



# Kimball Electronics Group Quality Policy

*Our first priority is customer satisfaction; obtained through superior quality, customer service and continual improvement.*

*Our Quality Management System will define the requirements for meeting our business needs, complying with regulatory requirements and the tools to be used for establishing, reviewing and measuring our quality objectives.*

*We are all personally responsible for commitment and compliance to our Quality Management System, for ensuring its suitability, and continually improving its effectiveness in order to enhance our customers' satisfaction.*

*Our Quality Objectives are to focus on our customers' expectations and satisfaction by measuring and improving:*

- *Customer Quality*
- *On Time Delivery*
- *Operational Performance*
- *Compliance to our Quality Management System*



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# Kimball® International

## Our Vision

### *We Build Success*

Kimball International is a pre-eminent manufacturer of furniture, furniture components, and electronic assemblies, serving customers around the world. Our customers, both large and small, receive our undivided attention, as we treat every one as the only one. Our work with our customers is integrated into such an array of products and services our touch is felt throughout daily life in both the workplace and in the home. Kimball builds products, brands, and a reputation as an ideal place to entrust your livelihood, whether as a customer, supplier, employee, or share owner.

Our vision is to advance a new industrial covenant: immediate access to world-class design and manufacturing. Our products will reach end users through many paths, whether as one of our own brand names that we market, as a brand that we agree to provide for a separate company, or as a component of another product. Regardless of the Kimball product or whether the customer is ourselves, a company, or a person, our covenant will stand firm.

Our unifying bonds across our company will continue to be our unique culture and our shared skills in the development of efficient, high quality operations and services. By fulfilling our vision, we will emerge as an employer and supplier of choice. Our name will signal reliability and quality to the countless people who use our products and services, as well as to the inventors, designers, and marketers whose dreams take form in our factories, and whose success we help build.

**Kimball International builds success.**

## Our Guiding Principles

### *Customers*

- Our customer is our business. We must provide innovative products and services that excite our customers and exceed their expectations of quality, features and enduring value. We also must recognize and respond quickly and creatively to ideas of others, both internally and externally.
- Long term customers are more important than short-term results. We will promise only what we know can be delivered; we will strive to deliver more than was promised.
- We seek to consistently demonstrate a sense of warmth, humor and mutual respect in our relationships with our customers, to be the company with which they most enjoy working.

### *People*

- Our people are the company. Kimball has been built upon the tradition of pride in craftsmanship, mutual trust, personal integrity, respect for dignity of the individual, a spirit of cooperation, and a sense of family and good humor. We seek to enhance this culture as we grow.
- We cultivate a leadership style that embraces the attitudes of personal autonomy and empowerment; individual initiative and teamwork; employee involvement and continuous improvement; and open, non-defensive communication.
- We shall foster an organizational structure, information systems and development of personal skills that maximize our peoples' flexibility to respond to our customers on their own terms.
- We want employees to share in their company's success, both financially and through personal growth and fulfillment.
- The most unfair system of all is one that blindly treats all situations the same. Therefore, we discourage rigid rules and policies in favor of a philosophy of individual responsibility and flexibility, so that real needs, rather than the rules, are met.
- Offering ideas for improvements and new products is an opportunity we all share, a responsibility we must all accept. We seek to promote and reinforce an entrepreneurial spirit – a conviction that growth and continuous improvement is everyone's job.
- We seek a diversified group of employees who can be committed to preserving and enhancing these values.
- Suppliers are our partners, an extension of our company. They must share our commitment to total quality that exceeds our customers' expectations.

### *Citizenship*

- The environment is our home. We will be leaders in not only protecting but enhancing our world.
- Recognizing that an attitude of pride in the company and the community are intertwined, we seek to share, but not impose, our values within the communities in which we live. We also strive to help our communities be great places to live.
- We believe the greatest contribution we can make to the prosperity and quality of life of the communities in which we operate lies in being a dynamic, growing company.

### *Profits*

Profits are the ultimate measure of how efficiently and effectively we serve our customers and are the only true source of long-term job security. Profitability and financial resources give us freedom to shape our future and achieve our vision.



## Introduction

### ***About Kimball Electronics Group:***

**Kimball Electronics Group (KEG)** is a member of the Kimball International family of companies, a diversified furniture and electronics manufacturer, established in 1950. Kimball Electronics Group was established in 1961 to build electronic organs for our parent company. In the late 1980's we became focused solely on contract electronic manufacturing services. Since that time, it has been our mission to be a worldwide Electronics Manufacturing Service Industry leader in providing superior services and technology while growing profitably.

Today, Kimball Electronics Group is a leading technology company providing design and engineering services manufacturing, packaging, and distribution of electronic assemblies to a variety of industries on a global scale. Kimball Electronics is a contract manufacturer of durable goods. Kimball Electronics Group continues to make the customer the focus of everything we do and will continue to provide the highest industry quality through continuous improvement.

Supplier development, high quality and reduced costs are some of our customers' primary concerns. By measuring our suppliers' performance in the three key areas of quality, delivery and service, we are able to help our customers remain competitive in the world market. For more information about KEG, visit our internet web site at [www.kegroup.com](http://www.kegroup.com)



## **1.0 Purpose and function of this manual**

### **1.1. Vision**

It is Kimball International's goal to develop a working relationship with our suppliers that mirrors the Vision and Guiding Principles on which Kimball's business philosophy is founded. The cornerstone to this relationship is the alignment of our individual expectation in a manner that ensures that our suppliers understand that they are our partners, and an extension of our company. We must share our commitment to total quality that exceeds our customer's expectations.

### **1.2. Purpose**

The purpose of this Global Supplier Quality Manual is to specify Kimball Electronics Group quality management system requirements and to outline the minimum acceptance conditions for the areas addressed within the manual. This manual is to be considered the minimum basic requirements for doing business with Kimball Electronics Group; any additional requirements will be communicated on a case by case basis and/or will be addressed in other business related documents. See Section 2.3 Document Hierarchy.

### **1.3. Scope**

This manual only applies to product that is being supplied to Kimball Electronics Group, either via direct shipment or through distribution. Any supplier process that does not relate to material or services being provided to Kimball Electronics Group (KEG) is outside of the scope of this manual.

## **2.0 Foundation of Core Requirements**

### **2.1. General**

- 2.1.1. This manual may be updated without notice. For latest revision and revision verification refer to Global Supplier Quality Manual at [www.kegroup.com](http://www.kegroup.com). All prior documented agreements remain valid until the newest revision of this manual is reviewed and acceptance of said manual is established.
- 2.1.2. This manual was developed using the fundamental guidelines established in the International Organization for Standardization (ISO) Standards, such as ISO 9001, ISO/TS 16949 and ISO 13485.

### **2.2. Basic Quality/Delivery Expectations**

- 2.2.1. KEG's Quality and Delivery targets are 0 PPM/0 Defect Occurrence and 100% On-Time Delivery.
- 2.2.2. It is also KEG's expectation that the supplier develop processes and procedures to prevent the occurrence of defects and strive to continually improve upon those processes.
  - 2.2.2.1. Processes similar to the AIAG/Advanced Product and Quality Planning (APQP) are highly recommended for use during the planning and development of the production processes.
  - 2.2.2.2. PPAP Development and the use of statistical tools as outlined in sections 14.0 Production Part Approval Process (PPAP) and 15.0 Designation and Control of Special Characteristics are highly recommended for all commodity types throughout the development and production processes.
  - 2.2.2.3. KEG also recommends the use of the 6 Sigma tool set, Lean practices, and 5S housekeeping activities.

### **2.3. Document Hierarchy**

- 2.3.1. This manual defines the minimum requirements in conjunction with purchase orders, drawings and specifications. In the event of conflicting interpretations, the following order of precedence applies:
  - 1. Purchase Order
  - 2. KEG Specification or Drawing
  - 3. Reference Documents/Signed Agreements/Data Sheets
  - 4. This Manual

Note: No verbal or unsigned agreements supersede the requirements documented in this manual.



## 2.4. Supplier Approval of Manual

- 2.4.1. The supplier shall review the entire manual, and forward a signed copy of the KEG Global Supplier Quality Manual (GSQM) Acceptance form in Addendum B to their KEG Purchasing Contact.
- 2.4.1.1. If the supplier contests any section or element of this manual, unless the issue is obvious in nature based on component type, part classification, business situation, or commodity, the supplier shall provide detailed reasoning for each exception using the document in Addendum B.
- 2.4.1.1.1. It is KEG’s intent to limit the amount of exceptions; thus all exceptions will be reviewed and negotiated by the appropriate KEG personnel.
- 2.4.1.1.2. Approvals of the exceptions will be granted by the Plant Management Representative (or delegate) for the KEG facility affected. When multiple KEG facilities are affected the approval needs to be granted by all affected facilities.

## 2.5. Quality System/Certification Requirements

Supplier Type	Commodity Type	Minimum Requirement (W/Waiver from Kimball/Customer)	Basic Requirement	Development Goal
Component Manufactures	Automotive	ISO 9001	ISO 9001	ISO/TS 16949
	Medical	ISO 9001	ISO 9001	ISO 9001 & ISO 13485
	Other	ISO 9001	ISO 9001	ISO 9001
Distributors / Brokers	All	ISO 9001	ISO 9001	ISO 9001
Service Provider (impact quality of product)	Automotive	ISO 9001	ISO 9001	ISO 9001
	Medical/Other	ISO 9001	ISO 9001	ISO 9001
Gauge Manufacturer	All	ISO 9001	ISO 9001	ISO 9001

- 2.5.1. It is KEG’s expectation that our suppliers will strive to be compliant with the Development Goal for the commodity type of the components being supplied as outlined in the matrix above. All references to the ISO standards are to the most current revision level.
- 2.5.1.1. Suppliers currently not compliant are to submit development plans for achieving a quality system certification appropriate for their commodity type.
- 2.5.2. KEG’s Minimum Requirements for Quality System Certification are based on the Commodity Type (where used) for the material being supplied.
- 2.5.2.1. If the supplier is uncertain of the industry in which their material will be used, they should contact their Purchasing Contact for clarification/confirmation.
- 2.5.2.1.1. Without specific knowledge of the industry that their parts will be used in, the supplier shall be subject to the automotive requirements listed in the matrix.
- 2.5.2.2. Suppliers that provide material for an “**Automotive**” program shall provide proof of certification to either ISO 9001 or ISO/TS 16949-by an accredited registrar.
- 2.5.2.2.1. If not certified to ISO/TS 16949, suppliers shall provide KEG with a timing plan for obtaining ISO/TS 16949.
- 2.5.2.2.1.1. If the supplier does not intend to become certified to ISO/TS 16949, a letter explaining this position will need to be provided to KEG.



