ORACLE

Product Color Specification

Document Number and Revision: 950-3302-01 Rev HK

Overview

The goals of Oracle Product Color Management Program is to ensure consistent visual color matches between the many materials that are used in the manufacture of products. This specification provides information on color control for suppliers of plastic resins, paint coatings, and inks

Audience

This document applies to all products manufactured by Oracle worldwide.

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1.0 Scope

The goals of Oracle Product Color Management Program is to ensure consistent visual color matches between the many materials that are used in the manufacture of products. This specification provides information on color control for suppliers of plastic resins, paint coatings, and inks. This document applies to all products manufactured by Oracle worldwide.

For related information on Global Cosmetic Quality and Workmanship Standards see specification 923-2001-xx.

2.0 Product Color Management Program

This Product Color Specification ("Specification"), together with an Oracle-issued **appearance standard** defines the product color control system for worldwide use by Oracle and its suppliers. This specification provides information essential for achieving consistent visual color matches between different materials and coatings manufactured by various global suppliers.

Appearance Standards (Color Chips): The Product Color Management Program includes the development of new color standards. Oracle color standards are manufactured to custom color specifications unique to Oracle products. This specification and the reference data printed on the standard will assist Oracle suppliers in achieving acceptable material color matches (see example in section 2.1.1).

Part manufacturers are allowed to select material and paint suppliers. For Oracle custom colors, to ensure color consistency between manufacturers, materials must be initially qualified by Oracle, and each production lot of material must be approved by Oracle prior to use. Please see the process flow charts at the end of this specification for details.

2.1 Appearance Standards

The appearance standards (color chips) defined in Tables 1 and 2 (see Section 11.0) define the physical part of the color management control system (used in conjunction with the written specification). These color standards represent the custom colors that Oracle has developed for use on its products. Because these are custom colors, no equivalents in ink matching systems or in commercial pre-mixed paints or resins exist.

The part numbers in Tables 1 and 2 are physical parts and are therefore not ECO controlled. Revisions or changes will be tracked in this document.

2.1.1 Sample - Oracle Color Standard

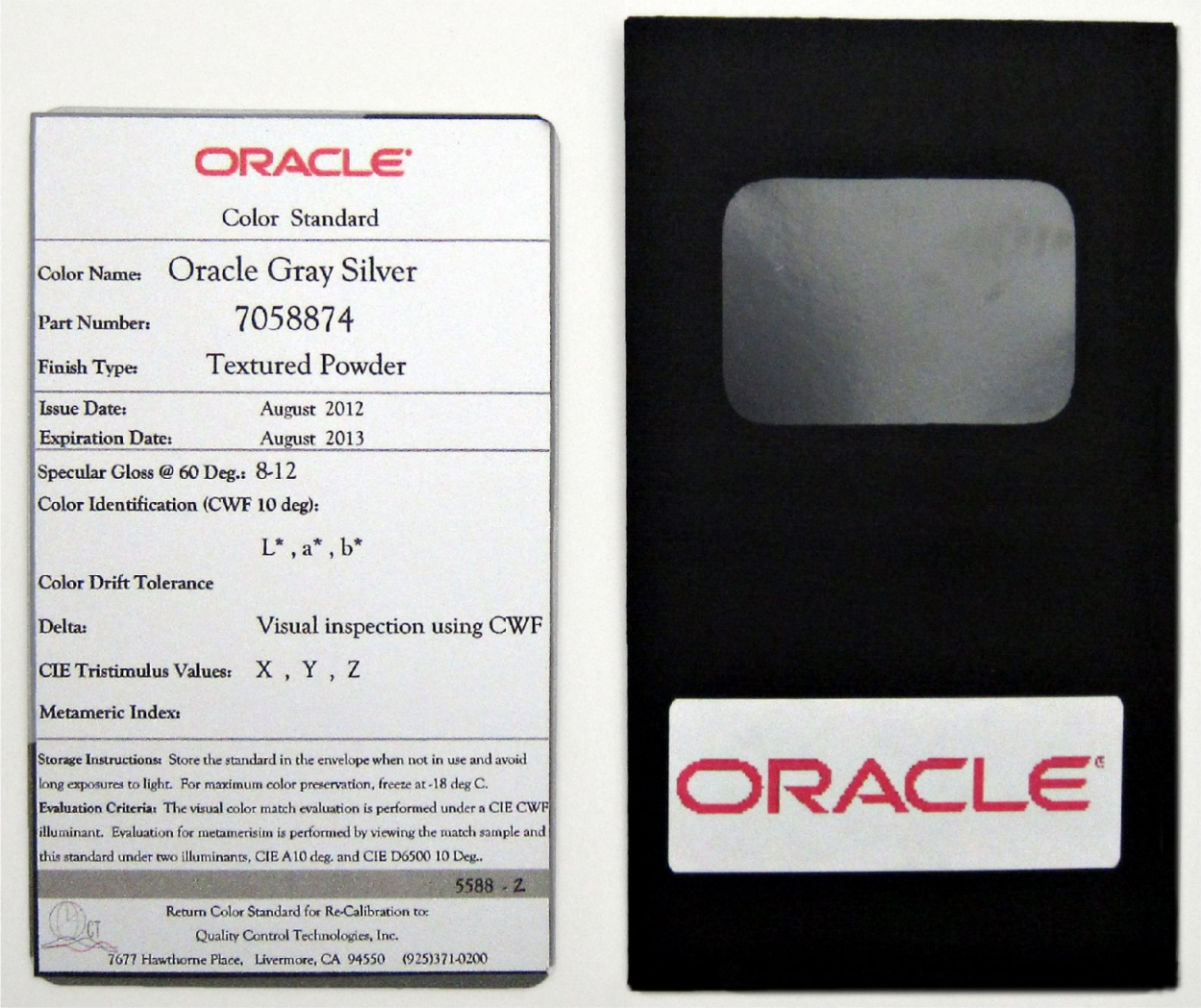


Figure 1. Sample Oracle Standard

2.2 Distribution of the Color Standards and Specification

To obtain product color standards defined in Tables 1 and 2 (see Section 11.0). For additional copies of this Specification, please contact the Oracle Color Management Program Manager or your Oracle Supplier Management representative (see Section 2.3).

Expiration of Color Standards: The supplier is responsible for requesting replacement standards whenever the standards are no longer suitable for color matching or a maximum of 1 year from the date of receipt. Expired standards shall be shipped back to Color Lab before replacement standards are shipped out.

2.3 Materials Color Match Evaluation Source

Oracle's designated contractor for color matching, color evaluation, and Color Standards distribution is:

Quality Control Technologies, Inc. (QCT)

Attn: Denice Cross

3987 First St., Suite D

Livermore, CA 94551

Tel: 925.371.0200

dcqct@pacbell.net

QCT will provide Oracle with product materials color match evaluation service. This service is performed on samples submitted by the coating, ink, or resin manufacturers. The samples sent to QCT must be accompanied by an Oracle Batch Submission Form (available from QCT, EM or Oracle Ops Eng. See section 13.1).

A QCT color match qualification report that indicates acceptance or rejection of the material color match is sent to the requestor and to Oracle. If the material is rejected, the report provides suggestions to the supplier on methods for improving the color match.

3.0 General Requirements

3.1 Responsibilities

This section defines the color qualification method for plastics, paints, and inks. The Oracle Supplier Management contact for a project or the External Manufacturer shall provide the supplier with this specification. The supplier is responsible for obtaining the required color and texture standards from Oracle or Oracle's designated contractor (see Section 2.3).

The supplier's color match samples are submitted to the designated color lab for initial qualification analysis, and production lot control and approval. The use of proper storage methods and periodic checking by the supplier will ensure that the Oracle Product Color Standards have not drifted from the spectrophotometer data. The supplier is responsible for requesting replacement standards when their standards are no longer suitable for color matching or a maximum of 1 year from the date of receipt.

3.2 Applicable Reference Documents

The following documents may be used as additional reference sources to this Specification. This Specification may expand on certain aspects of the test methods. In the event of a conflict between this Specification and these documents, this Specification shall take precedence.

- ASTM D2244 Standard Method for Instrumental Evaluation of Color Differences of Opaque Materials

- ASTM D1729 Standard Practice for Visual Evaluation of Color Differences of Opaque Materials
- ASTM D4086 Standard Practice for Visual Metamerism
- ASTM D523 Standard Test Method for Specular Gloss
- ASTM D4674 Standard Test Method for Indoor Color Stability
- SPI Plastic Surface Finishes, Society of the Plastics Industry
- Oracle 950-1311-01 Paint Performance Specification

3.3 Pigment Recommendations

The pigments used to make the Oracle colors are selected for their attributes; therefore, pigments must have these characteristics:

- Meets current U.S. and international health and environmental requirements. Pigments and additives containing heavy metals such as chromium, cadmium, mercury, and lead are not permitted. Polybrominated biphenyls (PBBs), oxides and ethers (PBBOs and PBBEs), and polybrominated diphenyl oxides and ethers (PBDOs and PBDEs) are also not permitted.
- Worldwide availability
- Excellent UV (ultraviolet) stability
- Color stability within material processing temperature range (plastics, paints)

3.4 Paint Physical Properties

Coatings supplied to this specification shall meet the requirements of Oracle specification 950-1311-01 for physical properties. All coatings shall be tested per the requirements of Oracle 950-1311-01 for initial qualification. Random audits of production lots for performance properties will be done. The paint manufacturer and/or paint applicator will be required to submit test panels to Oracle or Oracle's designated contractor upon demand.

