

## I Purpose:

Define requirements governing the manufacture and shipment of plated, painted and screened fabricated metal components for customer concurrence. This document is intended to supplement the component drawing. All dimensions and tolerances should be specified on the component drawing. Any conflicts between the drawing and this specification should be brought to ATECH's attention for further clarification.

## II Specification Intended Use:

This specification is intended to clarify expectations between ATECH and customers requiring plating, painting and/or screening from our suppliers.

## III Customer Selection of Class:

For every order requiring secondary services our customer needs to designate which class their expectations fall into to ensure those expectations are quoted, manufactured to and delivered to. For every order requiring secondary services a quality class will be designated as follows:

- A – **Highest visibility. Surface is always at eye level or will be continuously scrutinized at close range.** Example: Show item.
- B – **Lesser visibility. Surface is sometimes at eye level or will be scrutinized temporarily or a control setting or data collection.** Example: Standard instrument panel.
- C – **Surface is not readily visible or is enclosed.** Example: Case back, bottom or interior pieces.
- D – **No appearance requirements.** Part is coated for protection only.

## IV Explanation of Quality Control:

The following describes the control ATECH will drive throughout the supply chain to ensure the customer's expectations are met. Any additional customer requirements or exceptions are to be noted and communicated in the customer purchase order and captured on the print or a marked up and signed copy of this specification.

- 1) Typical standards that will be expected to industry standards:
  - a) Powder coating thickness: typically .002 - .003
  - b) Plating Thickness: typically .0001- .0003
  - c) ATECH-SEH will meet the dimensional requirements of our Customer's prints. PLEASE NOTE- All print dimensions will be prior to finishing

- 2) Viewing environment and procedure
  - a) LIGHTING. Parts will be viewed in daylight equivalent light
  - b) Normal viewing time will be 5 seconds
  - c) The surface to be viewed will be held perpendicular to the viewer's line of sight
  - d) Normal viewing distance and distance from sample panel (if used) will be as indicated based on Class designation

<u>Finish Class</u>	<u>Viewing Distance</u>
A	18 to 20"
B	24 to 26"
C	30 to 36"
D	45 to 49"

SAMPLE SIZE: Unless otherwise directed – pull 1 sample for every 20 parts.

3) Visual Characteristics:

<b>Defect/Condition</b>	<b>Class A</b>	<b>Class B</b>	<b>Class C</b>	<b>Class D</b>
<b>COLOR CONTINUITY</b>	No color change on surface viewed. Reasonable changes from surface to surface are o.k.		Reasonable changes in color continuity on viewed surface and from surface to surface are o.k.	
<b>COVERAGE</b>	100%	100%	100%	100%
<b>SCRATCHES</b>	None	None	Light	Moderate
<b>BLEMISHES</b>	Light	Moderate	Moderate	N/A
<b>ORANGE PEEL</b>	None	Per sample	N/A	N/A
<b>BLEEDING</b>	None	None	< 10%	< 10%
<b>RIPPLES</b>	None	None	< 10%	N/A

**Allowable number of Defects:**

<b>Defect Size (in inches)</b>	<b>Class A # per surface</b>	<b>Class B # per surface</b>	<b>Class C # per surface</b>
.100	0	0	1
.090	0	0	2
.080	0	0	3
.070	0	0	4
.060	0	0	5
.050	0	0	6
.040	0	1	7
.030	1	2	8
.020	2	3	8
.010	3	4	8

**V Manufacturing Parameters:**

- 1) Manufacturing, in all material aspects, must be consistent with these specs
- 2) Quality control Records must be maintained for each lot.
- 3) Incoming material acceptance must be conducted on all purchased materials (coatings, chemicals, cleaners, etc.)
- 4) Environment and Cleanliness – care must be taken to ensure serviced parts will not be contaminated by dust or manufacturing debris that would affect finish quality
- 5) Threaded parts - care must be taken in treating threaded parts such that the thread arrangement is not damaged. Example: protect threads if a threaded hole is used to hang a part for painting, plating and/or drying