- 2.5.3. Suppliers of record being “compliant” to ISO 9001 prior to the release of Revision D to this manual shall be “grandfathered” for a period of time ending 06/31/2011.
  - 2.5.3.1. After the expiration of the “grandfathering” period, suppliers must meet the Quality System requirements outlined in the matrix or have obtained a waiver from KEG.
- 2.5.4. New suppliers not certified to the most current revision of ISO 9001, but who are able to show compliance, will need to obtain a waiver from KEG for the ISO 9001 minimum requirement, prior to being awarded business.
  - 2.5.4.1. The waiver shall cover a limited timeframe not to exceed one (1) calendar year, unless a timing plan is included, in which case, the timeframe will be established per the plan.
  - 2.5.4.2. Upon expiration of the waiver, the supplier must either show certification to ISO 9001 or have obtained a “Permanent Waiver” from KEG.
- 2.5.5. Waivers to the Quality System Requirement can be granted under special situations.
  - 2.5.5.1. Supplier must show compliance to the ISO 9000 requirements as outlined in section 2.5.2 or per KEG’s customer requirements.
  - 2.5.5.2. Request for the permanent waiver, for the life of a specific program, must be provided to the KEG facility affected, in the form of a SDR (Supplier Deviation Request) or be KEG customer directed.
- 2.5.6. Additional certifications may be required based upon customer requirements, application of the product, legal or regulatory requirements, and/or national requirements.

## 2.6. Change in Supplier Quality System Certification Status

- 2.6.1. In the event the supplier’s Quality System certification status changes, the supplier shall notify ALL KEG manufacturing sites that they supply product to within five business days.
  - 2.6.1.1. A change consists of any action by either the supplier or the supplier’s registrar that limits or alters the condition or duration of the supplier’s certification.
    - 2.6.1.1.1. This includes conditions such as renewal, upgrade, suspension, probation, expiration and termination.
- 2.6.2. In such cases where the lapse in certification causes the supplier to fail to meet the Basic Requirements as stated in section 2.5 Quality System/Certification Requirements, the supplier must provide documentation as to why the certification status changed, and make themselves available for an audit by KEG representatives to verify compliance to the minimum requirements.
  - 2.6.2.1. Suppliers, who provide parts per automotive requirements, will be subject to additional KEG and any KEG’s affected customer(s) requirements.

## 2.7. Documentation Language Requirements

- 2.7.1. In order to maintain documentation that is readily transferable and understood between different KEG sites, all documentation relating to Quality and Business activities shall be provided to the KEG site in English.
  - 2.7.1.1. This requirement can only be waived by the KEG site requesting the documentation.



## 2.8. Conditions of Purchase

- 2.8.1. Acceptance of the purchasing documentation constitutes acceptance of ALL REQUIREMENTS detailed within the purchasing documents. Suppliers shall meet all Conditions of Purchase including the Terms and Conditions.
  - 2.8.1.1. If the supplier is unable to meet these conditions, the KEG Purchasing Contact for that purchase document must be notified in writing, prior to acceptance of the order. The Conditions of Purchase will apply to each Purchase Order released by KEG.
  - 2.8.1.2. Failure to comply with the purchase requirements can result in the rejection of the received material, and the subsequent activities according to Section 5.0 Handling of Non Conforming Material.
- 2.8.2. Additionally, the supplier must be compliant to the business and shipping requirements, documented in the KEG “Global Routing Guide”.
  - 2.8.2.1. Suppliers must review the KEG “Global Routing Guide” and sign and submit the acknowledgement document included in the guide.
  - 2.8.2.2. The guide is located on the KEG website. [www.KEGGroup.com](http://www.KEGGroup.com).

## 2.9. Record Retention Requirements

- 2.9.1. Quality records shall be maintained in a manner so they remain legible and retrievable upon request
- 2.9.2. Additional record retention requirements can be referenced per AIAG, ISO 9001, ISO/TS 16949 and/or ISO 13485 documentation requirements and shall be maintained accordingly.
- 2.9.3. Kimball specific record retention requirements are based on industry standards and specific customer requirements.
  - 2.9.3.1. **Automotive** programs shall be maintained for a period of the program life plus 15 years.
  - 2.9.3.2. **Medical** programs shall be maintained for a period of the device life plus 1 year, with a minimum of 2 years.
  - 2.9.3.3. **Industrial** and other non-specified industries shall be maintained for a period of 5 years or industry standards retention timeframes, whichever is longer.
- 2.9.4. If the supplier is uncertain of the industry in which their material will be used, they should contact their KEG Purchasing Contact for clarification/confirmation.
  - 2.9.4.1. As a default, without specific knowledge of the industry that their parts will be used in, the supplier shall comply with the automotive requirements.
- 2.9.5. For components provided to multiple industries, the longer of the retention requirements apply.
- 2.9.6. Returned materials (actual parts) shall be kept for defective components and assembly processes to highlight problem areas and trends for a minimum of 2 years.

## 2.10. Sub-Supplier Management

- 2.10.1. It is KEG’s expectation that our supply base maintains responsibility for their suppliers and provides direction and leadership to their supply base consistent with KEG’s requirements.
  - 2.10.1.1. The supplier shall have a process in place to ensure their suppliers’ ability to provide defect free material per their delivery requirements.
  - 2.10.1.2. The supplier shall ensure the timely response to quality concerns from their suppliers.
  - 2.10.1.3. If a situation arises where KEG must take an active role with our supplier’s sub-supplier, to address a specific concern, KEG will do so; but will require participation from our supplier in those activities.



### 3.0 Supplier Manufacturing Change Request (SMCR)

#### 3.1. General SMCR Process Requirements.

- 3.1.1. Any change(s) that either alters/changes the process flow or has any impact on either the design condition or Form, Fit, and/or Function of a supplied component must be properly documented on a Supplier Manufacturing Change Request (SMCR) form and be submitted to **ALL** KEG facilities affected, for review/approval prior to implementation of the change.
- 3.1.2. ALL changes must be formally approved in writing by **ALL** affected KEG manufacturing sites prior to the implementation of said change.
  - 3.1.2.1. The failure to obtain written approval prior to making any changes could result in immediate stoppage of product shipments, KEG production operations and be subject to a potential product recall at the supplier's expense.
    - 3.1.2.1.1. The negotiation of expenses will be conducted by representatives of the KEG Purchasing, Sourcing, or Management groups for the facility(s) affected.
- 3.1.3. Submission and the subsequent approval of an SMCR does not constitute authorization for a supplier to ship the "changed" material. All changes are subject to potential PPAP requirements.
  - 3.1.3.1. PPAP requirements will be noted on the Approved copy of the SMCR document.
- 3.1.4. Approval at one KEG site does not warrant approval by all sites. Approvals will vary based on customer requirements. Shipment of changed material shall only be made to the KEG sites that have given final approval of the SMCR.
- 3.1.5. No Process or Design changes will be allowed on any KEG program for the first 90 days following production launch.
  - 3.1.5.1. All SMCR's submitted during this timeframe will be reviewed for validity; but will be placed in a HOLD status until the end of the 90 day moratorium.
- 3.1.6. Consult the KEG website at [www.kegroup.com](http://www.kegroup.com) for the most recent revisions of the KEG SMCR form and SMCR Instruction documents. The summarized flow chart in Appendix A depicts the required steps in the SMCR process.

#### 3.2. Submission Expectations

- 3.2.1 The supplier is expected to provide KEG with a detailed definition of the proposed change(s) and include with the SMCR all appropriate testing and/or dimensional data appropriate for the change being submitted. The required data will be consistent with the DVP&R (Design Verification Plan and Report) requirements for the initial validation of the component.
  - 3.2.1.1. When data/testing cannot be accomplished without the implementation of the change, a detailed plan explaining the data that will be provided post change shall accompany the SCMR.
- 3.2.2. The qualification documentation must include test results, capability studies, and/or other appropriate evaluation means that clearly demonstrate continued compliance to specifications and required reliability testing (see section 9.0 Reliability).
- 3.2.3. In the instance of a non-reversible change, additional information covering the transition plan with timing, buffer stock planning/quantity (to ensure continuity of supply), and contingency plans are expected to be submitted with the SMCR.
  - 3.2.3.1. Not providing the needed information to address these areas of concern with the initial SMCR submission will cause the review process to be delayed until the information is provided.



