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# Carlex Supplier Quality Manual

## 1.0 Introduction

Carlex's success is based on supplying high quality, high performance products at a competitive price to our customers. Our suppliers are a key element in achieving and maintaining this high standard of performance. We consider our suppliers an important part of the Carlex team. Carlex strives to develop and maintain positive working relationships with all of our suppliers.

**This document sets out and defines Carlex's expectations of our suppliers. As a supplier to Carlex, you agree to conform to the quality system guidelines in this document.**

Exceptions to these guidelines must be agreed to in writing by an authorized officer of Carlex.

This Manual and Carlex's General Terms and Conditions are available on the Carlex website ([www.Carlex.com](http://www.Carlex.com)). In this document, "you" or "your" relates to the supplier and "we" or "us" relates to Carlex.

Although this Manual does not alter or reduce any other requirements of the contract, it is intended to provide a better understanding of the expectations Carlex has of its suppliers.

Contact the STA/Supplier Quality Engineer assigned to your site for any questions related to the requirements listed in this document.

## 2.0 Reference Documents

The latest edition of the following AIAG reference manuals are used to develop this Supplier Quality Manual:

- Advanced Product Quality Planning and Control Plan (APQP)
- Materials Management Operations Guideline (MMOG)
- Measurement Systems Analysis (MSA)
- Potential Failure Mode and Effects Analysis (FMEA)
- Production Part Approval Process (PPAP)
- Statistical Process Control (SPC)

Additionally, ISO 9001:2015 and IATF 16949:2016 are used in the development of this Supplier Quality Manual.

## 3.0 Quality Systems Requirements

### 3.1 ISO/TS Quality Standards

All suppliers of products and services provided to Carlex that affect customer requirements must be, at a minimum, ISO 9001:2015 certified with the goal of conforming to IATF 16949:2016. Carlex reserves the right to require more



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specific component requirements from its suppliers based on end customer specific requirements.

Carlex may exempt certain organizations from ISO 9001:2015 and/or IATF 16949:2016. This exemption applies to those organizations whose automotive business is of such low significance that they will not register to ISO 9001/TS16949 but are still needed as a supplier. Exemption criteria shall be in writing and applied consistently in the application of this exemption. The audit is structured to evaluate the supplier's systems conformance to AIAG-QSA and/or ISO 9001:2015 and Carlex requirements.

You shall include Carlex in the listing of customers provided to the registrar prior to ISO 9001:2015 or IATF 16949:2016 audits. The entire facility (producing products for Carlex Glass America, LLC) must be registered to the applicable standard. Where the entire facility does not produce products for Carlex, a clear definition of what product lines are registered shall be included in the registration scope.

### 3.2 Supplier Profile

You must complete the Supplier Profile/Questionnaire information sheet and all included requirements annually.

Your customer representative is the primary interface with Carlex. If the customer representative changes you shall notify Carlex Supply Chain Management group of the changes.

If senior management responsible for Quality changes or if company ownership changes, you must provide updated information to Carlex's Supply Chain Management group within 10 days.

### 3.3 Conflict Minerals

Carlex is committed to sourcing responsibly and considers mining activities that fuel conflict as unacceptable. Carlex's efforts related to conflict minerals are aligned to the work of the Electronic Industry Citizenship Coalition® (EICC®) and Global e-Sustainability Initiative (GeSI). The EICC's and GeSI's work includes the Conflict-Free Smelter Program and the Conflict Minerals Reporting Template. Suppliers are required to meet this requirement per end customer requests. Register your organization with iPoint Conflict Minerals Program IPCMP at: <http://www.conflict-minerals.com/>. Traceability data must be maintained and accurate records must be kept for 5 years per the Organization for Economic Cooperation and Development (OECD) due diligence guidance for responsible supply chains of minerals from conflict-affected and high-risk areas and as required by Section 1502 of the Dodd-Frank Act.



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## 3.4 Heat Treat, Plating and Coating System Assessment

Suppliers providing Carlex with heat treated, plated or coated product / material shall meet the requirements of the AIAG CQI. Records of these assessments including any corrective actions required for compliance shall be maintained and made available upon request by Carlex.

## 3.5 Hazardous Materials

The supplier will include in the PPAP package a current Safety Data Sheet (SDS). Additionally, the supplier will annually provide a current SDS to the Carlex facility receiving any Hazardous Material or parts/components containing Hazardous Materials. All material classified as hazardous by local, state or federal government regulations will be identified, documented, handled, packaged, and shipped as required by applicable laws, rules and regulations.

