Keymark Corporation, Kasson & Keller Corporate Quality Manual

KEYMARK
CORPORATION
Comprehensive Aluminum
Extrusion Capabilities

Kas~Kel
Bright ideas in windows and doors.

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1.1 - Quality Management System (QMS) Introduction

The purpose of the *Keymark Corporation, Kasson & Keller Corporate Quality Manual* is to define the scope of the QMS; outline the documented procedures established to plan, implement, and maintain the QMS; and describe the interaction and sequencing of processes that allow Keymark Corporation and Kasson & Keller to function effectively as the premiere supplier of aluminum extrusions and vinyl windows and doors.

The *Quality Manual* outlines the resources, procedures, documents, records, information, and processes required to support all management, planning, product realization, monitoring, measurement, analysis, and continuous improvement activities in order to achieve and sustain customer satisfaction goals.

All documented procedures contained or referred to in the *Quality Manual* shall be established, implemented, and maintained in order to support an effective QMS. Document control, record control, internal audit, control of nonconforming product, corrective action, and preventative action procedures are included in the *Quality Manual*.

In the event where any process potentially affecting product conformity is outsourced, Keymark and Kasson & Keller shall insure customer requirements are fulfilled through the use of post-processing inspections conducted at our facilities (when applicable). Examples of outsourcing may include paint, anodize, and extrusion operations.

Keymark and Kasson & Keller retain the ultimate responsibility to provide the customer with a quality product that satisfies all applicable Aluminum Association (AA), American Architectural Manufacturers Association (AAMA), National Fenestration Rating Council (NFRC), and North American Fenestration Standard (NAFS) specifications that meet or exceed expectations.

1.2 - Document Control Procedure

All policies, procedures, and records pertaining to training, quality, or the QMS shall be controlled to ensure the accurate dissemination of information to all associates.

1. Standardized abbreviations shall be used in the creation of any <u>new</u> local document.

    a. First 2-3 letters = company identification (KNY, KFL, or KK)
    b. Second 2-3 letters = department identification (if applicable)

2. Abbreviations shall be contained within the footer of the <u>new</u> local document along with the title and a revision number following the company and department abbreviations (i.e. KNYEXT SOP_REV 1.0).

3. Each facility shall designate 1-2 individuals responsible for the final approval of documentation for correctness and accuracy prior to document release.

4. Department Managers shall be responsible for reviewing and suggesting changes to documents to promote continuous improvement (with input from floor personnel).

5. Each facility shall create and organize the documents in a consistent manner for ease of use throughout the different Departments.

    a. Controlled copies of all local procedures and methods are available on the KNYQMS, KFLQMS, and KKQMS shared drives (mirror image on local intranet sites).

6. The Director of Quality Assurance shall review, approve, and control the distribution of all external specifications (i.e. Aluminum Association, ASTM, ANSI, AAMA).

Note: Items 7 & 8 deal specifically local procedures and methods.

7. Standardized formatting shall be utilized, as determined by each facility. Required Personal Protective Equipment (PPE) shall be listed if applicable.

8. Department Managers or designated individual(s) shall be responsible for ensuring all distributed hard copies of local procedures and methods are the most recent revision.

Note: Items 9 & 10 deal specifically with Keymark prints.

9. The Engineering Department shall review, approve, and control the distribution of all hard copy and electronic prints to ensure only the most current are available for use.

10. In no case shall a print leave the Engineering Department unless it has been labeled as "Certified for Use" or "For Reference Only".

1.3 - Record Control Procedure

All records pertaining to training, quality, and the QMS shall be controlled.

1. The Director of QA, appropriate Department Managers, and other designated individual(s) shall be responsible for creating, reviewing, and updating records as necessary.

2. Records shall be monitored, controlled, and stored on a shared network drive.

3. Identification and/or disposal of outdated records pertaining to the QMS shall be controlled by the Director of QA; completed by the appropriate Department Manager (or as assigned).

4. Disposal of records containing any Personally Identifiable Information (PII) and/or sensitive customer information (i.e. financial information) shall be accomplished via shredding and/or deleting as appropriate.

5. The record retention period shall be a minimum of two (2) years, unless specified otherwise in the QMS.

6. The following lists required records – each facility shall identify an individual (or individuals) responsible for their creation and retention:

    a. Management review
        i. Records pertaining to the management review of the QMS and their findings/recommendations

    b. Human resources
        i. Records pertaining to education, training, skills and work experience

    c. Product realization
        i. Evidence that the realization processes and resulting product fulfill requirements

    d. Customer-related processes
        i. Results of the review of requirements relating to product and actions arising from the review

    e. Purchasing
        i. Results of supplier evaluations and actions arising from the evaluations

    f. Production and service Managers
        i. Records required to demonstrate the validation of processes where the resulting output cannot be verified by subsequent monitoring or measurement
        ii. The unique identification of the product, where traceability is a requirement
        iii. Customer property that is lost, damaged, or otherwise found to be unsuitable for use

    g. Control of monitoring and measuring equipment
        i. Standards used for calibration or verification of measuring equipment where no international or national measurement standards exist
        ii. Result of calibration and verification of measuring equipment

    h. Monitoring and measurement
        i. Internal audit results
        ii. Evidence of product conformity with the acceptance criteria and indication of the authority responsible for the release of the product

    i. Control of nonconforming product
        i. Nature of the product nonconformities and any subsequent actions taken, including concession obtained

    j. Improvement
        i. Results of corrective action
        ii. Results of corrective action effectiveness checks
        iii. Results of preventative action

2.1 - Customer Focus

Management shall ensure all customer requirements are identified and met in order to ensure customer needs and expectations are fulfilled.