### 3.3. Submitting the SMCR form

- 3.3.1. The “Supplier” sections of the SMCR document must be completed and the document submitted along with the qualification plan (DVP&R), to **ALL** KEG facilities affected by the change.
  - 3.3.1.1. KEG may require qualification testing based on the review of the change(s) proposed. See 9.0 Reliability section for details of qualification testing that may be required.
- 3.3.2. After the submittal of the SMCR to **ALL** affected KEG sites, it will be reviewed based on the information provided with the submission.
  - 3.3.2.1. During the initial review, a determination will be made to approve, reject, or require additional actions or data, and the results of the review will be reported back to the supplier via the Purchasing Contact.
  - 3.3.2.2. If additional actions or data is required, a detailed list of the requirements will be communicated back to the supplier by the Purchasing Contact.
  - 3.3.2.3. After the additional requirements have been met, the SMCR will be reviewed again to determine if it should be approved, rejected, or if further additional action is required
- 3.3.3. In the instance of a non-reversible change, approval may be given to proceed with the change with the requirement that additional action be taken.
  - 3.3.3.1. The SMCR must clearly state that the change is “NON-Reversible once implemented” within the description of the change and must include additional information covering the transition plan with timing, buffer stock planning/quantity (to ensure continuity of supply), and contingency plans are expected to be submitted with the SMCR.
  - 3.3.3.2. Not providing the needed information to address these areas of concern with the initial SMCR submission will cause the review process to be delayed until the information is provided.

### 3.4. Shipping Material requiring SMCR Sign off

- 3.4.1. No material subject to a SMCR can be shipped until the supplier has been notified of the approval of the SMCR and all PPAP requirements, if required, have been met, and the supplier has provided the Date Code and/or Lot Number of the initial production run.
- 3.4.2. The initial shipment under an approved SMCR must consist of 100% post-change material and must be identified in such a manner that it clearly identifies the SMCR number.
  - 3.4.2.1. A note must also be added to the packing documents identifying the SMCR number.
- 3.4.3. Once the initial shipment of product under an approved SMCR has been made, no material made prior to the change can be shipped to KEG without written approval from the KEG site(s) that has approved the SMCR.
  - 3.4.3.1. If pre-change material is received after the initial shipment of the changed material without the approval of the KEG facility, the material can be considered to be non-conforming material and be handled according to section 5.0 Handling of Non-Conforming Material.
- 3.4.4. The supplier shall be liable for costs associated with unapproved changes and shipments.
  - 3.4.4.1. It is the responsibility of the KEG Purchasing Group and the supplier to review, negotiate, and agree to such costs on a case by case basis.
  - 3.4.4.2. These costs can consist of, but are not limited to, any combination of the following conditions: rework, replacement, line down time, personnel support/labor costs, scrap induced by the unapproved material, and potential recall of material.



## 4.0 Corrective Action (CA) & Failure Analysis (FA) Requirements

### 4.1. Failure Analysis Requirements

- 4.1.1. The supplier shall have a documented system for Failure Analysis of supplied material.
- 4.1.2. The supplier shall perform Failure Analysis on units returned by any KEG facility.
  - 4.1.2.1. When Failure Analysis is requested by a KEG site, the Failure Analysis report shall be submitted to the site requesting the Failure Analysis within the timeframe indicated on the request for Failure Analysis.
- 4.1.3. The Failure Analysis timeframe requirements are based on a Priority Status determination, with an initial response due within 48 hours of receipt of the suspect component.
  - 4.1.3.1. If the part is a KEG customer return or is identified as critical, the FA will be considered a “Priority 1” and the required timeframe is five (5) working days from receipt of the unit.
  - 4.1.3.2. Issues that are not directly related to customer concerns or identified as critical will be given a “Priority 2”, which carries a timeframe of ten (10) days from receipt.
- 4.1.4. Missing the required timeframe for the Failure Analysis request will result in a reduction of the supplier's rating for that month and any following months until the report is submitted.
- 4.1.5. If the supplier’s FA report or other FA activities, determine the issue to be supplier caused, KEG can request a formal corrective action, if one was not provided by the supplier.

### 4.2. Containment Requirements

- 4.2.1. Containment must be established, documented, and reported to KEG within 24 hours of receipt of the initial notification of a Supplier Corrective Action Request (SCAR).
  - 4.2.1.1. This containment must include and identify all suspect material, i.e. at any KEG manufacturing site, in transit to any KEG manufacturing site, and at the supplier location.
  - 4.2.1.2. The supplier must notify All affected KEG facilities of when the containment actions have been implemented and when certified material will be available.
  - 4.2.1.3. Additionally, All affected KEG facilities must approve the corrective action before the containment activities can be removed.

### 4.3. Corrective Action Requirements

- 4.3.1. The corrective action plan shall be submitted to the KEG site contact requesting the corrective action within the timeframe indicated on the request for corrective action.
  - 4.3.1.1. The timeframe begins upon the supplier’s receipt of either the defective/suspect material, or upon receipt of photographic evidence or a written definition sufficient to allow for the supplier to effectively review, investigate, and determine the root cause of the occurrence.
  - 4.3.1.2. The supplier must notify KEG if the photographic or written definition is not sufficient for their corrective action activities and request clarification or additional information within 24 hours of receipt of the initial notification.
- 4.3.2. The Corrective Action timeframe requirement for submission of a Corrective Action Plan is based on a Priority Status determination, and requires an initial response due within 48 hours of receipt of the suspect component.
  - 4.3.2.1. If the part is a KEG customer return or is identified as critical, the CA will be considered a “Priority 1” and the required timeframe is five (5) working days from receipt.
  - 4.3.2.2. Issues that are not directly related to customer concerns or identified as critical will be given a “Priority 2”, which carries a timeframe of ten (10) days from receipt.
    - 4.3.2.2.1. Items of minor concern or ones that can be attributed to normal process variation shall carry a priority level of 2 or can be considered as “observational”, per the discretion of the KEG facility issuing the notification.



- 4.3.2.3. “Observational” issues do not require a full or formal 8D, but do require the supplier review the issue/defect and determine if a CA is necessary, and provide the KEG facility with the results of the analysis and a description of CA if one is implemented.
- 4.3.3. Missing the required timeframe for the plan submission will result in a reduction of the supplier’s rating for that month and any following months until the plan is submitted.
  - 4.3.3.1. In situations where the proposed corrective action will require a change to the manufacturing process or component design a SMCR will be required
  - 4.3.3.2. The SMCR is to reference the CA number within the “Reason for Change” section.
- 4.3.4. Periodic and timely progress updates shall be provided to the KEG facility requesting the CA.
- 4.3.5. Notification of approval from the KEG manufacturing site requesting the corrective action shall be given upon satisfactory completion of the corrective action.

#### **4.4. Overview of the 8-D method**

- 4.4.1. When a Corrective Action is requested, the method of documenting this process needs to follow the standard 8-Steps discipline (8D).
  - 4.4.1.1. The 8D method consists of identification of team members, detailed description of the problem, containment action, detailed root cause analysis and reason the defect was not contained, interim corrective action(s), permanent corrective action(s), steps taken to prevent reoccurrence, and congratulations to the team members.
- 4.4.2. Consult the KEG website at [www.kegroup.com](http://www.kegroup.com) for a copy of the KEG Corrective Action form (8D) and Corrective Action instructional documents.

### **5.0 Handling of Non-Conforming Material**

#### **5.1. General Requirements**

- 5.1.1. The supplier shall provide a means for the handling of suspect material when it is determined, and agreed to by the supplier, that the issue is the fault of the supplier.
  - 5.1.1.1. The Contact for the KEG facility affected will work with the supplier to determine the appropriate actions.
    - 5.1.1.2. These actions may include, but are not limited to any of the following actions:
      - Provide Priority Material to replace the non-conforming material
      - Authorize return of the suspect material to the supplier for sorting
      - Providing resources to sort the suspect material
      - Paying for the KEG site to sort the suspect material
      - Scrap of the non-conforming material at the KEG facility, at supplier cost
- 5.1.2. Additionally the supplier will be subject to actions regarding any costs incurred by the KEG facility resulting from the non-conforming material.

### **6.0 Notification of possible quality spills**

#### **6.1. General Requirements**

- 6.1.1. In the event the supplier discovers or suspects the shipment of non-conforming material, the supplier shall notify **All** KEG facilities potentially subject to receiving the suspect material.
  - 6.1.1.1. These notifications must be sent to the Purchasing Contract for **ALL** facilities that have potential exposure to the quality spill.
  - 6.1.1.2. The notification must include a detailed definition of the suspect/non-conforming condition as well as information concerning the number of suspect parts, date codes, lot numbers and any unique identifiers that identify the suspect units.
- 6.1.2. The supplier shall provide a plan for handling of non-conforming material and initiate a corrective action to address the non-conforming issue. Reference Section 5.0 Handling of Non-Conforming Material.



## 7.0 Certificate Requirements

### 7.1. General Requirements

- 7.1.1. When a Certificate of Analysis (C of A) or Certificate of Compliance (C of C) is specified either in the purchase order or the applicable specifications/drawings, the supplier shall provide a valid certificate with each shipment certifying that the material meets all contract requirements.
- 7.1.2. Acceptance of material based on a supplier certificate, does not exclude KEG from subsequent rejection due to any nonconforming attribute or characteristic.
- 7.1.3. Results of tests must be actual data that represents the lot of material shipped.
- 7.1.4. Failure to supply the certificate when required is potential grounds for rejection of the shipment.

### 7.2. Certificate of Compliance Components

- 7.2.1. To be considered valid, a C of C shall include as a minimum:
  - Lot Number and/or Date Code
  - Date of shipment
  - KEG PO number
  - Quantity shipped
  - KEG part number specified
  - Statement certifying compliance to contract requirements
  - Supplier's authorized signature, certifying compliance to requirements
  - Indication of material UL compliance, when applicable

### 7.3. Certificate of Analysis Components

- 7.3.1. To be considered valid, a C of A shall include all the components of a C of C plus the results of any tests ran on the lot/lots of material shipped.
  - 7.3.1.1. The specific test data required shall be noted in either the Purchase Order or on the product print/specification sheet.
  - 7.3.1.2. Additionally KEG PWB print requirements include verification of Ionic Contamination and/or precious metal thicknesses, when applicable.