**VI Packaging, Storage and Shipping:**

- 1) Any defects on parts (scratches, dents) to be processed must be reported to ATECH within 24 hours of shipping receipt at service provider or customer.
- 2) Parts must be protected in transport at all times to prevent damage, scratching, chipping, etc.
- 3) Use packaging either provided by ATECH or defined by ATECH at the time of order placement
- 4) Parts must be packed in clean materials as specified before removal from the controlled environment. Storage conditions should be maintained per requirements.
- 5) First in – first out (FIFO) shipping should be followed unless otherwise directed by ATECH.
- 6) Secondary finishing suppliers are required to return pack parts exactly as they were received. This means the same number of pieces in a box, in the same configuration, wrapped the same way and with card board layered between rows. If the supplier feels there is a better way to pack to insure a quality returned part, then they need to contact us so we can sign off. Without doing so makes the finishing supplier responsible and liable for any damaged parts. (rev 1 12-1-06)

**VII Labeling:**

- 1) Each shipping carton shall be labeled or identified by hand using a permanent marker (e.g. Sharpie). The information on each package must contain the following:
  - a) Customer Part Number:
  - b) Part Name :
  - c) Quantity:
  - d) Package number of the number in the lot (example 1 of 2, 2 of 2)

**VIII Quality Assurance:**

1. Each CUSTOMER will be issued these specifications and REQUESTED to review, designate a class required (A, B, C, D) and indicate any exceptions at the time of PO issuance. Exceptions should be noted for any part of these specifications so they can be communicated and assured throughout the supply chain.
2. Each supplier will be issued these specifications and expected to comply or indicate any exceptions at the time of PO confirmation and acceptance as well. They shall ensure services provided will comply with this specification and communicate in writing any request for deviation. They will also need to provide certifications for materials upon request.

## **XI DEFINITION OF TERMS**

**BLEEDING/STREAKING** – Flaws in the paint and/or plating film which cause usually long, narrow marking of uneven gloss or color.

**BLEMISH, FISH EYE** – Noticeable imperfection or variance in appearance of the coating, not otherwise defined.

**BLOBS** – A droplet or paint that is not level with the surface.

**BUBBLES/BLISTERS** - Areas in which the paint and/or plate film is raised or detached from the substrate.

**DEBRIS** - Minute foreign particles embedded in coating.

**GLOSS** – The appearance characteristics of a painted surface that reflect a particular shine or luster.

**LIGHTING** – Illumination of the coated surface for inspection purposes.

**ORANGE PEEL** – A continuous pebbled effect on the surface which simulates the texture of an orange.

**OVERSPRAY** – The unintentional application of a coating on an adjacent surface. Visual appearance and texture range from a fine mist to a coating. Acceptability will be defined on part control drawing.

**PEELING** - paint separating from the base material surface. Peeling is never acceptable.

**PIGMENT PARTICLES** – Small spots in coating that are a different color.

**SCRATCHES** - Lines of damage to the coating film.

**RIPPLES** – Closely spaced parallel waves in the surface of the paint film.

**RUNS/SAGS** – Excessive paint on the surface, which shows an increase in height.

**VIEWING DISTANCE** – Space, in inches, between inspector’s eyes and surface under inspection.

**VIEWING TIME** – Period of seconds specified for inspection of a given surface.

## **XII Revision record:**

<b>Revision</b>	<b>Date</b>	<b>Description</b>	<b>Approval (Print &amp; Sign)</b>
1	11/06/06	Material Coating codes Attached	Tom Evans
2	12/1/06	Updates on packaging, customers input and codes	J. Frost

## List of Code Definitions

<b>CODES</b>	<b>DESCRIPTION</b>	<b>QUALITY CODES ARE FOUND FOR SURFACE, COLOR AND THICKNESS IN ATECH-SEH SPEC 102</b>
BEAD	BEAD BLAST	
BAZ	BLACK ANODIZE	
CAL	CLEAR ALODINE (INTERCHANGEABLE WITH "IRI")	
CAZ	CLEAR ANODIZE	
CZINC	CLEAR ZINC	
EP	ELECTRO POLISH	
GAL	GOLD ALODINE	
GAZ	GOLD ANODIZE	
HEAT	HEAT TREAT	
IRI	IRIDITE (INTERCHANGEABLE WITH "CAL")	
IRI-A	MONROE IRIDITE 608-1A "CLEAR"	
NICKEL	ELECTROLESS NICKEL	
PASS	PASSIVATE	
PL/PLT	PLATE (PLEASE USE SPECIFIC CODE IF KNOWN)	
PNT	PAINT	
POW	POWDER COAT	
RFNH	REFINISH	
SCR	SCREEN	
YZINC	YELLOW ZINC	
ZINC	ZINC (INTERCHANGEABLE WITH "CZINC")	

SPEC.102 REVISION #1 12/1/06