1. Our Corporate *Quality Policy* and *Core Values* are both centered on the imperatives of meeting customer requirements and exceeding customer expectations.

2. Management shall ensure a careful determination and review of product requirements is conducted.

3. Management shall ensure effective communication with both existing and prospective customers is maintained.

4. Management shall ensure all Keymark and Kasson & Keller employees are made aware of our organization's commitment to the customer.

5. The *Quality Manual* encompassing the entire QMS shall be made readily available to all employees. All Department Managers and Supervisors are responsible for communicating the importance of the customer to their employees.

2.2 - Quality Policy & Core Values

Every Keymark and Kasson & Keller Associate is committed to meeting customer requirements, complying with all applicable standards and specifications, sustaining continuous improvement of the QMS, and relentlessly demonstrating adherence to our shared Core Values.

Keymark and Kasson & Keller Core Values:

1 - We will always work safely
2 - We can and will prevent accidents
3 - We want a robust culture
4 - We are a TEAM
5 - We support differences
6 - We provide adequate tools, training, and technology
7 - We treat our extended business family with respect, always
8 - We care about everyone who works here
9 - We don't quit. We are persistent
10 - We follow procedures and exceed customer expectations

2.3 - Quality Objectives

The Executive Team shall establish and communicate specific internal Quality Objectives (business goals) within the QMS for each facility.

2.4 - Quality Management Review (QMR)

Members of the Executive Team (comprised of the CEO, COO, CFO, VP Production, VP Engineering, and Director of HR) shall meet quarterly with the Director of Quality Assurance (QA), Plant Managers, and other Management Representatives to address the effectiveness of the QMS at each facility.

1. The Director of QA shall be responsible for scheduling quarterly QMR meetings. Normally, these meetings will be held in January, April, July, and October each calendar year to discuss quality issues from the previous quarter.

2. Each facility shall designate a Management Representative (or Representatives) to present topics to the Executive Team.

3. Topics presented should include results of internal audits, customer feedback, process performance, corrective actions (to include CA Effectiveness Checks), preventative actions, follow-up actions from previous QMR's, changes that could potentially effect the QMS, and recommendations for improvement.

4. Quality Objectives (business goals) shall be reviewed and discussed at each QMR.

5. The members of the Executive Team shall provide the Management Representative(s) with critical output during/immediately following the QMR.

6. Critical output provided to the Management Representative(s) shall include decisions and actions related to the improvement of the QMS and its processes, improvement of product related to customer requirements, and required resources.

7. After critical output is received from the Executive Team, the Management Representative(s) shall write the QMR report and forward to all managers within their company for dissemination and discussion within their Departments.

3.1 - Competence, Training, and Awareness

In order to meet the needs of our customers, we as an organization must select the right people for the right jobs, providing them with the knowledge and training to succeed.

1. Managers requiring the hiring of new employees should communicate with the HR Department to outline the specific traits they are seeking to fill vacant positions, available shifts, number of vacant positions, and starting wages for each position.

2. The hiring manager must ensure that an offer of employment is made only to those individuals deemed capable of performing all job functions. The hiring manager is responsible for determining the competence level required for each position.

3. After hiring, but before the commencement of work within their department, all floor employees are required to attend a site-specific safety orientation class hosted by the Health and Safety Manager (or designated alternate).

4. Upon completion of safety orientation, the Department Manager is responsible for ensuring that adequate job specific orientation and training is provided.

5. **Each facility shall establish a formal, standardized training program for new employees, individually tailored to each department and job function.**

   <u>All training programs shall include</u>:

   a. **Training Sign Offs**
   b. **Training Schedule**
   c. **Job Description**
   d. **Local procedures/methods**
   e. **PPE requirements**

6. Each facility shall establish a method to document that appropriate training has been received and understood by each employee (i.e. Read & Initial Binder). Translators shall be used when appropriate.

7. The Department Manager is responsible for determining when an employee is deemed "qualified" in his/her job function.

8. If a Department Manager and/or Supervisor believe re-training is required (due to a lapse in performance, sustained period away from work, etc…) re-training shall be provided to the employee (and documented).

9. Each facility shall determine annual or recurring training requirements specific to each department in order to emphasize key points, prevent recurrence of nonconformities, and broaden the employee's depth of knowledge. Training should be an on-going, continuous process – not a one-time event for new employees!