4.0 Material Production Qualification Color Matches

Oracle uses custom colors and stock colors for its products. Sections 4.0 – 14.3 define the requirements for custom and stock colors.

A custom material is defined as a material made to match Oracle color standards and meet Oracle performance specifications. To assure the highest quality and consistency of matches, any custom color materials (resin, paint, powder coat, ink) used on Oracle hardware must go through an initial qualification match before going into production. This Material Production Quality Color Match must be done with any new supplier producing material for use on Oracle hardware or with any new material or formulation from a current suppler. Once approved, each subsequent production lot must be submitted for approval prior to use. See the process flow charts at the end of this specification. Sections 4.0 to 8.0 in this specification give guidelines for the Material Production Quality Color Match. Once a Material Production Quality Color Match is approved the material can go into production. While in production the supplier is expected to follow Oracle's guidelines for Supplier Lot/Batch Monitoring (see Section 9.0 in this specification). For information on when to re-qualify a color match (see Section 7.7).

A stock color is defined as an existing material readily available and sold to any client. Made to paint manufacturer's in-house color tolerances. Stock colors require an initial qualification for color and Performance Testing per 950-1311-01. Batch approvals for stock colors are required on initial production lots to ensure process repeatability has been established. Thereafter, batch approvals can be requested at Oracle's discretion. The appearance of stock colors are monitored through audits of production lots (see Section 14.4 - Stock Color Paint Flow Chart 4).

4.1 Match Samples General Requirements (all Coating Types)

Quantity - Four (4) samples are required for Material Production Qualification Color Match evaluation. Each sample should be packaged separately to eliminate surface scratches that can occur during shipment.

Preparation - The samples should be prepared, and the coatings applied in accordance with the coating manufacturer's recommendations.

Size - The minimum sample size is 2”x 3”. The color match surface and the back surface should be large enough to make multiple 1-inch diameter (25.4 mm) spectrophotometer measurements (See Diagram A).

Identification - The samples should be accompanied by an Oracle Batch Submission Form (available from QCT, see Sections 2.3 & 13.1).

4.2 Plastic Color Match Samples

A high-quality surface finish is an asset in making color matching judgements. The Oracle mold surface is described in Diagram A. The plastic samples should have an SPI D-2 finish on one side and a high gloss finish on the other. (Refer also to the gloss and surface requirements in Section 5.0) This finish is used for color match qualification and does not represent the product texture. The samples should not have steps and different textures because these elements reduce the ability to make color comparisons. Good injection molding practices are required. The match samples must not have scratches, flow marks, bloom, fingerprints, or other blemishes that may detract from the visual and spectrophotometric evaluation process.

Note to resin suppliers: Raised or molded names, trademarks, and design ridges prevent the match sample from being placed parallel to the spectrophotometer port. The practice of molding in variations in the surface plane is discouraged because it can cause measurement discrepancies.

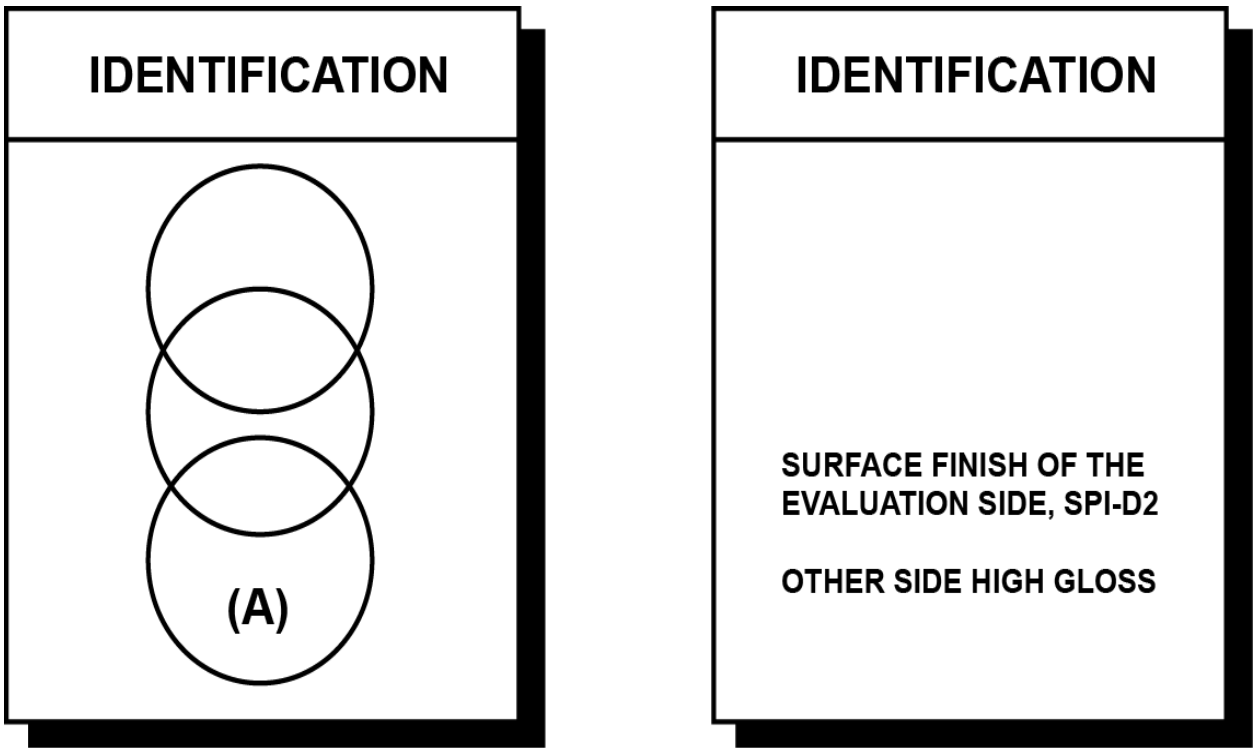


Diagram A

4.3 Paint and Powder Coat Color Match Samples

The paint match samples are coated on one side using the paint manufacturer's recommendations for film thickness and cure procedures. Liquid coatings should be submitted smooth (no texture applied). Powder paint match samples should be submitted as formulated.

4.4 Silk Screen / Pad Printing Ink Color Match Samples

Only inks used for silkscreening and pad-printing that are specified to this document, shall be color matched to an Oracle color standard and batch approved as defined in this document.

4.5 Printed Materials Ink Color Match

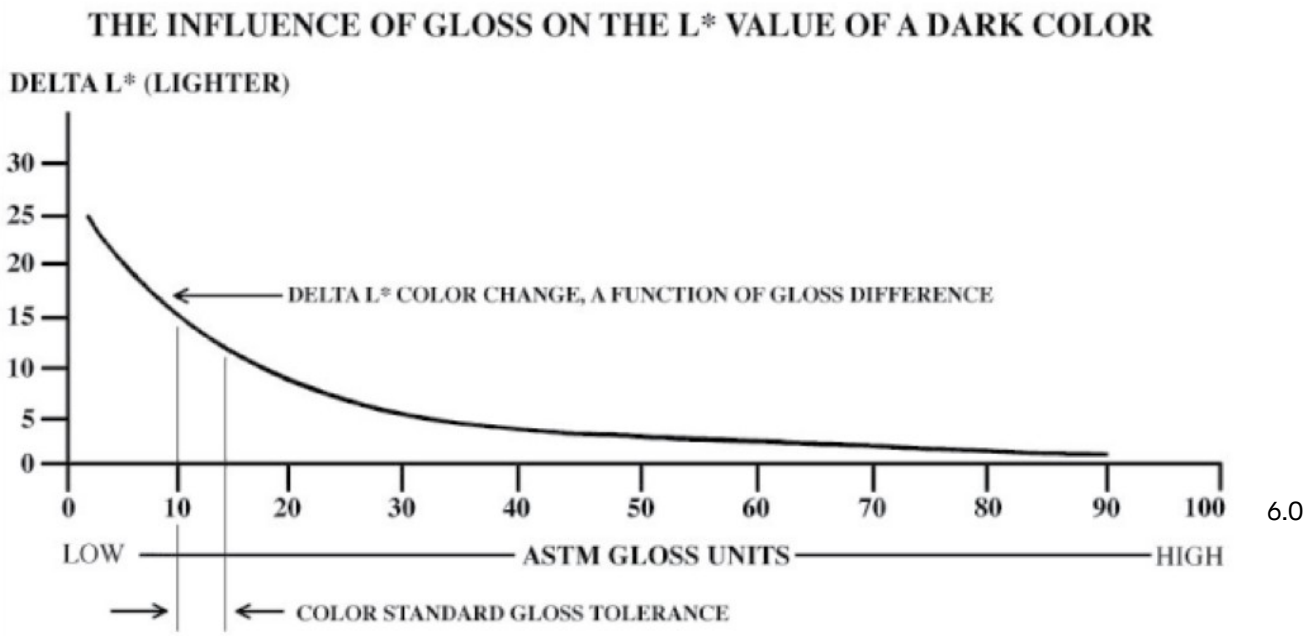
Inks used “ONLY” on printed stock applied onto or associated with the hardware systems (ex: adhesive labels and rack installation cards) shall be specified on the label drawings. Batch approval as defined in this document is not required for these materials. For more information, contact: Hardware User Centered Design (HUCD).