## 3.6 Restricted Substance Management Standard (RSMS)

Carlex is committed to product compliance, quality assurance, health and safety, and environmental management. Our policy shall be to conform to local, state, federal and customer requirements pertaining to certain chemical substances. Product data submissions and certifications should be made in the International Material Data System (IMDS) and included with the PPAP package. This policy supplements but does not supersede the responsibility of the supplier to comply with laws and regulations for the receiving Carlex location(s). It is the duty of all suppliers of product to Carlex to comply with the Global Automotive Declarable Substances List (GADSL).

## 3.7 Special Characteristics

For Special Characteristics utilizing customer directed symbols '◇', where applicable, you are expected to be aware of the OEM 'marking' requirements

## 4.0 Quality Performance Rating

The expectation is that you provide parts and services that have zero defects and result in zero customer claims. Carlex will rate its suppliers based on the Carlex scorecard. This scorecard will include, at a minimum: PPM, on-time delivery, any expedited shipping required, corrective actions required and response time, and existing quality certifications.

Your quality performance will be taken into consideration when we make sourcing decisions.

## 5.0 Quality Planning

### 5.1 APQP

You shall utilize the planning procedures and techniques provided in the latest edition AIAG Advanced Product Quality Planning and Control Plan reference manual to develop and report progress on new programs. You will be asked to

supply data at regular intervals in order to conform to Carlex's APQP Gate Process. As a member of a Carlex product development team, you may be invited, and are expected to participate in Supplier Component Review Team meetings as part of the APQP process.

## 5.2 PPAP

Suppliers submitting PPAP to Carlex North American sites shall conform to all requirements defined in the latest edition of the AIAG PPAP Manual. Suppliers submitting PPAP to Carlex European sites shall conform to all requirements defined in VDA Band 2. Carlex, at its discretion, may have additional specific requirements.

If there is any doubt or question regarding the need for PPAP, contact Carlex Corporate Supply Chain Management for clarification.

Carlex specifies submission of PPAP for the following reasons:

- 1) A new part or product (e.g., a specific part, material, or color not previously supplied to the specific customer)
- 2) Correction of a discrepancy on a previously submitted part
- 3) Any product modified by a change to design records, specifications or materials.
- 4) Use of other construction or material than was used in the previously approved part or product.
- 5) Production from new or modified tools (except perishable tools), dies, molds, patterns, etc. including additional or replacement tooling.
- 6) Production following upgrade or rearrangement of existing tooling or equipment.
- 7) Production from tooling or equipment transferred to a different plant site or from an additional plant site.
- 8) Change of supplier for parts, materials, or services.
- 9) Product produced after tooling has been inactive for volume production for a period of twelve months or more.
- 10) Product or process changes related to components of the production product manufactured internally or manufactured by suppliers.
- 11) Change in test/inspection method – new technique.

Level 3 is the submission level default unless otherwise specified in writing by Carlex Supplier Quality. Carlex reserves the right to change the PPAP submission level on individual submittals.

Any modifications after PPAP to part, process or facility must be communicated and approved in writing by Carlex Corporate Purchasing and Supplier Quality prior to commencement of activity. The Supplier Change Request form shall be completed and shall include resubmission of the appropriate level PPAP.

As a supplier of product and/or service that effects customer requirements, you shall ensure that all of your sub-suppliers meet all requirements of the latest revision of the AIAG PPAP Manual. The use of customer designated sub-suppliers/sub-contractors does not relieve the supplier of the responsibility of ensuring quality. You are responsible for ensuring the quality and conformance of sub-supplier/sub-contractor material or service to Carlex's requirements through a robust Supplier Management Program. Evidence of conformance and supplier management shall be made available at Carlex's request. Carlex reserves the right to request inclusion of the sub-supplier's PPAP within the supplier's PPAP submission. At a minimum, sub-supplier PSW shall be included with PPAP submission to Carlex. Additionally, Carlex reserves the right to audit the supplier's sub-suppliers/sub-contractors in the presence of the supplier's representative. Coordination of the audit will be through the supplier's representative.

PRE-PRODUCTION components that are not PPAP approved must be identified using 4X6 labels marked in blue letters PRE-PRODUCTION. Parts received that are not identified are subject to rejection.