3.2 – Infrastructure

Providing and maintaining a strong infrastructure is critical to achieving conformity to product requirements for our customers and maximizing internal production efficiencies. All employees are encouraged to report any problems with infrastructure or equipment.

1. Buildings, workspace, and associated utilities shall be maintained by the VP of Engineering, Plant Manager, and the Maintenance Department Manager.

   a. Buildings and utilities:

i. If any work associated with building or utility infrastructure has the potential to impact process capabilities or product requirements (quality), the customer shall be notified.

b. Workspace:

i. The Maintenance Department Manager shall be responsible for ensuring all facility machines and equipment are properly maintained.

2. Process equipment (to include both hardware and software) shall be maintained by the Information Technology (IT) Department, and managed by the Network Administrator and Director of BIS; reporting directly to the CFO.

i. The *Disaster Recovery Special Procedure* provides a plan to ensure that all data stored on the production servers can be restored in the event of system failure or accidental deletion.

ii. If any customer information is lost or compromised, the customer shall be notified immediately upon discovery.

3. Supporting services are divided into three categories: transportation, communication, and information systems.

a. Transportation requirements to include the maintenance of all company vehicles and coordination for the delivery of customer product shall be managed by the F&F Transportation Manager, reporting directly to the CFO.

i. Company trailers shall be maintained in good operating condition.

ii. In the event a contract carrier is used, the F&F Transportation Manager shall ensure the trailer to be used meets delivery requirements.

iii. In the event a customer arranges pick up, the customer shall assume the liability for any shipping damages incurred during delivery.

b. Communication requirements (phone system) shall be managed by the Network Administrator.

c. Information systems (internet website and company intranet) shall be managed by Network Administrator.

4.1 - Determination of Requirements Related to the Product

1. Prior to quote delivery/work initiation, a thorough review of customer requirements shall be conducted. Documentation of customer communication shall be maintained.

2. At Keymark, this review should include the intended use of the final product, extrusion facility to utilize, number of holes in die, proposed press assignment, exposed surfaces, paint coverage, alloy/temper, and extrudability.

3. Additionally, implied needs of the customer based on industry knowledge and experience (i.e. snap fits, assembly form/fit/function, etc…) shall be considered and communicated with the customer.

4. Product characteristics of aluminum extrusions (i.e. dimensional tolerances, alloy/temper, surface finish, hardness, etc…) shall adhere to the standards set forth by the Aluminum Association. Finishes of aluminum extrusions stall adhere to American Architectural Manufacturers Association (AAMA) specifications.

5. A die order will not be placed until a signed print is received back from the customer by the Engineering Department, signifying the customer's specific product requirements have been addressed.

6. Product characteristics of completed vinyl window and door units shall adhere to National Fenestration Rating Council (NFRC) and North American Fenestration Standard (NAFS) specifications.

4.2 - Review of Requirements Related to the Product

1. All product requirement review activities shall be completed prior to the finalization of any order/contract (or modification to existing order/contract) between the customer and Keymark or Kasson & Keller.

2. Any change(s) approved by both the customer and Keymark or Kasson & Keller shall be communicated to all relevant personnel (to include Customer Service Representatives, Order Entry, Engineering, as well as any department involved in the production or inspection of the final product).

3. Documentation of the customer acceptance of stated contractual terms shall be maintained no less than one year, and may include (but is not limited to) signed prints and email correspondence between the customer and Keymark or Kasson & Keller.

4.3 - Customer Communication

An open line of communication shall be established and maintained with all existing and prospective customers in order to ensure customer requirements are met.

1. Completed product information shall be maintained and made available to the customer upon request.

2. Information regarding customer enquiries and orders/contracts (to include any amendments) shall be communicated to the customer and all relevant personnel.

3. Customer feedback shall be addressed during all regularly scheduled QMR's. In addition, customer feedback shall be communicated and discussed during all weekly production meetings as applicable.

4. Any customer complaint shall be handled in accordance with *Section 5.7*.

5. Notification of potential product nonconformities shall be communicated to the customer as specified in *Section 5.5*.

6. It is the responsibility of all Keymark and Kasson & Keller Associates to maintain an awareness of customer requirements.

4.4a - Purchasing Process

1. Each facility shall ensure all purchased products for use in product realization (or the final product) conform to all specifications as stated on the Purchase Order.

2. Criteria for the selection, evaluation, and re-evaluation of approved suppliers shall be established and maintained at each facility.

3. An Annual Supplier Review shall be conducted to analyze supplier performance. Attendees should include Quality, Purchasing, and Production leadership.

    a. Analysis should include rejection history, customer complaints, on-time delivery, changes in supplier manufacturing processes, and order completion.

    b. Feedback should be provided to suppliers to foster continuous improvement.

4.4b - Purchasing Information

1. Each facility shall define and document the specific responsibilities of personnel performing a receiving function.

2. Owners of all downstream inspection activities shall ensure any nonconformities discovered of purchased product are communicated to the appropriate individual(s).