5.0 Gloss Requirements

The gloss of the evaluation side of the match sample must meet the gloss requirements listed in Tables 1 and 2 (See Section 11.0 and also found on the back of the color standard). The gloss measurement shall be done in accordance with the requirements stated in ASTM D523 Standard Test Method For Specular Gloss.

5.1 L* Value Change, a Function of Gloss

Gloss variations between the match sample and the standard in the mid- to high-gloss range have little effect on color difference (value and chroma). Gloss variations in the low-gloss range can significantly change the chroma and lighten or darken a color (see chart below).



6.0

Visual Color Evaluation

6.1 Visual Color Match

Visual color comparison performed under the CIE CWF (cool white fluorescent) illuminant is the definitive method used to determine if a sample matches the Oracle appearance standard. Visual color match evaluations should be performed by a trained observer who has been qualified by passing the Farnsworth-Munsell 100 Hue Color Discrimination test. The visual closeness of the color match that is required is based on the aesthetic application of the color to the product and system interrelationship. The visual color match evaluation is used in conjunction with the spectrophotometer CIE L*a*b* color difference data. When an anomaly occurs, the visual match supersedes the spectrophotometer match for determining the acceptance of a sample. The spectral data is for reference only and can be used to aid communication in describing what adjustments may be needed to achieve an acceptable visual match.

6.2 Color Match Light Booth

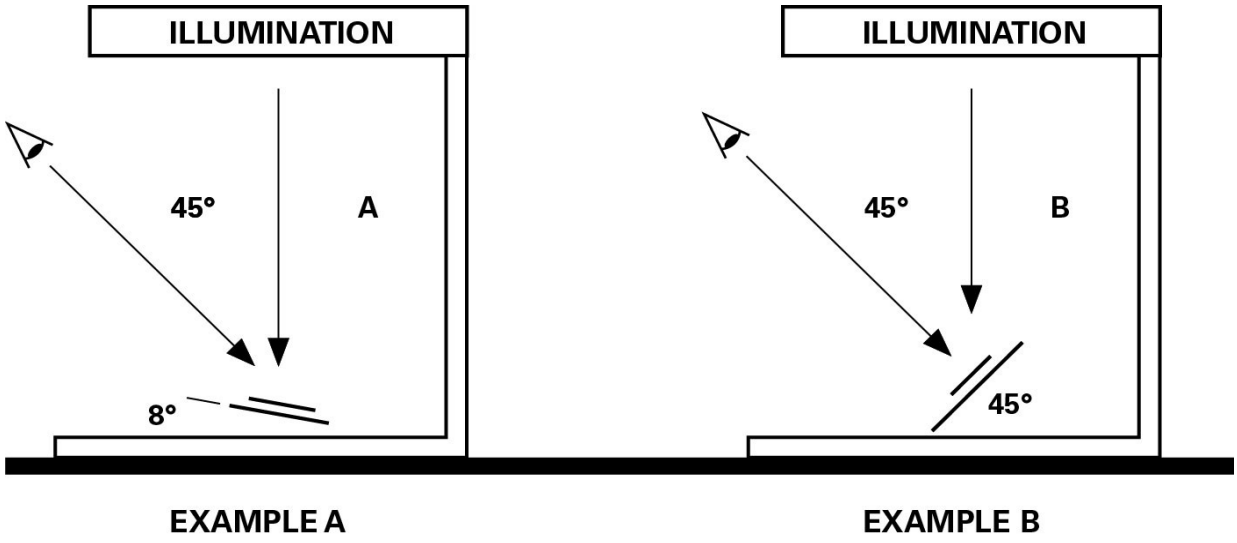
All color match evaluations should be performed in a light booth that is equipped with CIE CWF 4400 K, CIE D 6500 K, and CIE A 2854 K illuminants. The booth should be configured to ASTM D 1729 requirements.

6.3 Illuminants and Metamerism

Color formulation and qualification color match evaluations should be performed under the CIE CWF (cool white fluorescent) illuminant. Metameric evaluations should be performed by viewing the match sample and the color standard under the CIE A illuminant and CIE D 6500 K illuminant. The aesthetic quality of the color match should remain constant and not appear different. Metamerism is a cause for rejection.

6.4 Light Booth Viewing Techniques

The match sample and color standard should be evaluated under many viewing angles. This is important when there are specular reflection differences. Comparisons of dark colors should be made using Example B (below). This angle reduces the specular gloss variations that can interfere with L* value (lighter or darker) match comparisons.



EXAMPLE A EXAMPLE B

7.0 Spectrophotometer Color Match and Evaluation Procedures

7.1 Spectrophotometer Color Analysis

It is important that the same measurement parameters are used for material color matching and for match sample color evaluation. The color measurement parameters described below pertain only to opaque materials. The visual color match evaluation is used in conjunction with the spectrophotometer CIE L*a*b* color difference data. Visual color comparison is the definitive method used to determine if a sample matches the Oracle appearance standard. When an anomaly occurs, the visual match supersedes the spectrophotometer match for determining the acceptance of a sample. The spectral data is for reference only and can be used to aid communication in describing what adjustments may be needed to achieve an acceptable visual match.

7.2 Instrumentation

The spectrophotometer should have capabilities within the acceptance range established by the Manufacturing Council on Color and Appearance (MCCA).

7.3 Color Measurement Parameters

The supplier should use the following color measurement parameters when color matching all Oracle opaque colors:

- CIE delta L*a*b*
- CIE CWF Illuminant (4400 k)
- Specular Gloss Included
- 10º Observer

Oracle will evaluate the quality of the color match using two additional parameters:

- Metameric Index (MI) between the match sample and the color standard
- Spectral Energy Distribution (SED) Curve of the match sample and the color standard

7.4 Color Measurement Data

The supplier will furnish the CIE delta L*a*b* and delta E* color differences between the match sample and color and the color standard.

7.5 Color Match Qualification Tolerance

Oracle does not provide CIE delta L*a*b* color tolerances for production color qualification matches. Tolerances for each color can vary and are dependent on the aesthetic importance of the color application to the product.

7.6 Match Sample Qualification Report

Samples (see Section 4.0) should be sent to Oracle's designated contractor (see Section 2.3) who will evaluate the match sample using visual comparison techniques and a spectrophotometer. The supplier will be notified of the approval or rejection of the sample. When a color match is rejected, additional data will be furnished to assist the supplier in resubmitting the sample for approval.

7.7 Color Match Re-qualification

The supplier must re-qualify materials when changes have been made to the color formulation (except for pigment percentages), fillers, molding compound, and paint chemistry.

8.0 Product Material Color Stability

8.1 Color Stability Requirement

A CIE delta E* of 1.5 color change is generally acceptable. A delta E* color change of 1.5 is more noticeable on light colors and less noticeable on dark colors. High-chroma colors are inherently less color stable, requiring a larger delta E* limit. The Oracle Hardware User Centered Design Department (Industrial Design) will specify color change limits for unique product applications.

8.2 Color Stability Test Method

The ASTM D4674 Standard Test Method for Indoor Color Stability is used to determine the acceptable level of color change. The UV Actinic Exposure is UVAE-CWF irradiance of 2806 W-h/m^2 and represents an accelerated test equivalent to 3 years real time.

8.3 Color Stability Variation

Most materials have an actinic activation spectrum, which is a sensitivity to specific ultraviolet (UV) and visible wavelengths. This sensitivity causes a color change and can occur in three areas of the materials formulation:

- The basic resin or compound
- Additives that improve the physical properties or processing characteristics
- Pigments or dyes that are used to achieve the color match

The color stability of most materials can be improved by:

- Adding or increasing the amount of UV stabilizers
- Selecting different engineering additives
- Selecting pigments that are more resistant to UV radiation and visible light color change

8.4 Material Suppliers

Most material suppliers in the U.S. can specify the level of color stability for their products. Suppliers who cannot specify the color stability of their materials must have them tested.

9.0 Supplier Lot/Batch Monitoring

9.1 Objective

Once a material production qualification color match is approved, it becomes the supplier's color reference standard for paint, plastics or ink. The color matches within each subsequent product lots will vary. This variance is called a color drift. The objective is to assure that the material is manufactured within the Oracle color drift tolerances before it is shipped to the plastic molder or paint applicator.