## 8.0 Management of KEG Tooling

### 8.1. General Requirements

- 8.1.1. Tooling items, both KEG owned and KEG's customer tooling under the supervision of KEG, will be permanently identified for ownership visibility.
- 8.1.2. The KEG Purchasing Contact shall distribute the tool order number to the supplier.
- 8.1.3. The supplier is responsible and liable for the tooling item, immediately upon receipt.
  - 8.1.3.1. This includes cleanliness, preventive maintenance, storage and handling of the tool.

### 8.2. Tracking of Tools at the Supplier's Site

- 8.2.1. The supplier shall maintain the following information on KEG / KEG customer owned tools:
  - Tool or tool order number
  - Description of the tool
  - Receiver or owner of the tool
  - List of KEG customer owned tools
  - List of KEG owned tools
  - Location of tool in house
- 8.2.2. A KEG site may send tools to a Supplier with the tool number already engraved on the tool.



- 8.2.3. If a KEG Purchasing Contact issues tags to suppliers, the ownership of a respective tooling item shall be identified by Blue Tags (KEG owned) or Red Tags (KEG customer owned).
  - 8.2.3.1. When tags are not practical, the supplier shall attach the tool order number to the tool in a manner that is visible and practical for the nominal operation of the tool.
  - 8.2.3.2. The supplier shall advise KEG of the process used to ensure the tool number is applied.

### **8.3. Changing of a KEG Tool Status**

- 8.3.1. The KEG Purchasing Contact shall be immediately notified of any change to the functionality of the tool or any issue that might affect quality or delivery of product produced.
- 8.3.2. Modifications and change of location shall require the submission and subsequent approval of an SMCR prior to the initiation of the change. (See Section 3.0 Supplier Manufacturing Change Request.)
- 8.3.3. The supplier shall obtain written approval prior to scrapping any KEG or KEG supervised tool.

## **9.0 Reliability**

### **9.1. General Requirements**

- 9.1.1. The supplier shall have or have access to a reliability program, per industrial standards, to support product that they are supplying to any KEG facility.
  - 9.1.1.1. The reliability levels of the supplier's product shall be measured in industry terms.
- 9.1.2. The reliability level of a supplier's product and the test methods used to determine those levels shall be consistent with industry standards and be identified as such.

### **9.2. Electrical Reliability**

- 9.2.1. When appropriate, new components and/or components subject to changes under a KEG approved SMCR, shall undergo qualification testing using Automotive Electronics Council (AEC) Q test standards where applicable, unless waived by KEG in writing.
- 9.2.2. It is the supplier's responsibility to develop and initiate a testing plan compliant to the AEC requirements, when they apply.
- 9.2.3. Equivalent standards may be used when the AEC testing requirements are not applicable, but the supplier must provide a testing plan compliant to the alternate guidelines and consistent with the intent of the AEC testing requirements.
  - 9.2.3.1. It is the supplier's responsibility to document the equivalence of an alternate standard. The documentation shall consist of a line item by line item analysis of both testing standards.
  - 9.2.3.2. Information about AEC may be found at [www.aecouncil.com](http://www.aecouncil.com).
- 9.2.4. Other requirements may be needed depending on the application of the device. KEG will communicate additional requirements during the time of the quote or during the change process.

### **9.3. Mechanical Reliability**

- 9.3.1. Mechanical components shall not change in form, fit, or function when exposed to the manufacturing and application environment of the device.
- 9.3.2. Suppliers shall clearly identify any manufacturing or application limitations of their devices.
- 9.3.3. Testing requirements will be per either the DVP&R (Design Verification Plan and Report) requirements or applicable specifications.



## **10.0 Supplier Rating/Supplier Score Card**

### **10.1. Supplier Performance**

10.1.1. The supplier's performance will be continually evaluated by any KEG facility receiving product from the supplier, with emphasis on the following:

- Quality and/or customer complaints
- On-time delivery
- Pricing
- Customer service
- Reliability

10.1.2. The supplier shall define, document and implement systems that support a product nonconformance parts per million (PPM) rating of zero (0), and on-time delivery performance rating of 100%.

10.1.2.1. When PPM and/or on-time delivery expectations are not met, the supplier is to implement internal corrective actions to address the deficiencies.

10.1.2.2. When issues continue with a supplier without satisfactory improvement, this may result in desourcing.

## **11.0 Supplier Audit**

### **11.1. General Requirements**

11.1.1. A Quality System Assessment and process audit may be conducted by KEG representatives, at the supplier's manufacturing location, prior to the issuance of a purchase order.

11.1.1.1. The purpose of the audit is to verify that the supplier has the manufacturing and supporting processes appropriate to produce a component that can meet both the quality requirement of 0 PPM/defect and delivery requirement of 100% on-time delivery.

11.1.1.2. An audit activity can be conducted to ensure that the supplier's Quality System is compliant to the minimum requirements per the matrix in Section 2.5 Quality System/Certification Requirements.

11.1.1.3. Additional audits such as process, product, and or "fresh eyes" audits can be conducted by KEG representatives at the supplier's manufacturing location with sufficient notice.

11.1.2. Corrective Actions may be generated as a result of any audit activity.

11.1.2.1. Proper closure of all corrective actions issued is mandatory.

11.1.2.2. All deficiencies identified during an assessment audit that require corrective action shall have their corrective actions initiated before an acceptable rating can be given.

11.1.2.2.1. The supplier's commitment to correction of the deficiencies identified during the audit will be a factor in determining overall acceptability of the supplier.

11.1.2.3. If corrections cannot be implemented immediately, the supplier shall submit detailed plans for correction, including agreeable timing (detailed Gantt charts are preferred) to KEG for review and approval following the completion of the audit.

11.1.2.3.1. The optimum situation is to provide timing/target dates during the closing meeting.

11.1.2.3.1.1. At a minimum, corrective action plans shall be submitted within 10 days from the receipt of the audit report.

11.1.2.3.2. Subsequent Quality System surveys may be required based on the results of the initial assessment. The frequency may be adjusted based on historical performance.

11.1.2.3.3. Once corrections are made, a follow-up survey and detailed process audit may be scheduled to confirm the effectiveness of the corrective actions.



## **12.0 Workplace Cleanliness and Safety**

### **12.1. General Requirements**

- 12.1.1. Plant cleanliness and working conditions are to be conducive to manufacturing a quality product and providing for quality improvement.
  - 12.1.1.1. Housekeeping initiatives such as 5S or general cleanliness activities are highly recommended.
- 12.1.2. Preventive maintenance and cleaning schedules shall be established for the production, inspection, and testing areas producing material for a KEG facility.
  - 12.1.2.1. Such schedules are to be rigorously followed and objective evidence maintained.
- 12.1.3. The supplier shall have a process to ensure compliance with all applicable government safety and environmental regulations, including those concerning handling, recycling, eliminating or disposing of hazardous materials.
  - 12.1.3.1. Evidence of compliance shall be provided by the appropriate certificates or letters.
- 12.1.4. The supplier shall monitor injury and accident rates and take actions, appropriate for their manufacturing operations and locations, to protect their employees.

## **13.0 Packaging, Labeling & Handling**

### **13.1. General Requirements**

- 13.1.1. In-process and finished product shall be appropriately packaged to protect it from damage.
  - 13.1.1.1. All supplier provided packaging shall meet applicable shipping laws, codes and regulations, and must be qualified to International Safe Transit Association (ISTA) test standards as appropriate.
- 13.1.2. All shipments shall be packaged or placed in a new container unless otherwise specified.
  - 13.1.2.1. The use of returnable containers will be reviewed on a case by case basis.
- 13.1.3. When returnable packaging is to be utilized, the supplier is to ensure that it is clean and free from dirt, debris, foreign materials and damage, prior to utilization.
  - 13.1.3.1. Returnable packaging that is not clean and free from dirt, debris, foreign materials or damaged, may be grounds for rejection of the material lot.
    - 13.1.3.1.1. Damaged/dirty returnable packaging shall be repaired, cleaned, or replaced as appropriate.
- 13.1.4. Packages shall be labeled in accordance with Electronic Industry Association (EIA) Standards, unless otherwise specified, and shall meet KEG specifications or requirements. A standardized barcode method can be utilized, but the formation must be approved by KEG, and be compliant with KEG's Labeling Standards.
  - 13.1.4.1. KEG's Labeling Standard is located on the KEG website at [www.kegroup.com](http://www.kegroup.com).
- 13.1.5. Each shipment shall be marked with the following information, or have the information encoded into a barcode method approved by KEG:
  - KEG P.O. number
  - KEG part number
  - Manufacturer part number
  - Manufacturer name
  - Date Code
  - Engineering change/revision level
  - Quantity
  - Lot Code
  - Number of boxes (in the shipment)
  - KEG site name, and address
- 13.1.6. Additional marking that are required when applicable for the component type:
  - Component value
  - Component tolerance
- 13.1.7. Packing slips shall be attached to the carton exterior in shipping envelopes.



### **13.2. Special Labeling of Shipments**

- 13.2.1. The initial shipment of product shipped under an approved SMCR, PPAP, EC, control ship, or deviation must be labeled as such.
- 13.2.2. Any unique tracking number supplied by the KEG site to the supplier shall be placed on the material label, or attached to the material, in such manner that makes it clearly visible.
  - 13.2.2.1. A note shall also be added to the packing slip identifying the SMCR, EC, PPAP, deviation number, control ship, or KEG tracking number, as well as the KEG contact name.
- 13.2.3. Product shipped after sorting or rework by the supplier shall be labeled as such. The label shall state sorting or rework performed and date performed.

