ENGINEERING SPECIFICATION
OF ENGINEERING REQUIREMENTS

POWDER COATING

APPROVAL*	DATE DAY/MO/YR
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REVISION NOTICE

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01. PURPOSE AND SCOPE

This document gives process instructions to be followed when powder coat paint is applied to L3Harris product. This also outlines in-process testing of coatings which may be specified in engineering or purchasing documents/requirements.

02. APPLICABLE DOCUMENTS

The following documents form a part of this document to the extent specified herein:

02.1 GOVERNMENT DOCUMENTS

Document	**Title**
MIL-C-24712A	POWDER COATINGS

02.2 CSW ENGINEERING DOCUMENTS

Document	**Title**
IS-001	Use of Non-Specified Hardware/Material and Drawing Notes
W-018	Manufacturing Criteria for Painting and Rework of Paint and Powdercoat

02.2.3 DOCUMENT CONFLICTS

In the event of conflict between the documents referenced herein and the contractual requirements, the requirements of the contract shall be considered superseding requirements. In the case of conflict between documents referenced herein and the contents of this standard, the contents of this standard shall be considered a superseding requirement.

03. GENERAL REQUIREMENTS

03.1 CLEANING

03.1.1 Bare metal parts shall be cleaned to “water break free” condition prior to powder coat application.

03.1.2 Aluminum with chem-film coating shall meet the following:

03.1.2.1 Wipe all surfaces to be painted using a soft cloth and a residue free solvent capable of removing oil and grease

03.1.2.2 Maintained in clean new packaging from the completion of chem-film process until application of powder.

03.1.2.3 Cleaned parts must be handled with gloves or clean hands in order to prevent contamination. Suppliers shall have a documented process ensuring hand cleaning before handling parts, and prevent use of hand lotion while handling parts.

03.2 POWDER COAT APPLICATION

03.2.1 Suppliers shall apply powder coat according to manufacturer data sheet.

03.2.2 Powder coat thickness shall conform to the manufacturer's recommendations except where component geometry prevents consistent coating thickness, (deep cutouts or heat sink fins) thicker or thinner coating is acceptable as long as no bare metal is showing and finish is free of runs and clumping.

03.3 POWDER COAT CURE

03.3.1 The oven real time readout shall be calibrated yearly.

03.3.2 The oven shall be pre-heated above cure temperature prior to introducing coated parts.

03.3.3 If no maximum temperature is specified by the powder coat manufacturer, the oven temperature setting shall not exceed 30 degrees F over manufacturer specified cure temperature.

03.3.4 Powder coat cure time shall conform to all manufacturer data sheet recommendations and the following instructions. In case of a conflict, powder manufacturer instructions shall take precedence over the following cure time instructions:

03.3.4.1 The minimum cure time shall be calculated as follows:

- PH + MC + OC (0% min to 100% OC max) = TC
- PH (Pre Heat) = The amount of time required to heat the thickest area of the part to powder supplier recommended substrate temperature
- MC (Manufacturers Cure) = Manufacturer Recommended Cure Time at Temperature

- OC (Over Cure) = 0% min to 100% maximum of MC.
- TC (Total Cure) = Total time in cure oven

03.3.4.1.1.1 Note 1: Over cure provides for variation in temperature within the cure oven and variation within temperature calibration limits. Limited to 0% min to 100% max OC (Over Cure).

03.3.4.1.1.2 Note 2: Supplier must individually calculate the TC for each part number and document.

03.3.4.1.2 When measuring substrate temperature, temperature sensor shall be applied to thickest area of the part. Sensor shall be in contact with unpainted surface and covered with appropriate heat resistant tape. If no unpainted area is accessible, an instrumented part without powder coating may be placed in oven.

03.4 PACKAGING

03.4.1 All powder coated parts shall be individually wrapped in protective material.

03.5 CERTIFICATE OF COMPLIANCE

03.5.1 Supplier shall document a substrate temperature graph for the PH, MC, TC & OAT (Oven Air Temperature) on every first article.

03.5.2 When first article has already been performed on established part numbers, supplier is required to document a substrate temperature graph using PH, MC, TC & OAT on each part number before coating.

03.5.3 Using an actual part (A scrapped part is preferred. L3 will not supply good product for testing) supplier may perform a complete TC and test coating using MIL-C-24712A para 4.8.18; Reagent A; there shall be no rub through to substrate under 100 double rubs using 100% MEK, a 2lb ball peen hammer with soft cloth attached and adhesion test as per MIL-C-24712A para 4.8.6.

03.5.4 Supplier shall document the powder coat manufacturer and batch number for every order, and document affected part numbers when powder changes mid PO.

03.5.5 Supplier shall select a consistent coupon to test each batch of powder, document the coupon's substrate temperature graph (PH,MC,TC & OAT). Once TC has been performed supplier shall complete an adhesion test (MIL-C-24712A para 4.8.6.), confirm color match (MIL-C-24712A) and perform the cure test following method in MIL-C-24712A para 4.8.18; Reagent A; there shall be no rub through to substrate under 100 double rubs using 100% MEK, a 2lb ball peen hammer with soft cloth attached.

03.5.6 Supplier shall store all C of C related data no less than 7yrs unless specified by contract.

03.5.7 Supplier shall inspect per WS-010 and indicate defects.

03.5.8 The C of C is to be made available on request to L3 employees and supplier may be asked to perform any of these test's when requested.

03.5.9 The supplier can also test above and beyond these requirements.