In addition to submission to Carlex, you shall retain PPAP packages and samples and make them readily available to Carlex within 24 hours of request. PPAP packages and samples shall be retained for the length of time that the part (or family of parts) is active for production and service requirements plus one calendar year unless otherwise noted by Carlex.

All PPAPs must be submitted electronically, in English and utilize the Carlex PPAP checklist.

Failure to comply with any of the above PPAP requirements shall be deemed a breach of contract per the Carlex Terms and Conditions. Materials received without appropriate PPAP approval shall be considered Non-Conforming Material per Section 6 of this Carlex Supplier Quality Manual.

### 5.3 Bulk Material

Requirements for bulk material PPAPs are as follows:

1. Bulk Materials include, but are not limited to the following:
  - a. Adhesives and sealants – solders, elastomers
  - b. Chemicals – resins, polishes, additives, treatments, colors
  - c. Coating – topcoats, undercoats, primers, phosphates
  - d. Film and film laminates
  - e. Ferrous and non-ferrous metals – bulk steel, aluminum, coils, ingots
  - f. Monomers, pre-polymers and polymers – rubber, plastic, resin

**Note:** Glass, paint and vinyl are **NOT** considered bulk material and should follow the PPAP process detailed in Section 5.2 PPAP above.

2. PPAP submission and approval is required for:
  - a. Bulk material processing technologies that are new to suppliers and that have not been previously used for this application
  - b. Suppliers that are starting to sell a new product for a new application
  - c. Any change that would normally be expected to have an effect on the part and material formulation
3. In addition to the above PPAP requirements, Carlex expects its suppliers to provide the following data with every shipment:
  - a. Material certifications tested per required specifications
  - b. Color plaques or numeric color values, if applicable
  - c. On-going SPC data, if specified

## 5.4 Safe Launch Plan

Carlex Glass America, LLC requires that a Safe Launch Plan (SLP) is to be implemented to verify process stability and product compliance to stated standards and specifications in an organized manner. Carlex may require an SLP when a supplier or commodity is deemed high risk or when there is a complex or long distance supply chain. The intent is to minimize the risk of non-conforming parts being introduced into the production process.

## 5.5 Supplier Capacity Analysis

Capacity verification is an integral and mandatory part of TS16949 and APQP. The objective of the Carlex Supplier Capacity Analysis is to verify the supplier's production system can support the on-going quality and quantity demands requested by Carlex. The Carlex Supplier Capacity Analysis tool is to be used for this requirement. Carlex may request supplier capacity analysis upon new part introduction, increased demand or as an annual review.

## 5.6 Material Identification and Traceability

You must be able to identify a specific lot or batch through all states of production, packaging and delivery. This must include any out-sourced operation. Injection molded product must have cavity identification.

You must also record the raw material/component lot/batch number assigned by the sub-supplier that is used to produce each specific lot/batch of final product.

The specific lot/batch number shall be recorded on all documentation pertaining to the delivered product. This documentation may include, but are not limited to:

- Material lot number
- Job set-up sheet
- Production log
- Inspection/testing methods
- Control charts
- Traveler tags

## 5.7 Annual Revalidation

Carlex requires the supplier to revalidate supplied parts and material annually.

Revalidation at a minimum should consist of the following:

- a. Dimensional layout (all characteristics on the current print)
- b. Performance testing
- c. Measurement system analysis
- d. Update of any Carlex specific requirements
- e. SDS
- f. ISO/TS certification
- g. Lev 4 Warrant noting 'Annual Validation' in the comments section

The supplier shall retain records of the annual revalidation, which shall be made available to Carlex within 24 hours upon request.

## 5.8 Statistical Process Control

If requested, the supplier should provide evidence of control and on-going capability as required for submittal at PPAP revalidation. SPC monitoring is required where applicable for prototype, preproduction trial runs, PPAP and continuous improvement monitoring. Minimum capability values are Ppk of 1.67 for the pre-production trial runs and Cpk 1.33 for PPAP per AIAG Guidelines.

Evidence of control and on-going capability may be required for submittal on a regular basis.

Summaries of SPC data are acceptable, when requested.

## 5.9 Risk Assessment

Carlex requires its suppliers to have a risk assessment process in place to identify risks that can affect the ability to meet supply demands and commitments to Carlex. The risk assessment process is expected to measure, monitor, analyze and respond to identified risks to improve performance and reliability.

