lynch of changes in product and/or process definition. Where applicable, Lynch will require approval from our customer.

d) **Quality Records**

- 1) The supplier shall provide a Certificate of Compliance (C of C) upon delivery of product.
- 2) The supplier shall provide detailed Inspection Reports upon delivery of product.
- 3) The supplier shall provide detailed Test Results upon delivery of product.
- 4) The supplier shall maintain control and retention of all quality records below for 10 years unless otherwise stated.
 - Certificate of compliance (C of C)
 - Detailed dimensional inspection reports: process document inspection report, verification report, heat treating
 - Material Certificate (for raw material received internally or from the subcontractor of a finished good)
 - Job specific test reports (ie: Mag-flux, Ultra-sonic)
 - Non-conformance reports
 - Equipment and operating capacity lists
 - Equipment calibration records
 - Employee training records and certificates

2) Material / Parts Specifications

- a) Material Test result (Mill Certificate) required. Lynch requires actual results of mechanical and chemical tests. A recital of standard material specifications will not be accepted.
- b) Material must conform to applicable industry specifications and be free of surface defects and damage from handling prior to shipment to Lynch.
- c) Mag-Flux testing of the product is required prior to shipment to Lynch. Product with surface defects detected by this method shall not be shipped to Lynch with prior approval.
- d) All hardware, such as threaded plugs and fasteners, must be trivalent chromium plated. Product that is hexavalent chromium plated will not be accepted without prior approval from Lynch.
- e) Product or material must comply with RoHS Hazardous Substances Directive (2002/95/EC).
- f) Material and/or parts must comply with Counterfeit Material / Parts Requirements (AS6174A & AS5553A).
- g) Product or material must comply with conflict minerals Section 1502 of the Dodd-Frank Act.

3) Machining Specifications (Details to be determined)

- a) **Gun Drilling**
- b) **General Machining**
- c) **EDM**
- d) **Welding**

4) Surface Coating and Heat Treatment Specifications

a) Surface Quality

- 1) No rack marks permitted
- 2) All internal machined surfaces must be properly and evenly coated. Incomplete and inferior finish quality will not be permitted
- 3) The removal of surface coating/plating is not permitted without prior written approval from Lynch, due to the negative effects on surface finish and quality.

b) Black Oxide

- 1) MIL-DTL-13924D, Class 1
- 2) MIL-DTL-13924D, Class 2
- 3) MIL-DTL-13924D, Class 3
- 4) MIL-DTL-13924D, Class 4

IMPORTANT:

- a) All surfaces must be free of excess smut
- b) All surfaces must be dry to touch
- c) Colour other than black is not permitted
- d) Caustic soda build-up is not permitted in any internal machined features

c) Electroless Nickel

- 1) Max .0002" thickness
- 2) .0003" - .0005" thickness
- 3) .0010" +/- .0001" thickness, High Phosphorus per AMS-C-26074
Appearance: Shiny / Bright / Reflective
Friction: Coefficient of Friction per ASTM D-1984, Kinetic Average 0.15
Corrosion Resistance: Based on 0.001" thick coating and tested per ASTM B117 for 1000 hours, failure is first sign of red corrosion.

IMPORTANT: The following requirements apply to all Electroless Nickel standards listed above:

- a) Manifold must be rolled in the plating solution to remove all air pockets prior to plating. Air pockets lead to areas of high corrosion during plating.
- b) To prevent rusting, ensure all threads used for handling are thoroughly flushed after plating.
- c) Do not fasten or bolt to any port or hole not authorized on the drawing.

d) Anodizing

- | | | |
|--------------------|-------------|----------------------------------------------------------------------------|
| 1) Anodizing: | Anodize II | Black - MIL-A-8625, Type II, Class 2 |
| 2) Anodizing 001: | Anodize II | Clear - MIL-A-8625, Type II, Class 1 |
| 3) Anodizing 002: | Anodize IIB | Black - MIL-A-8625, Type IIB, Class 2 |
| 4) Anodizing 003: | Anodize IIB | Clear - MIL-A-8625, Type IIB, Class 1 |
| 5) Anodizing 004: | Anodize IIB | Gold - MIL-A-8625, Type IIB, Class 2 |
| 6) Anodizing 005: | Anodize III | Clear - MIL-A-8625, Type III, Class 1 |
| 7) Anodizing 006: | Anodize III | Black - MIL-A-8625, Type III, Class 2 |
| 8) Anodizing 007: | Anodize IIB | Blue - MIL-A-8625, Type IIB, Class 2 |
| 9) Anodizing 008: | Anodize IIB | Green - MIL-A-8625, Type IIB, Class 2 |
| 10) Anodizing 009: | Anodize III | Black - MIL-A-8625, Type III, Class 2, .002" +/- .0005" |
| 11) Anodizing 010: | Anodize III | Clear - MIL-A-8625, Type III, Class 1, .002" +/- .0005" |
| 12) Anodizing 011: | Anodize II | Black - AMS-A-8625, Type II, Class 2,
37 per FED-STD-595 Aircraft Black |
| 13) Anodizing 012: | Anodize II | Gold - MIL-A-8625, Type II Class 2 |
| 14) Anodizing 013: | Anodize I | Clear Chromic - MIL-A-8625, Type I, Class 1 |
| 15) Anodizing 014: | Anodize IB | Clear Chromic - MIL-A-8625, Type IB, Class 1 |
| 16) Anodizing 015: | Anodize II | Clear - MIL-A-8625, Type II, Class 1, Seal in boiling de-ionized water |