9.2 Letter of Certification for Plastic Resins

At the completion of production, the supplier will furnish the designated color lab with a certificate of color difference analysis for all batches within a lot. It is not necessary to provide physical samples. The data should include:

- Oracle product color name and identification number
- Plastic identification, resin grade, and color number
- Lot number and pounds (or kilograms)
- CIE delta L*a*b* of each batch, metameric information and gloss level

9.3 Paint Batch Color Approval and Monitoring

The paint manufacturer will provide the designated color lab with a color match sample and spectral data of each batch for approval before packaging and shipment to the paint applicator (see Section 14.3 Production Lot Color Evaluation and Disposition Process Flow Chart 3). All paint samples should be prepared using the manufacturer's application procedures and recommended dry film thickness for the specific paint resin. All samples will be will be compared in the smooth condition except for those coatings designated as "Textured" in Section 2.1.1 (see image)

The data should include:

- Oracle product color name and identification number
- Manufacturer's product number, type, and color number
- Batch/Lot number and size (gallons, pounds)
- CIE delta L*a*b* of the batch

Upon approval of the lot, the approving agent will assign a code to the lot that signifies Oracle approval. This approval code will be communicated to the paint manufacturer. The code must be 1) visible on the coating, paint or plastic, container and supplied in writing to the procuring company, or 2) available as a quality record from the approving agent, and paint manufacturer, and paint applicator.

Batch approvals for stock colors are required on initial production lots to ensure process repeatability has been established. Thereafter, batch approvals can be requested at Oracle's discretion. The appearance of stock colors are monitored through audits of production lots (see Section 14.4 - Stock Color Paint Flow Chart 4).

9.4 Batch-to-Batch Color Drift Tolerances

The following reference tolerances apply to both paints and plastics:

- CIE delta L* ±0.40
- CIE delta a* ±0.40
- CIE delta b* ±0.40
- CIE delta E ±0.50
- Metameric Index <0.30

These values are guidelines and should be used as reference. Visual color comparison is the definitive method used to determine if a sample matches the Oracle appearance standard. The visual color match evaluation is used in conjunction with the spectrophotometer CIE L*a*b* color difference data. When an anomaly occurs, the visual match supersedes the spectrophotometer match for determining the acceptance of a sample.

9.5 Supplier Lot/Batch Tracking and Audit

This requirement applies to both stock colors and custom colors. The designated color lab and Oracle will track and chart all color difference data between the supplier color standard values and the production batch values through a summary report. The supplier will be notified by the designated color lab when an out-of-tolerance trend is observed. It is recommended that the supplier send in their provided Oracle Color Standard to the designated color lab every 6 months for evaluations to ensure the standard is still compliant.

9.6 Acceptance of the Production Plastic or Paint

Acceptance of batches within a lot is based on the supplier's compliance with this specification. Oracle or its vendors will return any material that is not in compliance. Upon approval of the lot, the approving agent will assign a code to the lot that signifies Oracle approval. This approval code will be communicated to the paint manufacturer. The code must be visible on the coating, paint or plastic, container or supplied in writing to the procuring company.

10.0 Application Notes

10.1 Paint Performance

Coatings supplied to this specification shall meet the requirements of Oracle specification 950-1311-01 for physical properties. All coatings shall be tested per the requirements of Oracle 950-1311-01 for initial qualification. Random audits of production lots for performance properties will be done. The paint manufacturer and/or paint applicator will be required to submit test panels to Oracle or Oracle's designated contractor upon demand.

10.2 Appearance Variance Issues

If during final inspection by the paint applicator the appearance of the production parts does not match the Oracle standard the following items should be verified -

- the appearance standards are Oracle issued and have not expired

- the paint has been approved by Oracle or Oracle's contractor.
- the paint was applied according to manufacturer's recommendations (Dry film thickness and cure cycle are critical).

If these items are verified as correct, then the applicator should contact the paint manufacturer, report the discrepancy, and have a technical representative show up on-site.

If the problem cannot be resolved the Oracle Mechanical Product Engineer or Oracle External Manufacturer Supplier Quality Engineer should be contacted for further options. If there are questions about the standards or verification of lot approvals, the Color Management Program Manager or Hardware User Centered Design (HUCD) engineer should be contacted.

11.0 Oracle Color Standards Tables

11.1 Table 1 - Oracle Product Color Standards

Color Name	Oracle Part Number	Gloss Range (@60°)	Comments	Custom or Stock	Approved Suppliers
Alloy Ghost Gray	255-1122-01	15 - 19	Approved for existing & new programs.	Custom	See Table 3
Alloy Ghost Gray Gloss	255-1140-01	90 - 100	Approved for existing & new programs.	Custom	
Alloy Gray	950-4697-01	15 - 19	Approved for existing & new programs.	Custom	See Table 3
Alloy Silver	950-4696-01	15 - 19	Approved for existing & new programs.	Custom	See Table 3
Charcoal Gray	950-3394-01	10 - 14	Approved for existing & new programs.	Custom	See Table 3
Cold Service Blue	7022249	10 - 14	Approved for existing & new programs.	Custom	See Table 3
HF Green	255-1119-02	10 - 14	Approved for existing & new programs.	Custom	See Table 3
Hot Service Orange	8203644	10 - 14	Approved for existing & new programs.	Custom	See Table 3
Oracle Bezel Black	255-1142-01	7 - 10	Approved for existing & new programs.	Custom	See Table 3
Oracle Cool Gray 11	255-1133-01	14 - 19	Approved for existing & new programs.	Custom	See Table 3
Oracle Logo White	255-1110-01	90 - 100	Approved for existing & new programs.	Custom	See Table 3
Oracle 485 Red	255-1132-01	14 - 19	Approved for existing & new programs.	Custom	See Table 3
Paint Texture #1 (Fine)	950-3458-01	5 - 9	Approved for existing & new programs.		
Air	8203645	14 - 19	Approved for existing & new programs.	Custom	See Table 3
Oracle Red	8203646	14 - 19	Approved for existing & new programs.	Custom	See Table 3
Oracle Bark	8203647	14 - 19	Approved for existing & new programs.	Custom	See Table 3

11.2 Table 2 - Oracle Powder Coat Color Standard

Color name	Oracle Part Number	Gloss Range (@60°)	Comments Approved for existing & new programs.	Custom or Stock	Approved Suppliers
Charcoal Gray (Textured)	950-3609-01	4 - 6	Approved for existing & new programs.	Custom	See Table 3
Gray Silver (Textured)	7058874	8 - 12	Approved for existing & new programs.	Stock	See Table 3

12.0 Oracle Approved Suppliers

12.1 Table 3 – Approved Vendor List (AVL)

Color Name	Oracle Part Number	Supplier	Supplier Part Number	Product Description	Type
Alloy Ghost Gray	255-1122-01	Fujitsu	WM050603A-ABS	ABS	Resin
Alloy Ghost Gray	255-1122-01	Fujitsu	WM050603A	HIPS 6500	Resin
Alloy Ghost Gray	255-1122-01	Maxswell Dev Ltd	GX-5200-01170	Water base paint	Paint
Alloy Ghost Gray	255-1122-01	Monterey International	WM050603A	ABS / AG15A0	Resin
Alloy Ghost Gray	255-1122-01	Monterey International	WM050603A	HIPS / MP6500	Resin
Alloy Gray	950-4697-01	Axxion	58-500078-00	PC/ABS C6200	Resin
Alloy Gray	950-4697-01	Bayer Polymers	702497	FR2000	Resin
Alloy Gray	950-4697-01	Cardinal Industrial Finishes	3601+E05459	Low Bake Water base	Paint
Alloy Gray	950-4697-01	Cardinal Industrial Finishes	3701+E05459	Low Bake Water base	Paint
Alloy Gray	950-4697-01	Cardinal Industrial Finishes	8101+E05459	High Bake Waterborne	Paint
Alloy Gray	950-4697-01	Cardinal Industrial Finishes	8121+E05459	High Bake Waterborne	Paint
Alloy Gray	950-4697-01	Cardinal Industrial Finishes	H301-GRAY	Epoxy Polyester Hybrid Powder Coating	Powder
Alloy Gray	950-4697-01	Dickten Masch Plastic	350-1288-01		Resin
Alloy Gray	950-4697-01	Foxconn LH (Shenzhen)	C6200-1612011	PC+ABS C6200	Resin

Alloy Gray	950-4697-01	Fujitsu	WM050603B	HIPS 6500	Resin
Alloy Gray	950-4697-01	Fujitsu	WM050603A-1#54073	ABS	Resin
Alloy Gray	950-4697-01	IVC Industrial Coatings	96203	High Bake Water base	Paint
Alloy Gray	950-4697-01	IVC Industrial Coatings	94934	Low Bake Water base	Paint
Alloy Gray	950-4697-01	IVC Industrial Coatings	B10906HA17K	Powder Coat	Powder
Alloy Gray	950-4697-01	Monterey International	WM050603B	ABS / AG15A0	Resin
Alloy Gray	950-4697-01	Monterey International	WM050603B	HIPS / MP6500	Resin
Alloy Gray	950-4697-01	PPG	PCF70245	Hybrid Powder Coating	Powder
Alloy Gray	950-4697-01	PPG	XPM63177S	2K Solvent	Paint
Alloy Gray	950-4697-01	Sabic	7T7D142	ABS	Paint
Alloy Gray	950-4697-01	Sabic	GY7C059	Cycoloy C6200, C2950HF, C3650, C6600	Resin
Alloy Gray	950-4697-01	Sabic	GY7C073	Lexan 221R, Lexan 920	Resin
Alloy Gray	950-4697-01	Sherwin Williams	HAT2-40141	Hybrid Powder Coating	Powder
Alloy Gray	950-4697-01	Sherwin Williams	F83A01582	Kem Aqua 600T	Paint
Alloy Gray	950-4697-01	Sherwin Williams	F83A01583	Kem Aqua 1500T	Paint
Alloy Gray	950-4697-01	Xyratex (Malaysia)	976119	PC-BPL1000-7T7D142	Resin
Alloy Gray	950-4697-01	Foxconn Plastics (Shenzhen, China)	U2504022	Lupoy EF1006FM	Resin
Alloy Gray	950-4697-01	Sabic	7G7C3613	PC EXL7414	Resin
Alloy Silver	950-4696-01	Axxion	50-200036-00	High Bake Monocoat	Paint
Alloy Silver	950-4696-01	Cardinal Industrial Finishes	3721+E03564-P	Low Bake Water base	Paint
Alloy Silver	950-4696-01	Cardinal Industrial Finishes	5021+E03564-P	High Bake Solvent	Paint
Alloy Silver	950-4696-01	Cardinal Industrial Finishes	8121+E03564-P	High Bake Water base	Paint
Alloy Silver	950-4696-01	Durachem	DF5P-2402	Paint	Paint