### **13.3. Electro Static Discharge (ESD) Requirements**

- 13.3.1. ESD packaging shall be used for all static sensitive products per industrial standards. KEG ESD Control Programs are based on ESD Association S20.20 or IEC 61340-5-1.
  - 13.3.1.1. The product's packaging shall be labeled as to the sensitivity of the device.
- 13.3.2. Suppliers of static sensitive components shall incorporate suitable measures, including protected areas, handling, and packaging requirements, to ensure that components are not damaged due to ESD events prior to arrival at a KEG facility.
  - 13.3.2.1. These practices shall be documented in an ESD Control Program within the suppliers manufacturing facilities.
    - 13.3.2.1.1. Objective evidence is to be available demonstrating compliance.
- 13.3.3. Suppliers shall notify KEG in writing of any component designated as Class 0 <250V (HBM) or material that is susceptible to static charges <100V (HBM) per ESD Association STM5.1.

### **13.4. Moisture Sensitive Device (MSD) Requirements**

- 13.4.1. The suppliers shall use the MSD packaging and labeling requirements for all moisture sensitive devices per IPC/JEDEC J-STD-033 standards.
- 13.4.2. The suppliers of MSD devices shall have a control program in place to guarantee conformance to MSD standards within the supplier's manufacturing facilities, and shall use the latest revision of IPC/JEDEC J-STD-020 to determine the sensitivity classification for non-hermetic solid-state surface mount devices.
  - 13.4.2.1. Objective evidence showing compliance shall be available for review if requested.
- 13.4.3. MSD sensitive components shall be sealed in a moisture barrier bag containing desiccant and humidity indicator card, when appropriate.
  - 13.4.3.1. The bag shall be labeled indicating moisture sensitivity level, peak body temperature exposure, maximum exposure time before re-bake is required, and date the bag was sealed.
  - 13.4.3.2. Shelf life shall be a minimum of 12 months.



## 14.0 Production Part Approval Process (PPAP)

### 14.1. General Requirements

- 14.1.1. Suppliers of material requiring a Production Part Approval Process (PPAP) shall comply with all KEG specific requirements in addition to the standard requirements listed within the Automotive Industry Action Group (AIAG) Production Part Approval Process (PPAP) manual (most recent revision), and shall maintain a PPAP Approved Status throughout the program life.
- 14.1.1.1. When a PPAP is required, the supplier shall not ship production intent material prior to PPAP approval, without written KEG authorization.
- 14.1.2. The guidelines for PPAP submittals are based on the manuals published by the AIAG. It is recommended that the supplier use the AIAG formats for their PPAP documents.
- 14.1.2.1. The list below identifies the manuals published by AIAG that the supplier should consult in the formatting of any PPAP submittal made to KEG facilities.
- AIAG / Production Part Approval Process (PPAP) manual
  - AIAG / Advanced Product and Quality Planning and Control Plan (APQP) manual
  - AIAG / Potential Failure Mode and Effects Analysis (FMEA) manual
  - AIAG / Statistical Process Control (SPC) manual
  - AIAG / Measurement System Analysis (MSA) manual
- 14.1.2.2. KEG Part Submission Warrant is located on the KEG website at [www.kegroup.com](http://www.kegroup.com).
- 14.1.3. KEG requires a Level 3 submission for all initial submittals, unless otherwise specified.
- 14.1.3.1. KEG can request PPAP submittals for any component, independent of commodity, application requirements, or standard practices based on either KEG's or KEG's customer requirements.
- 14.1.3.1.1. KEG will officially notify the supplier when a PPAP is required.
- 14.1.3.1.2. PPAP requirements will generally apply for custom (non off-the-shelf) components for use in medical, industrial, or automotive applications.
- 14.1.3.2. Parts from each unique production process, duplicate assembly line and/or work cell, each position of a multiple cavity die, mold, tool or pattern, shall be measured/analyzed and results provided with the submission.
- 14.1.3.3. If a supplier has been issued a Purchase Order that requires a PPAP, for a submission level other than Level 3, or for any activity other than an annual revalidation PPAP, a checklist shall be provided to identify the specific elements being requested.
- 14.1.3.3.1. If one is not provided, the supplier is to contact their Purchasing Contact and/or the Supplier Quality Contact for the KEG facility requesting the PPAP, and request the PPAP Checklist noting the specific requirements.
- 14.1.4. Questions regarding PPAP requirements are to be directed to the KEG Purchasing Contact and/or the Supplier Quality contact for the facility that is requesting the PPAP.
- 14.1.5. The supplier shall maintain all applicable PPAP elements/records for each part, or family of parts, irregardless of the part submission level, and they shall be readily available, when requested.
- 14.1.6. A copy of the PPAP Checklist is available on the KEG website at [www.kegroup.com](http://www.kegroup.com).

### 14.2. PPAP Documentation Requirements

- 14.2.1. KEG's specific document requirements and retention/submission requirements will follow the guidelines established in the AIAG Production Parts Approval Process (PPAP) Manual.
- 14.2.2. All documents shall be dated within the last six (6) months, with all inspection results, test data, and material certifications dated within three (3) months of the submittal.
- 14.2.3. All documents shall clearly identify the part number and revision level. If the submittal represents specific cavities or tooling, the documentation shall reflect the cavity or tooling numbers used.



14.2.4. Unless otherwise agreed to by the KEG Purchasing or Supplier Quality Contact, PPAP submissions shall be in a ring bound binder with tabs separating and identifying each section, and will include a cover sheet with the project information and a content index.

14.2.4.1. Electronic copies of the PPAP documentation can be submitted upon agreement by the KEG facility that will be receiving the PPAP documentation.

### 14.3. KEG Specific/Additional PPAP Requirements

14.3.1. KEG “Customer Specific” PPAP requirements are detailed below:

Retention/Submission Requirements Table		Submission Level				
	KEG General Requirements (if applicable)	1	2	3	4	5
-	Manufacturing Feasibility Sign-off	S	S	S	*	S
-	Capacity Planning & Verification	S	S	S	*	S
-	Packaging Information/Instructions w/Sample Label	R	R	S	*	R
-	ELV Documentation	S	S	S	*	S
-	Sub-Supplier PPAP (Warrants)	R	S	S	*	R
-	Balloon Print	R	R	S	*	R
-	Rework Procedures	R	R	S	*	R
-	Safe Launch Control Plan	R	R	S	*	R
-	Control Characteristic Matrix/List	R	R	S	*	R
-	Engineering Specification (ES) Test Planning	R	R	S	*	R
-	Product or Process Qualification Plan	R	R	S	*	R
-	Print Specification Agreement	R	R	S	*	R
<b>R</b>	The supplier shall retain at appropriate locations, including manufacturing, and make <b>readily</b> available to the customer representatives when requested.					
<b>S</b>	The supplier shall submit to designated customer product approval activity and retain a copy of records or documentation items at appropriate locations, including manufacturing.					
<b>*</b>	The supplier shall retain at appropriate locations, and submit to the customer upon request.					

14.3.2. The marked/balloon print shall include **ALL** dimensions, notes, and other requirements identified with sequential numbers.

14.3.2.1. The purpose of this print is to have a unique identifier for each element on the print that can be compared to other required documentation such as the dimensional layout report.

14.3.2.2. The Ballooned Print must be of the most recent revision officially released by the KEG Purchasing Department from the facility requesting the PPAP.

14.3.3. Where engineering specifications require product validation testing, the supplier will be required to include a documented test plan.

14.3.3.1. This validation plan shall include details for each characteristic being evaluated, test facility, start date(s) and target completion dates.

14.3.3.2. Refer to AIAG/APQP manual section on DVP&R (Design Verification Plan and Report).

14.3.4. If rework, salvage or reclaim operations become a necessary part of the production operation, they must be PPAP approved and are to be submitted as part of the PPAP submission.

14.3.4.1. All processes must be supported by documented procedures that insure compliance to all related specifications, and will need to be uniquely identified within the process flow diagram, process FMEA, control plans, and any appropriate supporting documentation.

14.3.4.2. Once the initial PPAP has been approved, the addition of any rework, salvage or reclaim operations can only be done via the SMCR process. See Section 3.0 SMCR.

14.3.5. During the planning and development of a new product, it is expected that the supplier develop a documented Product/Process Qualification Plan to qualify new or changed processes.

14.3.5.1. This is to include planned steps to reach production intent processes and rates.

14.3.5.2. This can be documented via the project time line or a formal DVP&R. See the AIAG/APQP manual section on DVP&R (Design Verification Plan and Report).



14.3.6. The initial shipment of material under an approved PPAP must be labeled in accordance with the requirements of Section 13.2 Special Labeling of Shipments.

14.3.6.1. Once initial shipment of product under an approved PPAP has been made, no material made prior to PPAP can be shipped to KEG without written approval from the KEG site.

#### **14.4. Annual Recertification Requirements**

14.4.1. When notified by KEG, the supplier shall submit a Level 4 revalidation PPAP consisting of, at the minimum, a PSW, and capability studies for all features defined as critical on the print.

14.4.1.1. Additional requirements such as Complete Dimensional and/or Function/Electrical analysis of the component will be requested on an as needed basis.

14.4.1.2. The annual revalidation submittal due date is considered to be the anniversary date that the initial PPAP was submitted, unless otherwise notified by KEG.

14.4.1.3. Document requirements shall be consistent to those of an initial submittal as noted in Section 14.3.

#### **14.5. Submission due to Approved SMCR**

14.5.1. Submission may be required for any changes to a production process, design record, specification, or material. See section 3.0 Supplier Manufacturing Change Request and the AIAG/PPAP manual for clarification of general requirements.

#### **14.6. Requirements for PPAP Approval**

14.6.1. All required documentation for the submission level shall be included.

14.6.1.1. Items indicated on the PPAP Checklist must be provided to achieve PPAP approval. Details on AIAG requirements are outlined in the AIAG/PPAP manual.

14.6.2. Any result(s) or finding(s) outside the specification limits is potential cause for rejection.

14.6.2.1. Every possible action needed to correct the conditions is to be taken to ensure the part meets all design requirements prior to the initial PPAP submission.