3. When nonconforming product is discovered (either during receiving or the execution of downstream inspection activities), the suspect material shall be immediately quarantined and identified by the individual making the discovery.

    a. After all suspect material has been quarantined and identified; senior management and designated Quality, Purchasing, and Production leadership shall be notified to prevent the unintended incorporation of potentially nonconforming product into any manufacturing process.

b. The supplier shall be notified whenever nonconforming product has been discovered. This communication shall include the nature and extent of the nonconformity, and may also include sampling or photographic evidence provided for supplier review/disposition.

4.5 - Verification of Purchased Product

Senior management shall communicate inspection responsibilities to the appropriate Department Managers where purchased product not previously inspected will be used in the realization of final product.

1. For purchased products unable to be inspected completely at the time of receipt, proper guidelines shall be adhered to in order to minimize the effect of purchased product nonconformities during the product realization.

2. Keymark downstream inspection activities include but are not limited to the following:

    a. Aluminum/Billet – material certifications and spectrometer results.

    b. Aluminum Sow – material certifications (to be forwarded along with receiving documentation to Accounts Payable for storage).

    c. New/Revised Dies – first run die/profile inspection results.

    d. Paint – post painting adhesion, thickness, and finish inspection results.

    e. Thermal Strut – visual inspection upon delivery and post-production shear test inspection results.

    f. Packing Materials – visual inspection upon delivery as well as at time of use.

    g. Anodize Chemicals – post anodizing mils, gloss, color match, and seal test results.

3. Inspection activity results (records) shall be stored by the appropriate Department Manager(s) and communicated as required to Quality and Purchasing leadership.

4.6 - Validation of Processes

Although regular monitoring and measurement activities provide reasonable assurance that special processes can be successfully executed, validation is required by an independent third party to ensure the resulting product meets all customer criteria and industry standards.

Keymark:

1. Paint and anodize processes must be validated, due to the fact that not all requirements specified by the American Architectural Manufacturers Association (AAMA) can be reasonably tested during post production inspection activities at Keymark.

2. Sampling visits are conducted periodically at Keymark by an independent third party.

3. Testing is conducted to ensure all special processes (paint and anodize) meet or exceed industry specifications. Upon successful completion of testing, a certificate is issued to Keymark as documentation of performance requirements, enabling Keymark to be listed on the AAMA Verified Components List (VCL).

4. For paint applications, AAMA 2603, AAMA 2604, and AAMA 2605 specifications are validated. Color uniformity, specular gloss, dry film hardness, dry and wet film adhesion, impact resistance, chemical resistance (to muriatic acid, mortar, and detergent), and corrosion resistance (to humidity and salt spray) are tested.

5. For anodize applications, the AAMA 611 specification is validated. Oxide coating thickness (ASTM B487), oxide coating weight and apparent density (ASTM B137), color uniformity (AATCC TM173), gloss uniformity (ASTM D523, 60°), abrasion resistance (Michael Clark Abrasion Test), corrosion resistance (ASTM B117, 1000 hrs. using 5% salt solution), seal test (ASTM B680), and craze resistance are tested.

6. Paint and anodize special processes shall be revalidated every 36 months as required by AAMA. Test results and certificates may be made available to the customer upon request.

Kasson & Keller:

1. Representative finished units must be validated, due to the fact that not all requirements specified by the National Fenestration Rating Council (NFRC), and North American Fenestration Standard (NAFS) can be reasonably tested during post production inspection activities at Kasson & Keller.

2. Sampling is conducted periodically by an independent third party.

3. Testing is conducted to ensure representative finished units meet or exceed industry specifications. Upon successful completion of testing, certificates are issued to Kasson & Keller as documentation of performance requirements, enabling Kasson & Keller to receive NFRC certification.

4. For representative finished units, the NAFS standard (AAMA/WDMA/CSA 101/I.S.2/A440) is validated. Operating Force (ASTM E2068), Air Leakage Resistance (ASTM E283), Water Penetration Resistance (ASTM E547), Uniform Load Deflection (ASTM E330), Uniform Load Structural (ASTM E330), Forced Entry Resistance (ASTM E588), Thermoplastic Corner Weld, and Deglazing are tested.

5. Certifications shall be revalidated as required by the NFRC. Test results and certificates may be made available to the customer upon request.

4.7 - Identification and Traceability

It is imperative that all products are uniquely identified from initial production to shipment, and that traceability is maintained throughout all production processes. This allows any detected nonconformity to be tracked back to its source, and ensures the remainder of the affected batch can be located and isolated.

Keymark:

1. Prior to production, an extrusion ticket is generated by the Press Foreman for each production run (batch lot). All information contained on the ticket is also stored electronically in the Extrusion Production Information and Control System (EPICS).

2. The extrusion ticket shall contain the following information:

    a. Date extruded, press number, shift, time
    b. Die number, die copy number, print weight, profile outline
    c. Alloy, temper, finish (paint, anodize, or mill)
    d. Number of pieces, extruded length, department process routing
    e. Customer name, sales order number & item number, due date

3. After the profile has been extruded, cut to specified length, and loaded for transport to the aging ovens; the extrusion ticket must be securely affixed to the bin or rack.