Alloy Silver	950-4696-01	IVC Industrial Coatings	96199M	High Bake Water base	Paint
Alloy Silver	950-4696-01	IVC Industrial Coatings	921324B-XQ+	Air Dry Waterborne	Paint
Alloy Silver	950-4696-01	PPG (Malaysia, Taiwan) (CONDITIONAL APPROVAL FOR C2 SYSTEMS ONLY. PENDING COLOR CORRECTION)	XPM63176	2K Monocoat Solvent	Paint
Alloy Silver	950-4696-01	PPG	SPE61959	High Bake Solvent	Paint
Alloy Silver	950-4696-01	Red Spot	318LE 2575	Solvent Base	Paint
Alloy Silver	950-4696-01	Sherwin Williams (Nantong, China)	F83S01521-020P9	KA 1500T High Bake Water base	Paint
Alloy Silver	950-4696-01	Sherwin Williams (Shanghai)	F83SP1155	KA 600S Low Bake Water base	Paint
Alloy Silver	950-4696-01	Sherwin Williams (USA)	F63TXS17923-XXXX	Polane T	Paint
Alloy Silver	950-4696-01	Sherwin Williams (Nantong, China)	F63TXS17923-9103-018P1 silver	Polane T	Paint
Alloy Silver	950-4696-01	Sherwin Williams (Malaysia)	TS0523E	Polane B	Paint
Alloy Silver	950-4696-01	Xyratex (Malaysia)	DE2-24P/DE-2-24C	Paint	Paint
Alloy Silver	950-4696-01	ChingSong (Taiwan)	SV8001	High Bake Solvent	Paint
Alloy Silver	950-4696-01	Donbon (Taiwan)	PX-1 664-43 (MP 664-45)	2K Monocoat Solvent	Paint
Charcoal Gray	950-3394-01	Bayer Polymers	702347	248 Lustran 3N169LAA	Resin
Charcoal Gray	950-3394-01	Cardinal Industrial Finishes	6101-498	Polyurethane	Paint
Charcoal Gray	950-3394-01	Cardinal Industrial Finishes	6301-GMR01730	Polyurethane	Paint
Charcoal Gray	950-3394-01	Cardinal Industrial Finishes	8101-498	High Bake Waterborne Acrylic Semi-Gloss	Paint
Charcoal Gray	950-3394-01	Cardinal Industrial Finishes	3601+E05459	Low Bake Water base	Paint
Charcoal Gray	950-3394-01	Cardinal Industrial Finishes	3601-498	Air Dry Waterborne Acrylic Semi-Gloss	Paint
Charcoal Gray	950-3394-01	Cascade Coatings	LU-10447HBW-AD	High Bake Water base	Paint
Charcoal Gray	950-3394-01	Cascade Coatings	LU-10447HBW-AL	High Bake Water base	Paint
Charcoal Gray	950-3394-01	IVC Industrial Coatings	96127	High Bake Water base	Paint
Charcoal Gray	950-3394-01	IVC Industrial Coatings	94461	Low Bake Water base	Paint
Charcoal Gray	950-3394-01	Sabic	GY3A538	Cycoloy C2950HF	Resin
Charcoal Gray	950-3394-01	Sabic	GY3A538	Cycoloy C6200	Resin

Charcoal Gray	950-3394-01	Sabic	GY3A539	Cycolac MG47	Resin
Charcoal Gray	950-3394-01	Sherwin Williams	F83A1534	Kem Aqua 600 T	Paint
Charcoal Gray	950-3394-01	Sherwin Williams	F63A1568	Polane 700T	Paint
Charcoal Gray	950-3394-01	Sherwin Williams	F83A1133	Kem Aqua 1500T	Paint
Charcoal Gray	950-3394-01	Sherwin Williams	F83AC653	Kem Aqua 1500T HF	Paint
Charcoal Gray	950-3394-01	Sherwin Williams	F73WXA10997-4394	Kem Aqua 600	Paint
Charcoal Gray	950-3609-01	Akzo - Interpon (NingBo)	EP355Z	Powder Coat (Textured)	Powder
Charcoal Gray	950-3609-01	Cardinal Industrial Finishes	C241-GR663	Polyester Semi-Gloss Textured Powder Coating	Powder
Charcoal Gray	950-3609-01	IVC Industrial Coatings	82186H05J	Powder Coat	Powder
Charcoal Gray	950-3609-01	PPG	PCF70249	Textured Powder Coating	Powder
Charcoal Gray	950-3609-01	Sherwin Williams	FAT2-40022	TGIC Free Polyester Textured Powder	Powder
Charcoal Gray	950-3609-01	Sherwin Williams	PAT2-40032	TGIC Polyester Textured Powder Coating	Powder
Charcoal Gray	950-3609-01	Trimite	LX 7824-05	Low Cure Polyester Texture Powder	Powder
Gray Silver	7058874	Performance Powders	PTS4028-1	Textured Polyester Powder Coating	Powder
Gray Silver	7058874	PPG	PCSP75102	Textured Polyester Powder Coating	Powder
Gray Silver	7058874	Sherwin Williams	HSZ160016	Powdura Hybrid Textured Powder	Powder
Gray Silver	7058874	Sherwin Williams (Shanghai, China)	HAF2-J2882	Powdura Hybrid Texture Powder	Powder
Gray Silver	7058874	Sherwin Williams (Italy)	FST1E0001	Powdura Hybrid Textured Powder	Powder
Gray Silver	7058874	Sherwin Williams (Nantong, China)	PAF2J4016	Powdura Hybrid Texture Powder	Powder
Gray Silver	7058874	Trimite	E1HB010-0000	Textured Powder Coating	Powder
Gray Silver	7058874	Sherwin Williams (Grove City, Ohio)	HSZ160033 (PENDING PERF TESTING)	Textured Powder Coating	Powder
HF Green	255-1119-02	Bayer Polymers	600214	Bayblend FR 2010	Resin
HF Green	255-1119-02	Foxconn LH (Shenzhen)	C6200-1612013	PC+ABS C6200	Resin
HF Green	255-1119-02	Sabic	3T7D006	Cyccoloy C6200 (CMR 41776)	Resin

HF Green	255-1119-02	Sherwin Williams (Shanghai)	F73GP7163	Permaclad Low Bake	Paint
HF Green	255-1119-02	Foxconn-Prac	C6200-1612013	PC+ABS C6200	Resin
HF Green	255-1119-02	Teijin Limited (Japan)	RN-7730, QM50535	PC/ABS+30% GF	Resin
Hot Service Orange	8203644	Cymmetrik (Shenzhen)	8203644ß	Ink	Ink
Oracle Air	8203645	Foxconn (S.China)	F83WP4122	KA8305	Ink
Oracle Red	8203646	Norcote, Inc. (USA)	RDMSK-8956-A1	UV Ink	Ink
Oracle 485 Red	255-1132-01	Cardinal Industrial Finishes	3601+RDJ06755	Air Dry Waterborne Acrylic Semi-Gloss	Paint
Oracle 485 Red	255-1132-01	Cardinal Industrial Finishes	6301+RDM01732-S	Polyurethane	Paint
Oracle 485 Red	255-1132-01	Fujitsu/Mikasa Paint Co.	Oracle Red 485C	Liquid	Paint
Oracle 485 Red	255-1132-01	Sherwin Williams	F83R01505	Kem Aqua 1500T	Paint
Oracle 485 Red	255-1132-01	Sherwin Williams	F63R01002	Polane T	Paint
Oracle 485 Red	255-1132-01	Sherwin Williams	F73WXR16511-4394	Kem Aqua 600 Low Bake Water (San Leandro)	Paint
Oracle 485 Red	255-1132-01	Sherwin Williams	F83JXR17221-4394/F83R01505	Kem Aqua 1500T	Paint
Oracle 485 Red	255-1132-01	Sherwin Williams	F63TXR0193	Polane T	Paint
Oracle Bark	8203647	Foxconn (S.China)	Oracle Bark 2329	Ink	Ink
Oracle Bark	8203647	Foxconn (S.China)	C6200-U2011034	PC/ABS	Resin
Oracle Bark	8203647	Gaoqi Printing	F032-01894-9000	Ink	Ink
Oracle Bark	8203647	Gaoqi Printing	8219542-02	Ink	Ink
Oracle Bark	8203647	JianSheng (S. China)	F90149-1	Ink	Ink
Oracle Bark	8203647	Norcote (UK)	BR88-1591U1	UV Ink	Ink
Oracle Bezel Black	255-1142-01	Cardinal Industrial Finishes	8102-BKJ06975	High Bake Waterborne	Paint