14.6.2.2. If the supplier is unable to meet any of these requirements, they must contact the KEG Purchasing and/or Supplier Quality Contact for all of the KEG facilities requiring PPAP, in writing, to determine the appropriate action(s) to be taken prior to submission.

14.6.3. Inspection and testing shall be performed by a qualified laboratory.

14.6.3.1. If a commercial/independent test lab is utilized it must be an accredited facility.

14.6.3.1.1. The supplier shall submit both the test results from the laboratory and the standards used to determine the validity of the testing activity.

14.6.3.1.2. Blanket statements of conformance are unacceptable as test results.

14.6.3.2. A copy of the laboratory's certification must be included in the submission.

14.6.4. Once the submittal is approved, a KEG representative will return the signed copy of the warrant to the supplier for historical documentation.

#### **14.7. Rejected PPAP Submittals**

14.7.1. The supplier will be notified by a KEG representative of all discrepancies or deficiencies noted within the PPAP documentation.

14.7.1.1. A list of the discrepancies will be provided to the supplier.

14.7.1.2. Formal Corrective Action(s) may be required for rejection due to incomplete or inaccurate documentation, and/or out of specification conditions or non-capable conditions.



## 15.0 Designation and Control of Special Characteristics

### 15.1. General Requirements

- 15.1.1. The purpose of this section is to establish the requirements for the control of both KEG and KEG Customer designated Special Characteristics (SC, CC, DC).
  - 15.1.1.1. Suppliers will be required to meet all of the requirements for any Special Characteristics per the guidelines listed in Section 15.2 Special Characteristic Process Capability.
  - 15.1.1.2. When the requirements for a component are different than the requirements listed in the matrices, it is KEG's responsibility to communicate these expectations via either a KEG print, SC control matrix, or any signed documentation that shows the requirements.
    - 15.1.1.2.1. This document will need to be included in the PPAP submission.
- 15.1.2. In the event that additional Special Characteristics are determined to be necessary, KEG will assign its own designators to those features per the matrices.
  - 15.1.2.1. This will be accomplished via either a KEG print or Engineering Change (EC).
- 15.1.3. Requests for additional information or clarification are to be directed to KEG Purchasing, as primary contact and/or to the Supplier Quality Contact as a secondary contact.
  - 15.1.3.1. Any concern regarding manufacturing feasibility or capability of meeting the design requirements must be documented on the Manufacturing Feasibility document.
  - 15.1.3.2. This must be conveyed to the Purchasing or Sourcing Contact prior to the start of the development process. See Section 17.0 Manufacturing Feasibility Statement.
- 15.1.4. All statistical data must be representative of the entire production population and reflect how the parts will be received at the KEG facilities.
  - 15.1.4.1. Where multiple product streams and/or cavities exist, the statistics used to describe the population must include all possible sources of product variability.
    - 15.1.4.1.1. The supplier may submit separate capability studies for each cavity to identify the capability of the individual cavities
    - 15.1.4.2. SC features that identify multiple features such as hole patterns, mounting bosses, and pin locations require a separate capability study for each unique condition.
      - 15.1.4.2.1. This can be negotiated based on the number of studies required, and the supplier may request the number of required samples taken be reduced.
- 15.1.5. Statistical data and reports shall be transmitted at the frequency specified in the matrices.
- 15.1.6. It is the expectation of KEG that the AIAG guidelines be utilized in the development of the product Quality Plan, which includes the methods and controls for addressing Special Characteristics.
  - 15.1.6.1. The Designated Characteristic Ranking and associated matrixes detail the requirements for each classification of Special Characteristics.



**15.2. Special Characteristic Process Capability.**

15.2.1. If any SC feature does not meet the requirements outlined in the matrix below, the KEG facilities affected must be notified immediately for disposition and a corrective action plan must be submitted that includes at a minimum 100% inspection/containment until the issue is resolved.

<b>Designated Characteristic Ranking</b>		
<b>Characteristic Level</b>	<b>Description</b>	<b>Basic Requirement</b>
<b>Level 1 (S/C 1)</b>	<b>With Safety or Legal Consideration:</b> Product/ process/ test requirements or process parameters which can affect compliance with government regulations or safe vehicle/product function.	Cpk/ Cmk > 2.0 (short run/initial PPAP Submission) Ppk > 1.67 (Normal/Standard Production) SPC as appropriate Poka Yoke or 100% automatic inspection Monthly reports supplied to KEG
<b>Level 2 (S/C 2)</b>	<b>Customer Satisfactions Considerations:</b> Product/ process/ test requirements that are important to customer satisfaction.	Cpk/ Cmk > 1.67 (Short run/initial PPAP Submission) Ppk > 1.33 (Normal/Standard Production) SPC as appropriate Poka Yoke or 100% automatic inspection Monthly reports supplied to KEG
<b>Level 3 (S/C 3)</b>	<b>Product Performance Considerations:</b> Features which have impact on performance or which being out of specification may result in difficulty during the assembly process.	Poka Yoke strongly recommended
Non designated characteristics	Features which have impact on fit and function of the product.	Supplier is responsible to ensure that drawing requirements are met

Inspection must be specified on control plan. Characteristic must be marked within supplier PFMEA and control plan. In case supplier does not provide control plan within PPAP submission (for European confidentiality legislation), supplier must compile attached "Designated Characteristic Control Plan" and submit to KEG for approval.

<b>KEG Special Characteristics Designation</b>	<b>Characteristic Type</b>	<b>Method of Control</b>	<b>Frequency of Controls</b>	<b>Requirements</b>	<b>Reporting Requirements</b>
S/C1	Safety / Regulatory Compliance	Variable data SPC charts with control limits	Hourly, unless otherwise specified in the Control Plan	Capability study (See Designated Characteristic Ranking)	Monthly capability report
S/C2	Key Characteristic	Variable data SPC charts with control limits	Audit basis as specified in the Control Plan	Capability study (See Designated Characteristic Ranking)	Monthly capability report
S/C3	Standard Control Characteristic	Attribute data collection or Variable data SPC charts with control limits	Audit basis as specified in the Control Plan	Attribute gauging using C=0 or Variable gauging. Capability study	As required

<b>SPC Guidelines</b>	<b>Initial Process Capability (Cpk)</b>	<b>Ongoing Process Performance (Ppk)</b>
When	Prior to PPAP	After PPAP Approval
Type of Study	Short term	Long term
Data Collection Method	X-bar and R chart preferred	X-bar and R chart preferred
Sample Size	Minimum of 25 subgroups with a minimum of 4 individuals per subgroup. 100 pieces total per unique product condition (cavity, machine, tool, etc.).	Minimum of 120 individual readings taken over 30 days of production if applicable.
Analysis	Check for capability, stability and normality	Check for capability, stability and normality
Unstable and Incapable Processes	A corrective action plan must be in place that includes 100% inspection/verification.	A corrective action plan must be in place that includes 100% inspection/verification.



## 16.0 Capacity Verification

### 16.1. General Requirements

- 16.1.1. The primary purpose of capacity verification is to determine/identify bottlenecks within the manufacturing process that could impact the supplier's ability meet KEG's requirements. Refer to KEG website at [www.kegroup.com](http://www.kegroup.com) for a copy of the Capacity Verification documentation.
- 16.1.2. KEG can request/require capacity studies be performed, at any time during the program, for many possible reasons, not limited to those listed below.
- Capacity verification for new or current programs (required for custom parts)
  - Capacity verification related to potential program increase and delivery concerns
  - Evaluation of new equipment
  - Verification following equipment moves or manufacture line rearrangements

### 16.2. Capacity Verification Production Run Requirements (Run at Rate)

- 16.2.1. Capacity Verification shall be performed during a significant production run at the actual manufacturing site and will be conducted using the tooling, gauging, processes, materials, and operators that will be utilized during normal production.
- 16.2.1.1. All production processes, duplicate assembly lines or work cells, and each location of a multiple cavity die, mold, tool or pattern must be utilized, if possible, during the review.
- 16.2.1.2. The production run quantity requirements shall be at the discretion of KEG, based on the suppliers input; but at a minimum, will consist of one hour and/or 300 consecutive parts.
- 16.2.1.3. The run verification will be conducted by the supplier and all documentation supporting the run will be provided to KEG at the completion of the review.
- 16.2.1.3.1. At KEG's discretion, a KEG representative can be present during this activity.
- 16.2.2. If a possible production configuration, excluding human resources, can not be exercised during the run, KEG must be notified prior to the initiation of the run and may require a separate review.
- 16.2.3. The supplier is expected to address any limiting factors, or processing constraints, identified during the review and to take appropriate corrective actions to address productivity and efficiency.

### 16.3. Capacity Summary

- 16.3.1. If the Standard Annual Capacity for any of the process steps is less than the programs targeted Capacity Planning Verification, a corrective action plan showing actions to be taken to address the issue must be provided with the Capacity Verification documentation.
- 16.3.2. Tooling Capacity Utilization or Machine Capacity Utilization for any process step that shows greater than 80% utilization must be reviewed and a detailed plan of action established to ensure the process is capable of meeting potential increases in demands in a timely manner.