4. Extrusion tickets shall follow each bin of material throughout all remaining stages of production (to include paint, anodize, thermal break, and fabrication as specified).

5. After material has been routed through the Packing & Shipping Department, a yellow shipping ticket shall be generated by the Wrapper Operator and affixed to the completed bundle. The shipping ticket shall contain the following information:

    a. Pack code, due date, ship to address
    b. Job name, sales order & item number, customer Purchase Order number
    c. Customer part number and/or die number, part description
    d. Alloy, temper, cut length, net pieces, net pounds, finish
    e. Packing ticket number, date packed, inspection team number

6. At the same time the yellow shipping ticket is produced, a blue billing ticket is also generated containing all pertinent information required to properly bill the customer.

7. Each Department Manager is responsible for maintaining both identification and traceability within their department during processing for each unique batch lot.

Kasson & Keller:

1. Production Labels, referencing both the specific Job Number and Purchase Order Number, shall follow units in production throughout the entire assembly process.

4.8 - Customer Property

All materials provided by the customer shall be identified, verified, protected, and safeguarded from any type of handling damage or misuse.

1. Upon receipt of customer material, the quantities received shall be verified; obvious damage incurred during transit shall also be determined.

2. Should the material be found unsuitable for finishing or fabrication - or if the reported shipped quantity does not coincide with the actual quantity received - the customer shall be notified.

3. In the event customer material is lost or damaged while in the possession of Keymark or Kasson & Keller, the customer shall be notified.

4. Intellectual property (i.e. proprietary shapes and assemblies), as well as customer credit information shall be protected from any unauthorized use. This information shall not be released for any reason without the customer's express written consent.

5. In the event an active die breaks during the extrusion process, or in any instance when an active die is over-corrected and is no longer capable of producing conforming material, the affected die should be replaced by Keymark at no cost to the customer.

4.9 - Preservation of Product

Care shall be taken during internal processing and the final delivery phase to preserve the product and maintain conformity to customer requirements and specifications.

1. All Department Managers are responsible for the care and handling of material in their respective departments during production activities. This requirement also includes materials to be used during product realization (i.e. paint, strut, etc…).

    a. Managers are responsible for the proper identification and disposal of expired products (i.e. paint, anodize chemicals, fill & de-bridge chemicals, etc…).

2. Handling equipment (i.e. cranes, handcarts, forklifts, etc…) and transport devices (i.e. bins, carts, etc…) shall be maintained and serviced as required to prevent damage to product during internal processing.

3. Packaging and preservation requirements shall be determined prior to order fulfillment by the Salesman servicing the account. Standardized Packing Codes for aluminum extrusions as listed in EPICS shall be used unless the customer specifies otherwise.

4. Appropriate packing materials shall be used to protect the product against damage, or contamination during storage, processing, and transportation up to the point of use.

5. Company trailers shall be equipped with center posts, tarps or retractable load covers, and sufficient tie downs in order to ensure damage does not occur to finished products during shipment. Corner protectors and desiccant bags shall be used when needed.

4.10 - Control of Monitoring and Measuring Equipment

The calibration, verification, and control of monitoring and measurement equipment shall be implemented in order to prevent the shipment of nonconforming material.

1. Each facility shall designate an individual responsible for the ordering, receiving, and distribution of all monitoring and measuring equipment. Upon receipt each piece of equipment shall be uniquely identified, recorded, and verified as necessary.

2. Calibration/verification standards as well as calibrated/reference only tools shall be defined and listed.

3. The designated individual shall ensure all scheduled calibration activities are completed.

4. Each facility shall provide guidance on the proper handling and maintenance (cleaning) of all monitoring and measuring equipment. Proper storage for monitoring and measuring equipment will be provided on a department by department basis.

5. Daily verification tests for equipment (i.e., Webster hardness testers, calipers, etc…) shall be completed as assigned. If any piece of equipment fails verification, the equipment shall be turned in for repair or replacement.

6. Redundant QC checks shall be used to minimize the effect of faulty monitoring and measuring equipment in order to validate previously measured material.

5.1 - Customer Satisfaction

Meeting customer requirements and building trust are both key components outlined in our Corporate Quality Policy. The importance of customer satisfaction is highlighted by Core Value #10 – "We follow procedures and exceed customer expectations".

1. A primary metric used to measure customer satisfaction is the customer rejection rate; Keymark and Kasson & Keller both strive to always maintain this value ≤ 1%.

2. Customer rejection rates and Complete On-time Delivery shall be monitored regularly and reported to the Executive Team during all QMR's.

3. Customers are encouraged to provide supplier performance reports; Keymark and Kasson & Keller will make the appropriate accommodations to discuss feedback and recommendations with the customer whenever this information has been provided.

4. Any customer complaint shall be dealt with in a timely manner.

5.2 - Internal Audit Procedure

The desired outcome of the internal audit program is to strengthen the QMS and enhance production capabilities in order to drive continuous improvement activities.

1. Two types of FORMAL audits shall be conducted: Level 1 and Level 2.

2. The purpose of the Level 1 audit is to evaluate compliance with local procedures and methods. All production departments shall be audited annually.