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e) **Zinc Plating**

- 1) Zinc with Clear Chromate, per ASTM B633, Type III, Fe/Zn 8, trivalent Chromium
- 2) Zinc with Yellow Chromate, per ASTM B633, Type II, Fe/Zn 8, trivalent Chromium
- 3) Zinc-Nickel 01, ASTM B841-99, Type A, Class 1, (colorless) Blue Bright, 5-8 Microns/0.0002"-0.0003" Thickness
- 4) Alkaline Zinc-Nickel 01, ASTM B841-99, Type A, Class 1, (colorless) Conversion, 8-13 Microns/0.0003"-0.0005" Thickness
- 5) Zinc-Nickel 02, ASTM B841-99, Type B, Class 1, Yellow Conversion, 5-8 Microns/0.0002"-0.0003" Thickness
- 6) Zinc-Nickel 03, ASTM B841-99, Type C, Class 1, Bronze Conversion, 5-8 Microns/0.0002"-0.0003" Thickness
- 7) Zinc-Nickel 04, ASTM B841-99, Type D, Class 1, Black Chromate, 5-8 Microns/0.0002"-0.0003" Thickness, trivalent Chromium
- 8) Zinc-Nickel 06, ASTM B841-99, Type E, Class 1, Organic Topcoat, 5-8 Microns/0.0002"-0.0003" Thickness
- 9) Zinc Plating 8 Microns as per ASTM B 633 over Electroless Nickel, 8-13 Microns/0.0003" – 0.0005" Thickness
- 10) Zinc-Nickel 05, ASTM B841-99, Type A, Class 1, (colorless) Blue Bright, Grade 8, 8 Microns Thickness minimum
- 11) Alkaline Zinc Nickel 02, ASTM B841-99, Class 1, Type B, Yellow Conversion Coating, 0.0003" to 0.0005" Thickness
- 12) Zinc-Nickel 07, ASTM B841-99, Class 1, Type D, Black Non-UV Sensitive [Silver Free], 0.0002" to 0.0003" Thickness
- 13) Alkaline Zinc Nickel 03, ASTM B0841-99, Class 1, Type D, Black Chromate, 0.0003"-0.0005" Thickness

f) **Phosphating**

- 1) Phosphate – Dark Gray as per ISO 9717

g) **Passivation**

- 1) Passivation – ASTM A380 CODE F
- 2) Passivation - AMS QQ-P-35, Type II
- 3) Passivation – AMS 2700, Method 1 or 2

h) **Alodining**

- 1) Alodine 001: Alodine – MIL-C-5541, Class 3, Type II

i) **Liquid Penetrant Inspection (LPI) - Per ASTM E1417**

Type

- 1) I - Fluorescent dye
- 2) II - Visible dye

Method

- 3) A - Water washable,
- 4) B - Post-emulsifiable, lipophilic
- 5) C - Solvent-removable
- 6) D - Post-emulsifiable, hydrophilic

Sensitivity (Applicable to Type I penetrant systems only, Type II penetrant systems only have single sensitivity)

- 7) Level 1/2 - Very low
- 8) Level 1 - Low
- 9) Level 2 - Medium
- 10) Level 3 - High
- 11) Level 4 - Ultrahigh

Form

- 12) A - dry powder
- 13) B - Water-soluble
- 14) C - Water-suspendable
- 15) D - Nonaqueous for Type I fluorescent penetrant
- 16) E - Nonaqueous for Type II visible dye
- 17) F - Specific application

Class

- 18) 1 - Halogenated
- 19) 2 - Nonhalogenated
- 20) 3 - Specific application

j) **Heat Stabilization**

- 1) Stabilize at 250°F to 275°F for 1 hour, furnace cool slowly

k) **Prime & Paint**

- 1) **Primer** - DHMS C4.01, MIL-T-81772 Type II, Dry Film Thickness (1/1000in.) 1.0/1.3. **Top Coat** - DHMS C4.04 Type II, Polyurethane, Gloss Grey, MIL-T-81772 Type I, Dry Film Thickness (1/1000in.) 1.5/2.0.

5) Packaging and Transportation

a) **Packaging**

- 1) Metal to be secured and covered
- 2) Packed in wood crates
- 3) Create bare batten bundles with wood spacers and metal straps

b) **Transportation**

1) Vehicle type

- a) Flat bed truck
- b) 5 ton dock level truck
- c) Independent courier (car, van, taxi)
- d) Cargo van
- e) Closed box trailer

2) Carrier

- a) See "SHIP VIA" box on the Purchase Order (PO)

3) Loading Method

- a) Load onto skid
- b) Load to rear
- c) Load to side

4) Freight Fees

- a) Prepaid and Charge
- b) Collect
- c) FOB Lynch (delivery transport is paid by the Vendor)

5) Customs Brokerage and Fees

- a) Arranged and paid by Vendor
- b) Arranged and paid by Lynch