Oracle Cool Gray 11	255-1133-01	Cardinal Industrial Finishes	8102-GRJ06754	High Bake Waterborne	Paint
Oracle Cool Gray 11	255-1133-01	Cardinal Industrial Finishes	3601+GRJ06754	Air Dry Waterborne Acrylic Semi-Gloss	Paint
Oracle Cool Gray 11	255-1133-01	Cardinal Industrial Finishes	6301-GMR01731	Polyurethane	Paint
Oracle Cool Gray 11	255-1133-01	Gemalto	SU1546	Plastic Overlay	Resin
Oracle Cool Gray 11	255-1133-01	Knurr Environments for Elect		Ink	Ink
Oracle Cool Gray 11	255-1133-01	Marabu (Knurr)	UVSM 74196180	Knurr P/N 650060020 Gray - Silk Screen Ink	Ink
Oracle Cool Gray 11	255-1133-01	Norcote	GY88-6027-A1	Screen, Ink, O, 88 Series	Ink
Oracle Cool Gray 11	255-1133-01	Pu-Xian Plastic	345787500001/345787500002	Silicone	Resin
Oracle Cool Gray 11	255-1133-01	Sabic	Cycoloy 7CD004	CMR 65813	Resin
Oracle Cool Gray 11	255-1133-01	Sherwin Williams (MX and SL)	F63TXA16947-4394	Polane T	Paint
Oracle Cool Gray 11	255-1133-01	Sherwin Williams (S. China)	F83A01604	Kem Aqua 1500T	Paint
Oracle Logo White	255-1110-01	Cardinal Industrial Finishes	6409-WHJ06860	Polyurethane	Paint

13.0 Forms

13.1 Oracle Batch Submission Form

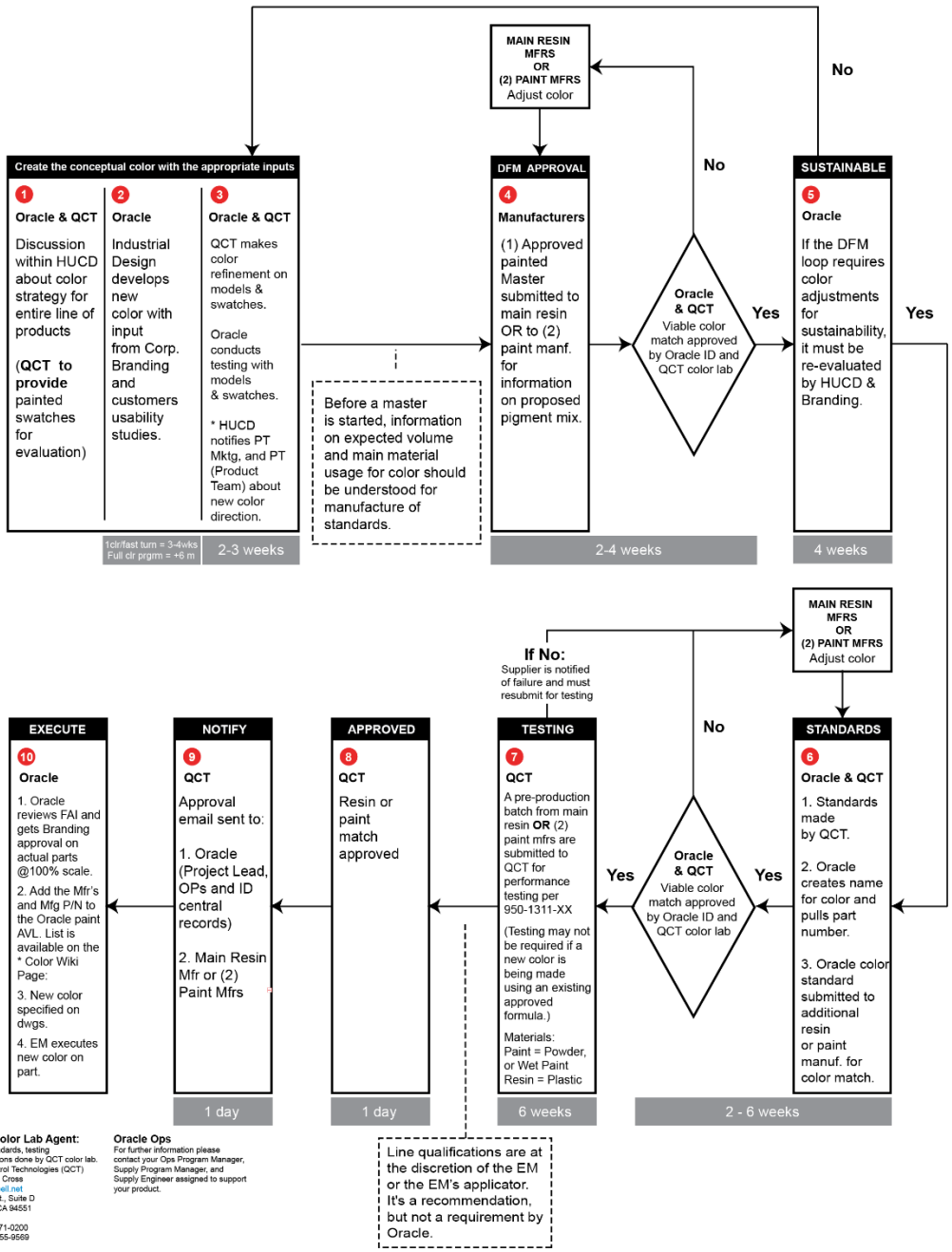
This form must be filled out and submitted with every batch. For editable .xls version of this form, please contact your EM, Ops PM and Ops Engineer assigned to support your product.

Please fill out the following information completely: 1) Send a copy to QCT with the submission sample. 2) Email a copy to the Oracle Color Mgmt Contact indicated below	
Submittal Date: _____ (mm/dd/yyyy)	
Is this a re-submittal? ***No*** _____ ***Yes*** _____	***Date of prior submission*** _____
Color Match Evaluation Information:	
Requestor Name	
Requestor Telephone Number	
Requestor Fax Number	
Requestor Email Address	
Supplier Name	
Supplier Manufacturing Location	
Supplier Product/Part Number	
Customer (who ordered this material)	
Batch Number	
Batch Size (gallons or pounds)	
Model / Chip Identification	
Oracle Color Name	
Oracle Color Part Number	
Color Match Type (i.e., paint, plastic, texture, ink)	
Paint or Material Type (for example, solvent, water, or powder)	
Plastic Type (PC ABS, polycarbonate, and so on)	
Oracle's Product application (i.e., keycaps, bezel)	
Oracle Program Name (the color will be applied to)	
Date the evaluation is requested (mm/dd/yyyy)	
Additional Contacts for the Evaluation:	
Name	***Email***
Please send the 3 color match samples along with the following information to:	
QCT Attn: Denice Cross Quality Control Technologies, Inc. 3987 First St., Suite D Livermore, CA 94551 Tel: 925-371-0200 Fax: 925-455-9569 dcqct@pacbell.net www.qualitycontroltechnologies.com	
A color match qualification report that indicates acceptance or rejection of the material color match for production is sent to the Requestor, to Oracle and to any other contacts indicated above. If the material is rejected, the report provides instructions to the supplier on methods for improving the color match. The material CANNOT be used for production until the batch has been approved by QCT.	
If you have any further questions about Oracle's Color Evaluation Process, please feel free to contact:	
June Lee, Color Management *Email: june.x.lee@oracle.com*	