3. The purpose of the Level 2 audit is to evaluate the effectiveness of the QMS as outlined in the *Quality Manual*. Level 2 audits shall be conducted annually.

4. A schedule for all planned Level 1 audits activities shall be provided by each facility to the Director of Quality Assurance (QA), and posted on each facility's QMS drive. Level 2 audits will be scheduled and conducted by the Director of QA.

    a. All managers are responsible for communicating the audit schedule to their employees to increase employee involvement and awareness.

5. Training for Level 1 auditors shall include familiarization with the department to be audited, and a review of all pertinent local procedures and methods. Required training for Level 2 auditors will be determined and provided by the Director of QA.

6. The following information is provided to define the planning, execution, and verification of the Level 1 audit program:

    a. Level 1 Auditors are selected by each individual facility (may not audit their own department).

    b. Questions (yes or no format) shall be based on local procedures and methods. A score of 85% is required to pass; scores < 85% will require a re-audit.

    c. Each facility shall identify an individual responsible for reporting audit results to departmental and executive leadership, and shall maintain a file of all audit findings and corrective actions for a minimum period of two years.

d. After the audit has been conducted, the local Audit Program Administrator and appropriate Department Manager shall determine if non-compliance is due to:

- Insufficient equipment, or equipment in need of repair
- Outdated or inaccurate procedures/methods that required revision
- Lack of training or discipline

e. For all questions missed, Department Managers shall have 2 weeks to provide a corrective action to the local Audit Program Administrator, COO, and Plant Manager; and 4 weeks to implement the corrective action. If a re-audit is required, it shall be conducted after a minimum of 6 weeks to evaluate progress towards conformity.

f. Verification of the effectiveness of corrective actions taken shall be presented to members of the Executive Team during subsequent QMR's.

7. The following information is provided to define the planning, execution, and verification of the Level 2 audit program:

a. Level 2 Auditors are selected by the Director of QA.

b. A process based approach utilizing documents, records, and observations will be used to assess the utilization of the QMS and its processes. Each facility shall be audited annually.

c. The Director of QA shall be responsible for reporting audit results to departmental and executive leadership, and shall maintain a file of all audit findings and corrective actions for a minimum period of two years.

d. After the initial audit has been conducted, an evaluation shall be made by the Director of QA to outline any instances of non-compliance.

e. Audit findings shall be based on the following status categories:

- Major NC (MNC) = systematic breakdown of QMS process(es)
- Minor NC (mNC) = improvement needed
- Discussion point (DP) = may develop into NC if not addressed

f. For all NC's, a formal CA Plan (with accompanying Fishbone Diagram) shall be completed by the QC Manager (with assistance from members of the facility audited), and submitted to the Director of QA. The effectiveness of the corrective action(s) taken shall be evaluated as specified in the CA Plan.

8. **INFORMAL audits to monitor employee compliance to local procedures and methods and appropriate PPE utilization shall be conducted by all Departmental Managers on a daily basis! Although no reporting requirements exist, failure to complete informal audits regularly will most likely result in poor Level 1 audit performance.**

5.3 - Monitoring & Measurement of Processes

QMS processes shall be monitored and measured to verify that planned results have been achieved.

1. Each facility shall identify, monitor, and communicate internal production and quality metrics (to include customer returns/rejection rate).

2. Measures of Effectiveness (MOE's)/Key Performance Indicators (KPI's) should be reviewed and discussed with the employees of each Department.

3. MOE's/KPI's shall be reviewed and discussed during each QMR. Members of the Executive Team or other senior management may change or amend MOE's/KPI's (or their reporting methods) at any given time.

4. Internal audits shall be conducted to quantify the level of adherence to local procedures and methods.

5. Corrective actions and/or new procedures may be issued by members of the Executive Team or management to address problem areas.

6. An independent testing facility shall be utilized to test and certify that painted and anodized aluminum extrusions, as well as completed vinyl windows and doors, conform to industry standards.

7. Each facility shall ensure that all independent testing is completed as required to ensure: Keymark maintains its status on the AAMA (American Architectural Manufacturers Association) Verified Component List (VCL), and Kasson & Keller maintains all North American Fenestration Standard (NAFS) and National Fenestration Rating Council (NFRC) certifications.

5.4 - Monitoring & Measurement of Product

Characteristics of all final products shall be monitored and measured to verify that customer requirements have been satisfied prior to the release of material.

1. Each facility shall ensure that key characteristics of all manufactured products are monitored and measured by trained and qualified personnel during both in-process and final inspections in order to ensure product conformity.

2. Each facility shall identify, define, each specific quality checks to be completed. Evidence of conformity shall be maintained.

3. Tolerances for cross-sectional dimensions, wall thickness, cut length, straightness, twist, flatness, and angularity for aluminum extrusions shall be determined by utilizing the Aluminum Association's *Aluminum Standards and Data* manual (unless otherwise specified on customer-approved print).