## 17.0 Manufacturing Feasibility Statement

### 17.1. General Requirements

- 17.1.1. The Manufacturing Feasibility Statement is a commitment by a supplier that the component's proposed design can be manufactured at a quality level of zero defects, while meeting all capability requirements, and shipped at a rate consistent with the production requirements.
  - 17.1.1.1. The feasibility analysis shall be based on a specific engineering change/revision level for the applicable drawings and/or specifications associated with the product.
    - 17.1.1.1.1. Design changes/revisions will need to be review independently.
- 17.1.2. Feasibility reviews shall be documented using the Manufacturing Feasibility Statement form available on the KEG website at [www.kegroup.com](http://www.kegroup.com).
  - 17.1.2.1. Assessment of feasible with no exceptions noted in the "Consideration" section of the document indicates that the supplier can meet ALL of the requirements for the program.
  - 17.1.2.2. Assessment of Marginal or Not Feasible, means that they supplier is not able to meet at least one of the program requirements.
- 17.1.3. The Manufacturing Feasibility Statement shall be submitted to KEG, during the programs initial development phases, for all custom components prior to receiving a commitment for tooling.
  - 17.1.3.1. Additionally, the Manufacturing Feasibility Statement submittals shall be required for product design changes that affect parts currently under PPAP control.
- 17.1.4. Customer design ownership does not preclude the supplier's obligation to assess the design's feasibility and make design change/improvement suggestions.
  - 17.1.4.1. The supplier is expected to recommend changes that would improve the manufacturability or quality, eliminate potential failure modes, or reduce cost.
- 17.1.5. When PPAP is required for custom components, the supplier shall submit an updated Manufacturing Feasibility Statement as part of the final PPAP package.
  - 17.1.5.1. Any lessons learned must be added to the Manufacturing Feasibility Statement.

### 17.2. Manufacturing Feasibility Submission

- 17.2.1. The Manufacturing Feasibility shall be submitted to KEG per the guidelines in section 17.1.
- 17.2.2. The supplier will use all applicable Advanced Quality Planning tools appropriate to demonstrate manufacturing feasibility.
  - 17.2.2.1. The supplier shall, at a minimum, report on the identified control characteristics and any associated characteristics essential to product performance.
  - 17.2.2.2. If the proposed process results in estimated Cpk values less than required, the supplier must provide suggestions for design/process changes to achieve the required indices.
  - 17.2.2.3. All issues or "No" answers in the Consideration section must be communicated to the KEG Purchasing and Engineering groups responsible for the program prior to the launch.
    - 17.2.2.3.1. Corrective action plan(s) and/or suggestions for design/process changes to achieve the design requirements must be submitted with the feasibility document.
  - 17.2.2.4. The supplier's Manufacturing, Quality, and Engineering management are required to sign the Manufacturing Feasibility Statement.
    - 17.2.2.4.1. Failure by the supplier to identify and document feasibility concerns during the supplier selection process, does not limit the suppliers legal and economic obligation to the program once awarded the business.



## 18.0 Supplier Deviation Request (SDR)

### 18.1. General

- 18.1.1. Any shipment of supplied materials that knowingly does not meet specified quality standards must be properly documented on a Supplier Deviation Request (SDR) form and approved by the KEG site receiving the material prior to the shipment of said material.
- 18.1.1.1. When unsure if an issue requires a SDR, the supplier shall contact the appropriate KEG Purchasing or Supplier Quality Contact.
- 18.1.1.2. Verbal and e-mail statements DO NOT constitute valid authorization without a signed SDR.
- 18.1.1.2.1. Any non-conforming material knowingly shipped, based on verbal acknowledgements or e-mail statements, can be considered as non-conforming and can be processed as such under the guidelines of section 5.0 Handling of Non-Conforming Material.
- 18.1.2. The KEG Supplier Deviation Request (SDR) is available at [www.kegroup.com](http://www.kegroup.com).
- 18.1.3. Approval of the SDR will come in the form of the signed and dated SDR document being returned to the supplier, with the approval status clearly identified.
- 18.1.4. SDR approval at one KEG site does not warrant approval by all sites.
- 18.1.4.1. Approval can/will vary based on KEG's customer requirements.
- 18.1.4.2. It is the supplier's responsibility to ensure that the identified material is shipped only to the KEG facilities that have approved the SDR.
- 18.1.4.3. Receipt of non-conforming material at a facility that has rejected a SDR will be handled under the guidelines of section 5.0 Handling of Non-conforming Material.
- 18.1.4.3.1. Additionally the supplier could be subject to corrective action measures and handling fees associated with the unauthorized shipment.

### 18.2. Submitting the SDR form

- 18.2.1. The completed form shall be submitted to the appropriate Purchasing Contacts at any KEG facility that will be receiving the discrepant material.
- 18.2.1.1. A SDR must be sent to **All** KEG manufacturing sites affected.
- 18.2.2. At a minimum the SDR form must include all of the following:
- Date Code and/or Lot Number of the nonconforming material
  - Detailed description of the defect
  - Testing or Dimensional analysis verses the specification requirements
  - Percentage of the production affected
- 18.2.3. Additional requirements will be communicated to the supplier on an as needed basis.
- 18.2.3.1. Qualification testing for some components may be required. Refer to Section 9.0 Reliability for details regarding qualification testing that may be required.
- 18.2.4. All requirements must be met before approval status can be determined.
- 18.2.4.1. Failure to provide all required documentation can result in a rejection of the SDR.

### 18.3. Shipping Material requiring SDR Sign off

- 18.3.1. No material subject to an SDR can be shipped to KEG until the SDR has been formally approved.
- 18.3.2. Shipment of material under an SDR shall only be made to the KEG facilities that approve the SDR.
- 18.3.2.1. Shipment of material to a KEG facility that has rejected the SDR will constitute shipment of non-conforming material and will be handled under the guideline of section 5.0 Handling of Non-Conforming Material.
- 18.3.3. All shipments of material shipped under a SDR shall be marked with the SDR number on the label or attached in such a way that it is clearly visible and must consist of 100% affected material.
- 18.3.3.1. A note shall be added to the packing slip stating the SDR number.



- 18.3.4. Any material subject to an SDR that is shipped prior to the approval of the SDR can be considered as non-conforming material and shall be handled under the guideline of section 5.0 Handling of Non-Conforming Material.

## **19.0 ROHS Compliance and End of Life Vehicle (ELV) Reporting**

### **19.1. General**

Kimball Electronics Group is committed to doing business with environmentally responsible suppliers and requires its suppliers to comply with all applicable laws, regulations, orders, and policies in providing materials and services to Kimball Electronics Group.

**ROHS Compliance:** The Restriction of the Use of Certain Hazardous Substances (RoHS) Directive, 2002/95/EC of February 13, 2003, was enacted by the European Community to minimize the impact of End-of-Life electrical and electronic equipment on the environment. The Directive bans the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products sold in the European Union beginning July 1, 2006.

**The End-of-Life Vehicle (ELV) Directive,** 2000/53/EC of September 18, 2000, was enacted by the European Community to minimize the impact of End-of-Life vehicles on the environment. The Directive prohibits the use of lead, mercury, cadmium, and hexavalent chromium effective July 1, 2003, subject to only certain exemptions listed in Annex II (2002/525/EC-27 June 2002).

The ELV Directive also seeks to prevent waste from vehicles by ensuring reuse, recycling, and other appropriate recovery means. In response to this directive the automotive OEM must confirm the substance ban is being observed and must also know the composition of all parts and materials in the vehicle as well as the location in the vehicle of any parts and materials containing certain hazardous substances.

### **19.2. Reporting Requirements**

In response to the requirements of the ELV and other potentially forthcoming directives, automotive OEMs are mandating that suppliers report 100% of the material composition as well as recycled content for all parts and materials shipped to them and going into vehicles marketed globally.

The International Material Data System (IMDS) was adopted by the automotive OEMs to house the required data. To support the data collection process, the Automotive Industry Action Group (AIAG) developed a common set of rules and formats and implemented them with the Compliance Connect™ Excel workbook. This reporting tool can be obtained via the AIAG web site.

- 19.2.1. KEG's specific requirements for both RoSH and ELV can be found in KEG Global Supplier Environmental Compliance Requirements manual.

19.2.1.1. The KEG Global Supplier Environmental Compliance Requirements manual is available at [www.kegroup.com](http://www.kegroup.com).

- 19.2.2. Where applicable, Kimball Electronics Group will contact affected suppliers to disclose required material and substance information using the Compliance Connect™ reporting tool and following the instructions contained in the KEG's Global Supplier Environmental Compliance Requirements.

19.2.2.1. If there is a change to the materials or substances in the supplier's product after initial submittal, the supplier shall resubmit the disclosure utilizing the KEG SMCR process.



## **20.0 Material Age**

### **20.1. General Requirements**

20.1.1. It is KEG's expectation that all material be compliant with the purchase order, revision levels, and has a manufacturing date code as recent as FIFO or corrective actions measures will allow.

20.1.1.1. This limitation is based on several factors, but the primary factor is the effect of age on solderability and/or seal integrity.

### **20.2. Material older than 2 years**

20.2.1. It is KEG's intent to limit the age of material received at any KEG facility to be within 2 years of the manufacturing date.

20.2.1.1. KEG facilities will not accept receipt of material that has a date codes older than 2 years of the date of purchase, without a KEG approved SDR waiving the age limitation.

20.2.1.1.1. An approved copy of the SDR must be included with the shipment.

20.2.1.2. Material shipped to any KEG facility that is older than 2 years and does not have an approved SDR will be considered non-conforming and shall be handled under the guideline of section 5.0 Handling of Non-Conforming Material.

### **20.3. Specific Requirements**

20.3.1. Specific requirements beyond the 2 year limitation will be based on the individual parts and/or programs, and will be reviewed/established as early in the program development as possible.

20.3.1.1. Material shipped to any KEG facility that is older than the required limits and does not have an approved SDR, can be considered non-conforming and can be handled under the guideline of section 5.0 Handling of Non-Conforming Material.

20.3.1.2. Specific requirements can be adjusted based on corrective/improvement activities.

20.3.1.2.1. When specific age limitations are required, the suppliers should be actively pursuing opportunities to improve/extend the usable life of the parts.

## **21.0 Safe Launch Requirements**

The purpose of the Safe Launch activity is to ensure the success of the product launch, for custom material. By increasing the inspection frequency on key processes and/or adding additional inspection actions for elements that have been identified as a potential risk, the objective is to identify issues prior to creating non-conforming material. The heightened manufacturing conditions remain in place until the program has been proven to be capable and the parts being created meet the needs and expectations of the customer.

