

**SUPPLIER QUALITY ASSURANCE MANUAL
FOR PARTS AND RAW MATERIALS**

***** QUALITY ASSURANCE SUPPORT ACTIVITIES FOR TRIAL AND MASS PRODUCTION *****

SECTION 39 - BOUNDARY SAMPLES/MASTER SAMPLES

I. BOUNDARY SAMPLES

PURPOSE: To comply with characteristics as required by the Customers of DENSO.

To establish agreement between DENSO and Suppliers (and Sub-Suppliers as necessary) on borderline acceptable or unacceptable characteristic limits.

To supplement the inspection standard for verifying production part or raw material characteristics.

SCOPE: Applies to Suppliers of production parts and raw materials as needed. Often requested/ used when the production part or raw material has specified appearance criteria, especially when visible to DENSO's Customer.

EXPLANATION:

Boundary samples are used to define the boundary level of a given visual or sensory characteristic difficult to define by quantitative methods. Boundary Samples may be temporary or permanent. The Boundary Sample defines the limit by which a judgment is made to reject or accept a questionable part. DENSO normally operates using Boundary ***Acceptable*** Samples.

SUPPLIER RESPONSIBILITIES:

1. Boundary Samples are created on an "as needed" basis when acceptance judgment questions arise.
2. Boundary Samples must be submitted by the Supplier's Quality Assurance Manager to their DENSO QA/QC contact.
3. At least two sets of boundary samples must be submitted to DENSO QA/QC. One set will be retained by DENSO and the other returned to the Supplier.
4. Each part must be clearly labeled using the Boundary Sample form provided. The form may also be reduced and attached to the part(s).
5. For Sub-Supplier appearance items, the Supplier must develop agreeable Boundary Samples with the Sub-Supplier for DENSO QA/QC approval. If necessary, the Boundary Sample(s) can be developed with DENSO QA/QC, and negotiated and approved by all three parties (DENSO, Supplier, and Sub-Supplier). Three sets of Sub-Supplier Boundary Samples are required, one of each to be retained by each of the parties involved.

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6. The Boundary Sample form must be completely filled out with as much descriptive information as possible, including the Supplier approval section. The Log No. and approvals section will be completed by DENSO.
7. Temporary Boundary Samples may be approved. In such cases, a countermeasure plan must be submitted detailing the problem and corrective actions.
8. Revisions, changes or renewals must be resubmitted according to the above guidelines.
9. If applicable, the expiration date will be completed by DENSO. When the Boundary Sample(s) reach the expiration date, the Supplier must resubmit the Boundary Sample(s).

II. MASTER SAMPLES

PURPOSE: To comply with characteristics as required by the Customers of DENSO.

To establish agreement between Customers, DENSO and Suppliers on acceptable final visual characteristics.

To supplement the inspection standard and support inspection of part characteristics.

To define a master against which all future representative product can be compared.

SCOPE: This procedure applies to parts/material with appearance criteria, especially when visible to DENSO's Customer. If DENSO QA/QC requests Master Sample(s), the Supplier shall submit sample(s) for mass production level parts.

EXPLANATION:

Visual parts bear critical importance to Customer satisfaction. Master Samples define the expectations of DENSO or the Customer for part visual characteristics. Master Samples are created to control consistency of final product approval.

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SUPPLIER RESPONSIBILITIES:

1. Master samples must be submitted by the Supplier's Quality Assurance Manager to their DENSO QA/QC contact as requested.
2. At least two sets of Master Samples must be submitted to DENSO QA/QC. One set will be retained by DENSO and the other returned to the Supplier.
3. Each part must be clearly labeled using the Master Sample form provided. The Sample must be mounted such that it can be removed/manipulated for inspection purposes, i.e., the use of a clear plastic envelope for example. The form may also be reduced and attached to the part(s).
4. For Sub-Supplier appearance items, the Supplier must develop agreeable Master Samples with the Sub-Supplier for DENSO QA/QC approval. If necessary, the Master Sample can be developed with DENSO QA/QC, and negotiated and approved by all three parties (DENSO, Supplier, and Sub-Supplier). Three Sub-Supplier Master Samples are required, one of each to be retained by each of the parties involved.
5. The Master Sample form must be completely filled out with as much descriptive information as possible, including the Supplier approval section. The Log No. and approvals section will be completed by DENSO. In the Boundary Description section, a comment should indicate that the parts are Master Samples.
6. Master sample approval is based on visual and/or numerical evaluation. Emphasis is given to visual comparison of the master color and/or mating components. Numerical data forms a basis for bench marking and tracking process variation. The method used for numerical data collection must be the one which best replicates the operative technique or standard required by the Customer such as $u' v'$, $L a b$, etc.
7. Revisions or changes must be resubmitted according to the above guidelines.
8. If the parts/material change in any way that affects the Master Sample, the Supplier shall resubmit the Master Sample according to the above guidelines.
9. Suppliers are responsible for maintaining color control with a system which documents the color history of parts provided to DENSO and which is in accordance with the Master Sample.
10. If applicable, the expiration date will be completed by DENSO. When the Master Sample(s) reach the expiration date, the Supplier must resubmit the Master Sample(s).

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