4. Mechanical property limits and chemical composition for aluminum extrusions shall be determined by utilizing the *Aluminum Standards and Data* manual.

    a. The *Aluminum Standards and Data* manual may be cross-referenced to the American Society for Testing and Materials (ASTM) B221, and the American National Standards Institute (ANSI) H35.2 standards

5. Acceptance criteria for painted or anodized aluminum extrusions shall be determined by the applicable American Architectural Manufacturers Association (AAMA) specification.

5.5 - Control of Nonconforming Product

Each facility shall ensure any nonconforming product is identified and controlled in order to prevent unintended use or delivery to the customer.

1. Personnel posting production scrap and re-work outcomes shall adhere to local procedures to ensure that any nonconforming product is handled appropriately.

2. When a nonconformity is detected, the affected material is placed on hold to alert quality staff that a potential nonconformity has been detected and a closer inspection is required. Any Manager, Supervisor, or QC Inspector may place an item on hold.

3. After additional examination, the decision is made to either re-work or scrap the affected material. The QC Manager, QC Supervisor, appropriate Department Manager, or designated individual will determine the necessary re-work actions.

4. After any re-work has been completed (per disposition), the appropriate Department Manager shall:

    a. Notify the QC Manager/Supervisor of what has been completed. Communication from both shifts shall include the number of pieces scrapped (and reason for scrap).

    b. Remove the hold tag, note on the tag what action has been completed and if any pieces were scrapped (please indicate on hold tag the source of scrap); turn in to QC.

5. After re-work action has been completed, the Director of Quality Assurance (QA), QC Manager, QC Supervisor, or designated individual may remove material from a hold status for further processing or shipment.

6. The following re-work limits should be observed to the maximum extent practicable:

    - Paint re-work (2603, 2604, and 2605) actions may be attempted up to three times.

    - Anodize re-work actions may be attempted as many times as required, however it should be noted that wall thickness and surface finish requirements are not always conducive to multiple re-work actions. <u>QC must be notified before/after re-work</u>.

- Heat treatment re-work should be attempted only once for all tempers.

- Unless specified above, there is no limit for all other re-work actions.

7. Nonconforming material may be released by either the Director of QA, QC Manager, QC Supervisor, or designated individual when, based on experience, form, fit, and function of the material is not affected. Items to be taken into consideration include (but are not limited to) checking assemblies, non-exposed surfaces, etc…

8. Senior management may recommend the release of nonconforming material; however the QC Manager (or Director of QA in his absence), or designated quality representative will make the final determination.

9. If re-work actions are deemed unacceptable, affected material shall be scrapped per local procedure.

10. In the case when aluminum extrusions are scrapped (where re-work actions would be ineffective); any Department Supervisor, Foreman, or QC Inspector may scrap material for any amount up to 200 lbs. Scrap carts will be brought to the Cast House as soon as possible to prevent inadvertent use (applies to Keymark New York only).

    a. When more than 200 lbs. is to be scrapped, either the QC Manager or QC Supervisor shall be consulted first.

11. If a nonconformity is identified after material has already shipped, the customer shall be notified. A Return Material Authorization will be issued as appropriate.

12. If a customer identifies a nonconformity, a sample and/or pictures may be requested. A Return Material Authorization will be issued as appropriate.

5.6 - Continual Improvement

Continuous improvement of the QMS is critical to meeting internal goals and exceeding customer expectations. Corrective and Preventative Actions shall be initiated by each facility when appropriate.

5.7 - Corrective Action Procedure

Each facility shall ensure that action is taken to both identify and address the causes of nonconformities in order to prevent recurrences.

1. Corrective Action (CA) is assigned to one of (3) distinct categories:

    a. CA as a result of a specific customer complaint (customer driven)
    b. CA as a result of a trend of multiple customer complaints (internally driven)
    c. CA as a result of internal audit activities (internally driven)

Note: Items 2 through 11 deal specifically with CA as a result of a specific customer complaint (submitted to the customer upon completion).

2. Upon issuance of a Return Material Authorization (RMA) based on information received via customer complaint (which may include physical sample(s) and/or photographic evidence if requested), a CA may be generated based on customer history and the quantity of material affected.

   Note: A correction (containment, short-term fix) may be required prior to CA completion.

3. The CA will be assigned to the most appropriate person (i.e. Department Manager) for completion. The nonconforming product shall be identified by a unique Keymark or Kasson & Keller Sales Order Number, Customer Part Number, and Customer Purchase Order number in order to maintain traceability.

   a. Keymark material should also include the Die number, pieces/pounds (and/or length of material), and finish.

4. Root Cause Analysis (RCA) shall be completed prior to the completion of a CA.

5. RCA should include the investigation of possible failures, malfunctions, or nonconformities of incoming materials, processes, tools, equipment, or facilities; inadequate or non-existent procedures and documentation; noncompliance with procedures; inadequate process control; lack of training; inadequate working conditions; inadequate resources; as well as inherent process variability.

6. The Director of QA, QC Manager, or other designated individual shall review each CA prior to submitting to the customer, incorporating best practices and lessons learned into local procedures.