### **21.1. General Requirements**

21.1.1. The quality requirement/expectation for supplied components is Zero (0) Defects through out the duration of the Safe Launch timeframe.

21.1.1.1. This expectation is applied to the entire supply chain, including the processes post the KEG facility and any field concerns.

21.1.1.2. Defects of significant nature, either internal or external to the supplier, can result in the restart of the Safe Launch requirements.

#### **21.1.2. Duration**

21.1.2.1. The required duration is based on the following guidelines, with the requirement being the situation that allows for a more thorough understanding of the manufacturing process and its capabilities.

- 25K parts
- 3 unique setups
- 3 months (90days)



### 21.1.3. Monthly Quality reports

21.1.3.1. Report of defects found in the supplier's production process, on a per run basis, shall be provided to the KEG facility or facilities receiving the material.

21.1.3.1.1. Reports shall include at a minimum the following criteria:

- Detailed description of the defect
- Root Cause and Corrective Action
- Frequency of the defects
- Histogram of defects by quantity and/or severity

21.1.3.2. SPC with trend analysis for the SC/CC features shall be provided on a per run basis.

21.1.4. Failure Analysis for all defective components found at KEG and at KEG's customer will be required, and corrective actions implemented for issues determined to be supplier related.

## **21.2. Specific Requirements**

21.2.1. Specific requirements are based on individual programs and will be reviewed/presented during the early developmental stages of the program.

21.2.1.1. Specific requirements will never be less than those stated in section 21.1 General Requirements.

## **22.0 Controlled Shipment Requirements**

### **22.1. General Requirements**

22.1.1. Should a situation arise where Kimball must take an active participative role in ensuring that the material being supplied to any KEG facility meets the required quality level, that supplier shall be placed on a Controlled Ship status. The issue or issues that are creating the need for the Controlled Ship status will be clearly communicated to the supplier and an agreement detailing the specific actions required by the supplier will be negotiated and agreed to by all parties involved.

22.1.1.1. Control level is based on the severity of the issue and determines who will provide the resources to accomplish the inspection activities.

22.1.1.1.1. Levels are not progression or escalation steps, based on the severity of the situation, the supplier can be placed on any level of Control Ship status.

22.1.2. Under Control Ship status, material must be 100% inspected against the components standard requirements or a specific agreed to inspection plan.

22.1.2.1. Material must be properly labeled with all appropriate identifications per section 13.2 Special Labeling of Shipments, and any additional requirements per the agreed to inspection plan.

22.1.3. Control Ship conditions will remain in place until the corrective action for the issue has been implemented and verified effective by KEG.

22.1.3.1. Minimum time frame for verification is 30 days following notification of completion of all associated corrective action activities.

### **22.2. Control Ship Level 1 (CS 1)**

22.2.1. Material is controlled within the supplier's facility and inspected by supplier resources.

22.2.2. Inspection must occur in a controlled location outside of the normal production area.

22.2.3. Inspection records must be maintained with findings reported to KEG, per the agreed to inspection plan.

### **22.3. Control Ship Level 2 (CS 2)**

22.3.1. Same requirements as CS level 1, except the inspection activities are to be completed by an approved 3<sup>rd</sup> party organization agreed to by KEG.

22.3.2. Supplier will be responsible for the expenses of the 3<sup>rd</sup> party.

### **22.4. Control Ship Level 3 (CS 3)**

22.4.1. Same requirements as CS level 2, but the inspections are to be performed at an off-site location.



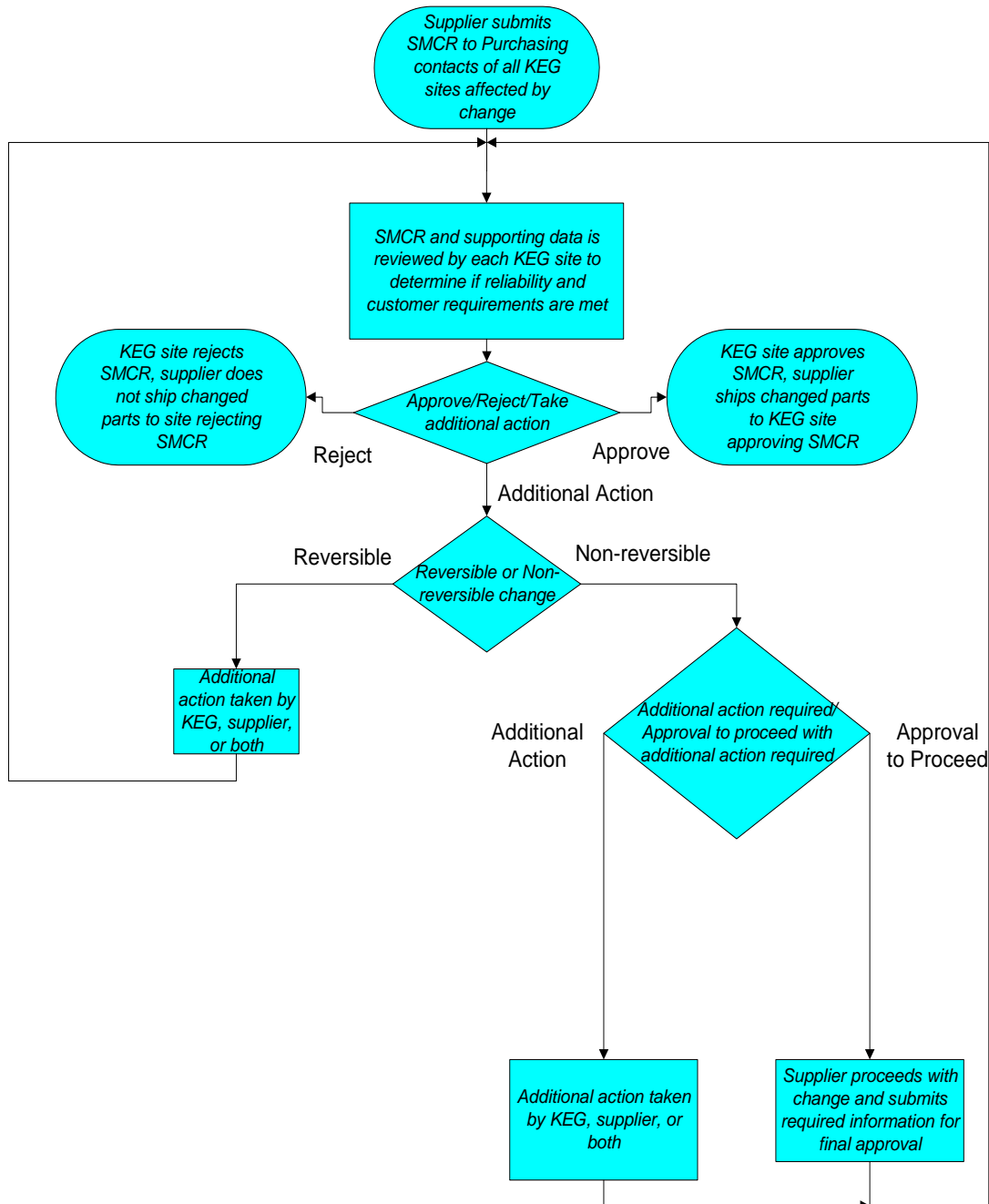
## **23.0 Right of Access Requirements**

### **23.1. General Requirements**

- 23.1.1. When appropriate, KEG, customers of KEG and regulatory authorities require the right of access to the supplier. This includes the applicable areas of all facilities, at any level of the supply chain, that are involved in the order and access to all applicable records.
- 23.1.2. Right of access will be requested by KEG to the supplier with as much advanced notification as is practical, based on the circumstances.



**Supplier Manufacturing Change Request  
Submittal Flow**





Appendix A

**KEG Global Supplier Quality Manual (GSQM) Acceptance form**

Supplier Name		Contact Person	
Location		Job Title	
Address		Phone	

**Confirmation of Acceptance of KEG GSQM rev C:**

- Accepted** – The minimum KEG requirements will be met without reservations.
- Accepted with exceptions** – The minimum KEG requirements can be met with exception as identified below.\*
- Rejected** – The minimum KEG requirements are considered to be not feasible by supplier.

**Exception List** \* Exceptions must be documented in the table below and will be a subject to KEG’s approval process.

Item #	Paragraph #	Supplier Comment / Proposal (use additional sheets if required)

**Supplier Sign-Off**

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date (MM/DD/YYYY)

**KEG Plant Sign-Off \***

\*Only when exceptions need to be considered.

- Accepted** – All listed exceptions may be considered as waived for the supplier.
- Rejected** – Exceptions listed above are considered to be not acceptable for KEG manufacturing site.

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date (MM/DD/YYYY)



**Appendix B**

<b>APPROVED BY</b>			
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KEJ Quality Manager	21 December 2009	KEJ Materials Manager	21 December 2009
KEPS Quality Manager	21 December 2009	KEPS Materials Manager	21 December 2009
KETL Quality Manager	21 December 2009	KETL Materials Manager	21 December 2009
KEMX Quality Manager	21 December 2009	KEMX Materials Manager	21 December 2009
KECN Quality Manager	21 December 2009	KECN Materials Manager	21 December 2009
KEWL Quality Manager	21 December 2009	KEWL Materials Manager	21 December 2009
KETA Quality Manager	21 December 2009	KETA Materials Manager	21 December 2009
KEFT Quality Manager	21 December 2009	KEFT Materials Manager	21 December 2009

<b>DISTRIBUTION LIST</b>	
President of KEG	General Managers
VP of Business Development	Materials Managers
VP of Finance	Global Quality Systems (KEJ QS Manager)
VP of North American Operations	E-Business Systems Analyst
VP of European Operations	
VP of Asian Operations	