14.0 Process Flow Charts

14.1 New Color & Material Process Flow Chart 1

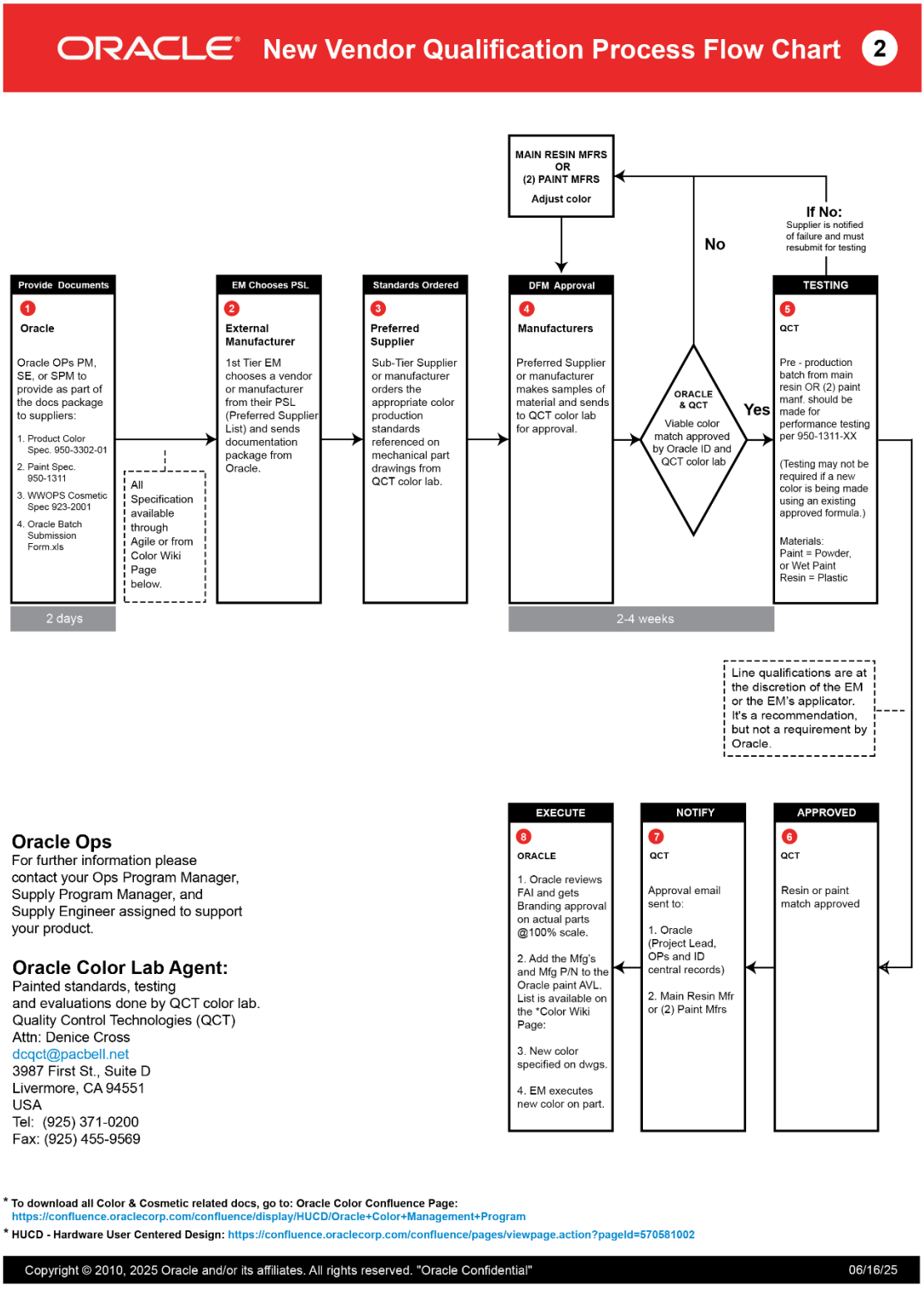
ORACLE New Color & Material Process Flow Chart 1



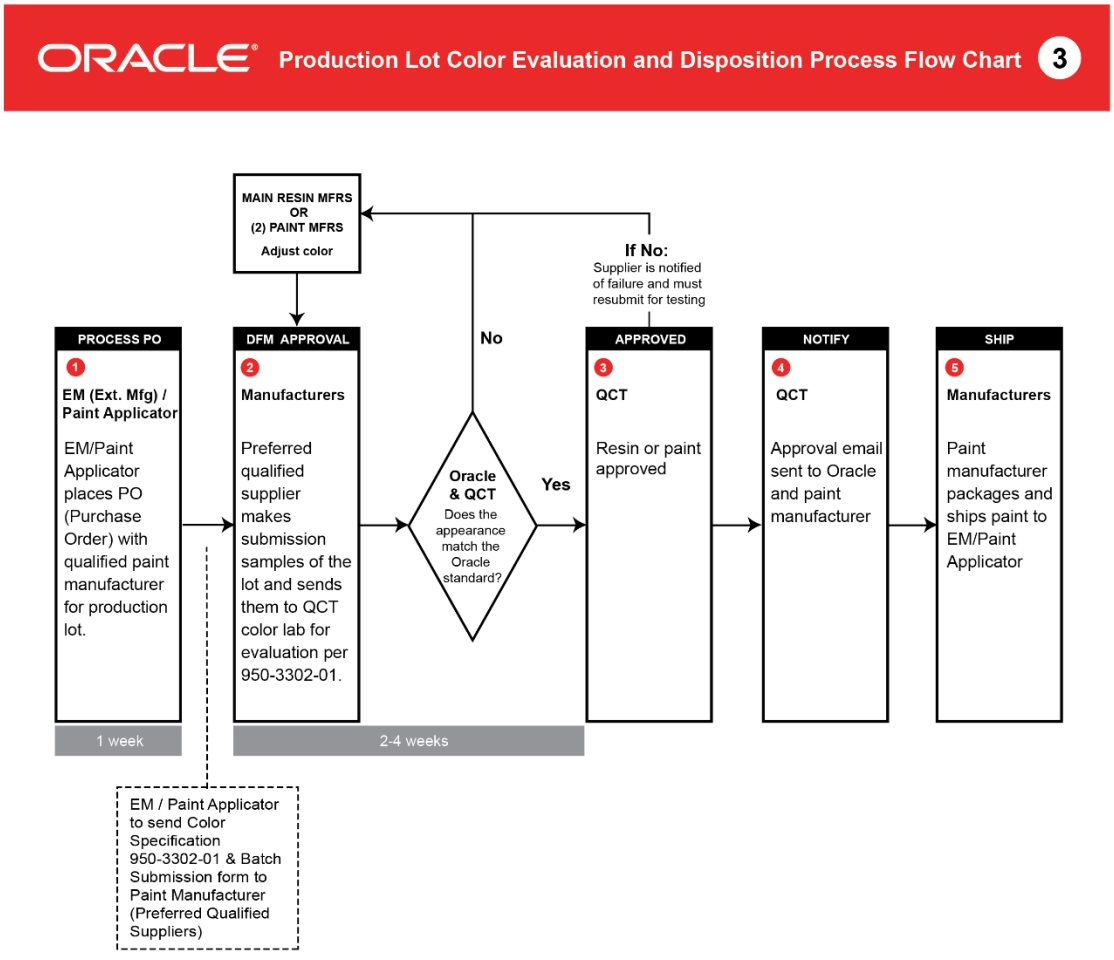
* **To download all Color & Cosmetic related docs, go to: Oracle Color Confluence Page:**
https://confluence.oraclecorp.com/confluence/display/HUCD/Oracle+Color+Management+Program

* **HUCD - Hardware User Centered Design:** https://confluence.oraclecorp.com/confluence/pages/viewpage.action?pageId=570581002

14.2 w Vendor Qualification Process Flow Chart 2



14.3 Production Lot Color Evaluation & Disposition Process Flow Chart 3



Oracle Ops

For further information please contact your Ops Program Manager, Supply Program Manager, and Supply Engineer assigned to support your product.

Oracle Color Lab Agent:

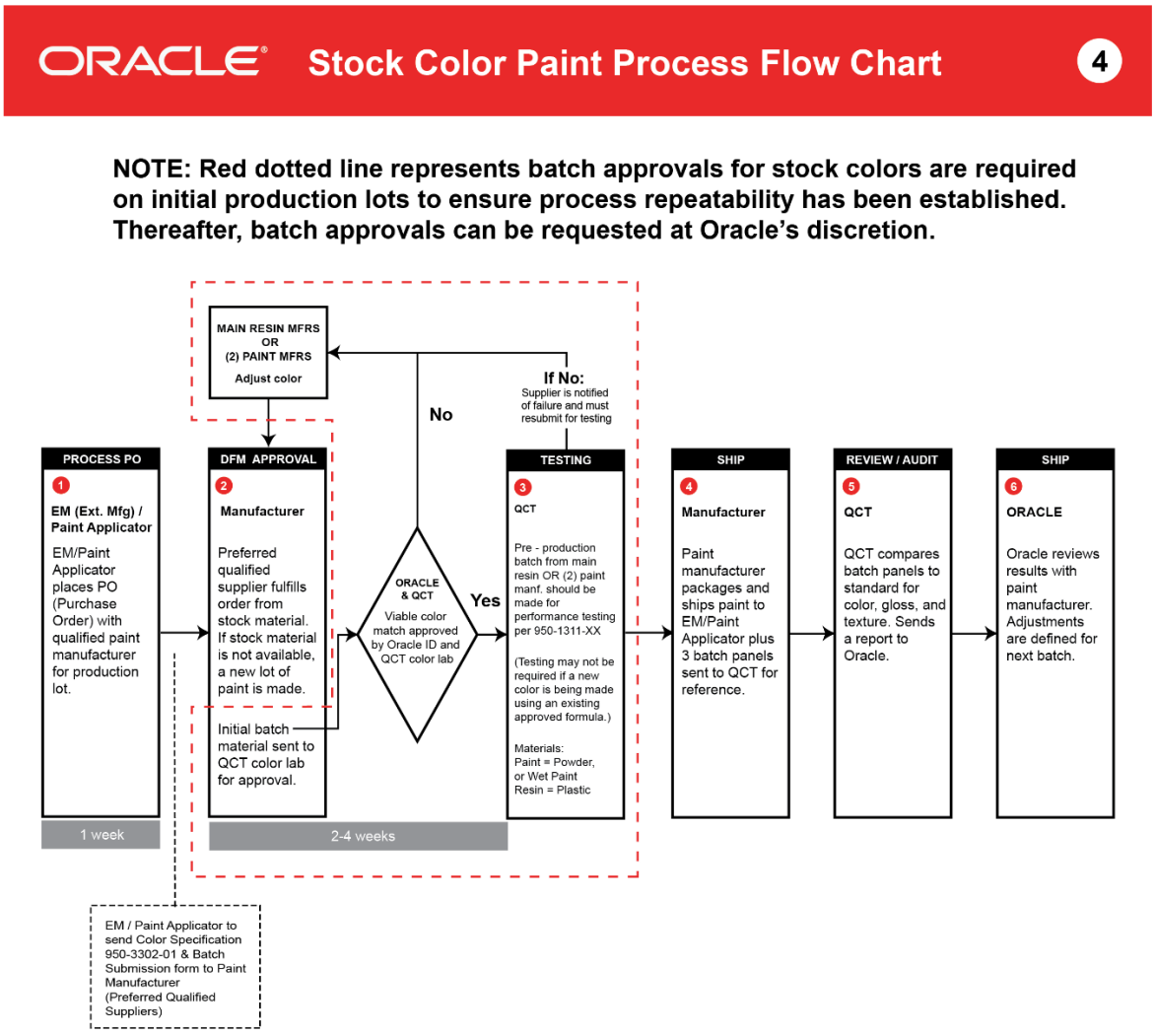
Painted standards, testing
and evaluations done by QCT color lab.
Quality Control Technologies (QCT)
Attn: Denice Cross
dcqct@pacbell.net