7. The individual completing the CA is responsible for implementation. All CA's should be sustainable.

8. Records of all CA's taken shall be maintained. Completed CA's should be submitted to the customer within 30 days of initial complaint receipt to the maximum extent practicable.

9. The effectiveness of all previous CA's taken in response to product nonconformities shall be reviewed each time a new CA is generated in order to verify the nonconformity is not a repeat occurrence. Each facility shall establish a method for executing CA Effectiveness Checks.

10. If an original CA is deemed ineffective, the following actions shall be taken:

    a. In addition to providing a new CA (for the repeat occurrence), the affected Department Manager shall meet with the COO, Plant Manager, or Director of QA to determine why the original CA failed to correct the nonconformity.

11. Repeat nonconformities shall be presented during the QMR, along with any trends noticed when looking at the totality of customer complaints received during each reporting period.

Note: Items 12 through 20 deal specifically with CA as a result of a trend of multiple customer complaints (not submitted to the customer upon completion).

12. Upon regular review of customer complaints, a CA will be generated by and at the discretion of the Director of QA or other senior management based on trend analysis data and the magnitude of the issue(s). Key factors to consider include the number of complaints as well as the associated costs of rework and/or scrap.

13. The CA will be assigned to the most appropriate individual or group of individuals for completion, implementation, and monitoring activities.

14. RCA shall be completed prior to the completion of a CA.

15. RCA should include the investigation of possible failures, malfunctions, or nonconformities of incoming materials, processes, tools, equipment, or facilities; inadequate or non-existent procedures and documentation; noncompliance with procedures; inadequate process control; lack of training; inadequate working conditions; inadequate resources; as well as inherent process variability.

16. Required completion date of assigned RCA and CA shall be specified.

17. The Director of QA, QC Manager, or other designated individual shall review each CA upon completion and consider incorporating best practices and lessons learned into local procedures.

18. Records of all CA's taken shall be maintained. In addition, the Director of QA, QC Manager, or other designated individual shall follow up as required to ensure full implementation.

19. The effectiveness of all previously completed CA's shall be formally reviewed. CA Effectiveness Checks shall be completed per local procedures.

20. If an original CA is deemed ineffective, a new CA and CA Effectiveness Check shall be completed.

Note: CA's resulting from internal audits, along with methods for verification of effectiveness, are described in Section 5.2 – Internal Audit Procedure.

5.8 - Preventive Action Procedure

Each facility shall ensure that action is taken to both identify and address the causes of potential nonconformities in order to prevent their occurrence.

1. Each facility shall establish a working group, comprised of both management and floor employees from various departments, to discuss trends and identify areas that might lead to the generation of nonconforming product.

2. Preventative Action (PA) is defined as any action taken to improve a condition or process that if not addressed, may lead to the inefficient use of resources or the occurrence of nonconforming product.

3. Risk Assessment (RA) shall be completed by the working group prior to the assignment of a PA.

4. A PA will be generated based on working group discussions, executive guidance, and/or manager recommendations after RA has been completed.

5. The PA will be assigned to the most appropriate individual, group, or department for completion.

6. A Qualification Study/Proposal is recommended for PA's involving major process improvements, and should include the following information:

    a. Scope – summary of what problem the project is attempting to address (why it is needed).

    b. Preliminary Goals & Objectives – lists items to be completed before the project can begin.

    c. Projected Costs – should include both material and labor costs.

    d. Cost Justification – should describe Return on Investment (ROI).

    e. Project Steps – outlines tasks to be completed in the execution of the project.

    f. Side-by-side Comparison – if the process improvement involves the installation of new equipment, proposed equipment should be compared with existing equipment (or with another new equipment alternative).

    g. Possible Courses of Action – lists both recommended and alternative solution(s) for Executive Team review and/or approval.

    Note: As an alternative format to the above, the Project Management Plan Template may be utilized, and is located at the following address:

    L:\KNY QMS\ACTIVE DOCUMENTS\Quality Control\Records\Quality Improvement Team\Project Management Plan Template.docx.

7. The written Qualification Study/Proposal (or Project Management Plan) should have clearly defined validation protocol. At the completion of the PA, process improvements must be validated (proven) through the use of objective evidence (charts, graphs, statistics, etc…).

8. The individual, group, or department assigned a PA is responsible for implementation, and should take actions to sustain the improvement(s) achieved.

9. Records of all assigned PA's shall be maintained to include date assigned, individual or group responsible, status, and measures of effectiveness. In addition, the Director of QA, QC Manager, or other designated individual shall follow up as required to ensure full implementation and provide assistance where needed.

10. The Director of QA, QC Manager, or other designated individual shall review each PA taken and when applicable, incorporate best practices and lessons learned into local procedures in order to sustain the improvement(s) achieved.

11. The effectiveness of PA's taken shall be formally reviewed per local procedures.

Document Revision History

Rev	*Issue Date*	*Revision By*	*Revision Description*
1.0	1/18/2017	Mike Drindak	Establishment of Keymark, Kasson & Keller Corporate Quality Manual.