3987 First St., Suite D
Livermore, CA 94551
USA
Tel: (925) 371-0200
Fax: (925) 455-9569

* **To download all Color & Cosmetic related docs, go to: Oracle Color Confluence Page:**
https://confluence.oraclecorp.com/confluence/display/HUCD/Oracle+Color+Management+Program

* **HUCD - Hardware User Centered Design:** https://confluence.oraclecorp.com/confluence/pages/viewpage.action?pageId=570581002

14.4 Stock Color Paint Flow Chart 4



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* **HUCD - Hardware User Centered Design:** https://confluence.oraclecorp.com/confluence/pages/viewpage.action?pageId=570581002

15.0 Contacts

15.1 Oracle Color Lab Agent

For Painted standards, testing and evaluations, contact QCT color lab.

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3987 First St., Suite D

Livermore, California 94551

USA

Tel: (925) 371-0200

Fax: (925) 455-9569

15.2 Oracle Ops

For further information please contact your Ops Program Manager, Supply Program Manager, and Supply Engineer assigned to support your product.

15.3 Important Confluence Sites

To download all Color & Cosmetic related docs, go to: Oracle Product Color Management Program – Confluence

https://confluence.oraclecorp.com/confluence/display/HUCD/Oracle+Color+Management+Program

To learn more about HUCD - Hardware User Centered Design, go to:

https://confluence.oraclecorp.com/confluence/pages/viewpage.action?pageId=570581002

Questions and Comments

For questions or comments about this document, please send an email to:

june.x.lee@oracle.com

Revision History

REV	DESCRIPTION OF CHANGE	DATE	APPROVED
A	Prod rel per ECO WO_16664		1/4/00
B	Changes to information on suppliers and standards	06/04/02	
C	Revised per ECO WO_27021	07/15/03	7/15/03
D	Revised per ECO WO_30508	01/07/05	1/7/05
E	Revised per ECO WO_31669	09/07/05	09/07/05
F	Revised per ECO WO_33549	07/19/06	
G	Revised per ECO WO_42794	05/10/10	
GA	Revised per EC E0004695	06/01/11	
GB	Revised per EC E0006634 Updated Color Standards Tables 1, 2 and 3 on pages 15-16	10/18/11	
GC	Revised per EC E0008994 Replaced reference to 913-3679 with Oracle Batch Submission Form	02/14/12	
GD	Revised per EC E0011912 Added Gray Silver , Deleted Crater Silver on pg16. Added Batch Submission Form, Process Flow Charts, and contact info pgs 17-22.	08/03/12	08/08/12
GE	Revised per EC E0014596 Changed Moon Silver Gloss level pg 16. Edited first & second paragraphs to include definitions and qualification requirements for custom and stock colors in Sec 4.0 (pg 8). Added a paragraph to Sec 9.3 about batch approvals for stock colors (pg14). Updated Stock Color Flow Chart 4 (pg 21).	01/24/13	01/24/13
HA	Revised per EC E0023921 Added column “Approved Suppliers” to Tables 1&2 (pg16). Deleted “Moon Silver” from Table 2 (pg16). Added Section 12.0-Oracle Approved Suppliers.	03/17/15	03/17/15

	Added Section 12.1-Updated AVL(pgs17-19) by deleting: • PPG-Alloy Silver P/N SAC70091-3 & • Azko-Charcoal Gray P/N EL3597 Revised Sec.14.2-Flow Chart #2 by deleting 923-2086-01 Spec. deliverable requirement in first box (pg23).		
HB	Revised per EC E0031937 • Alloy Silver_PPG_XPM63176_2K Monocoat_Performance Tested approved per Spec 950-1311-01 (pg.18) • Added Alloy Silver_SW_TS0523E_Polane B_Performance Tested approved per Spec 950-1311-01 (pg.18) • Corrected Charcoal Gray_SW_F83A1568 to F63A1568 (pg18). • Corrected Gray Silver_SW_HAF252882 to HAF2-J2882 (pg19)	06/16/15	09/28/16
HC	Revised per EC E0033474 • Added Alloy Gray to AVL_C6200-1612011_PC+ABS C6200 (pg.17) • Added HF Green to AVL_C6200-1612013_PC+ABS C6200 (pg.19)	01/11/17	02/01/17
HD	Revised per EC E53527 • Added Hot Service Orange, Cold Service Blue, Air, Oracle Red, Oracle Bark to List (pg.16)	10/01/20	10/01/20
HE	Revised per EC E59996 • Added AVLs: PPG-Taiwan & Ching Song SV8001 (Table 3_pg.19))_Alloy Silver Paint (CONDITIONAL APPROVALS) • Added Colors: Oracle Air, Oracle Bark (Table 3_pg 20)	05/10/23	05/24/23
HF	Revised per EC E60781 • Added AVL: DonBon (Taiwan) (Table 3_pg.19))_Alloy Silver Paint (CONDITIONAL APPROVAL)	08/17/23	08/17/23
HG	Revised per EC E60926 • Removed “Conditional Approval” for ChingSong SV8001 (Table 3_pg.19))_Alloy Silver Paint	09/08/23	09/11/23
HH	Revised per EC E61163 • Removed “Conditional Approval” for DonBon (Taiwan)_PX-166443 (MP-64445)_Alloy Silver, Paint (Table 3_pg.19) • Added Gaoqi Printing _8211116_Alloy Silver, Ink (Table 3_pg.19) • Added SW_F63TXS17923-9103_Alloy Silver, Polane (Nantong, China) (Table 3_pg20)	10/03/23	10/05/23

HI	Revised per EC# E63894 • Updated QCT address (pg.6) • Removed Gaoqi Printing _8211116_Alloy Silver, Ink (S. China) (Table 3_pg.19) • Edited SW_F83S01521-020P9_Alloy Silver, KA 1500T (Nantong, China) (Table 3_pg.19) • Added Cymmetrik_8203644_Hot Service Orange_Ink (Shenzhen) (Table 3_pg.20) • Added SW_Gray Silver PAF2J4016, Powder Coat (Nantong, China) (Table 3_pg20) • Added SW FST1E0001_Oracle Gray Silver_Powder Coat (Italy) (Table 3_pg.20) • Added GG F032-01894-9000_Oracle Bark (S. China) (Table 3_pg.21) • Added GG 8219542-02_Oracle Bark (S. China) (Table 3_pg.21) • Added JianSheng F90149-1_Oracle Bark_Ink (S. China) (Table 3_pg.21)	10/21/24	01/08/25
HJ	Revised per EC# E64555 • Added Teijin Limited (Japan RN-7730, QM50535_ HF Green _ Resin (Table 3_pg.20) • Added SW (Grove City, Ohio), HSZ160033_ Gray Silver _ Powder (Table 3_pg.20) • Added Norcote, Inc. (USA) RDMSK-8956-A1_ Oracle Red _ UV Ink (Table 3_pg.21)	03/07/25	04/28/25
HK	Revised per EC# E64996 • Added Foxconn Plastics (Shenzhen, China)_U2504022, Alloy Gray_Resin (Table 3_pg.18) • Added Sabic_7G7C3613, Alloy Gray_Resin (Table 3_pg.18) • Passed Perf. Testing_SW FST1E0001_Oracle Gray Silver_Powder Coat (Italy) (Table 3_pg.20) • Added Norcote (UK)_BR88-1591U1, Oracle Bark_UV Ink (Table 3_pg.21) • Updated addresses and links to all 4 flow charts (pgs 24-27)	06/16/25	07/08/25

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