## 5.10 Contingency Planning

The supplier shall have contingency plans in place that would be implemented in the event of a deviation from normal business processes. Contingency plans shall be documented and shall include, at a minimum, key internal/external contacts, containment actions and recovery steps to return to normal





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operations. Contingency planning shall include, but are not limited to the following circumstances: IT outages, equipment failures, transportation disruptions, sub-supplier quality or delivery issues, etc.

## 6.0 Nonconforming Material

### 6.1 Nonconforming Material

In the event that you supply product that is nonconforming (all products shipped past an interim date or without full PPAP approval are considered nonconforming), you shall be responsible for the nonconforming product and subject to the following actions:

1. We can return the entire lot of product, or any portion thereof, to you at your sole cost. You should refund us for the cost of the product or replace it with conforming product free of charge at Carlex's sole option. (This is only applicable if there is adequate stock to maintain production until certified product is available.)
2. You should sort the product at our facility within the timeframe specified by us to identify conforming product that we can consume to maintain production.
3. In the event you are unable or unwilling to sort product within twenty-four hours (unless specified otherwise), we shall have the option to:
  - i. sort the product for \$100 per hour, or
  - ii. have the product sorted by an impartial third party approved by us. You shall pay all of the third party sorting company fees
  - iii. charge a \$500 administrative/manpower fee (a one time fee applied to either of the above charges).

In the event that the nonconforming product is found at a Carlex customer location, you shall be responsible for any sorting costs in addition to any charge-backs incurred by Carlex from its customer. In addition, we reserve the right to debit any warranty charges incurred for defects caused by your nonconforming product. These charges may include, but are not limited to, transportation costs for return materials, evaluation costs incurred by Carlex personnel, dealer markup, and any punitive costs incurred from Carlex's customer. You shall also be expected to support customer-designated meetings to resolve warranty issues related to your product.

The remedies listed in this document for nonconforming product are not meant to be exclusive and, in addition to those remedies or actions set forth in this document, Carlex shall have the right to seek all other remedies, either in law or by contract, available to it to address nonconforming product.

## 6.2 Controlled Shipping

The standard guidelines for implementation of controlled shipping take into consideration one or more of the following:

- Inadequate containment and/or resolution of nonconformance via corrective actions.
- Untimely responsiveness for a nonconformance via corrective actions.
- Repeat issue resulting in corrective action requests from one or multiple Carlex plants.
- Incapable processes.
- Carlex customer quality rejection due to a supplier component.

Two levels of controlled shipping exist:

- a) Level 1 controlled shipping is defined as an additional 100% inspection process after final inspection in a separate inspection area. Your employees at your location shall complete the sort in order to make sure Carlex does not receive nonconforming parts/material. You must communicate the containment results daily to us.
- b) Level 2 controlled shipping is the same activity but the “person(s) performing the sort” must be employees of an impartial third party. We must approve the sorter company that you select. You shall pay all of the third party sorting company fees. The Level 2 containment may take place anywhere throughout the supply chain as designated by Carlex. Level 2 containment is in addition to the Level 1 requirements already put in place. Notification to supplier’s quality registrar will take place with request for re-audit of supplier’s systems. You must communicate the containment results daily to us.

We will notify you in writing of the controlled shipping level exit criteria.

If you are placed on a customer special status (e.g., GM CSII, Ford Q-1 revocation) for quality /delivery issues with product that is shipped to customers other than Carlex, you are required to notify Carlex Supplier Quality of the customer special status.

## 6.3 Deviations for Non-Conforming Material

It is the policy of Carlex **not** to accept product that does not meet the requirements of the applicable drawings and specifications. Requests for concessions on non-conforming product should be submitted to Carlex user plant and Supplier Quality for review by a cross functional authority and to obtain Customer approval, as required, prior to shipment. Any such requests shall be accompanied by a thorough explanation of the root cause for the non-



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conformance, the actions taken to eliminate these root causes and to prevent reoccurrence, and the date of quality assured product availability together with confirmation of its traceability and the manner of identification.

## 6.4 Supplier Corrective Actions

Supplier Corrective Actions for Carlex utilize the 8D format. Levels D0 – D3 shall be received by Carlex within 24 hours of initiation. Levels D4 – D8 shall be received within 14 days of initiation.

## 7.0 Delivery, Packaging and Labeling

### 7.1 Releases

We will communicate quantity and delivery requirements to suppliers using procurement releases.

In the event of a change in release, you will request and receive a copy of the updated release from the appropriate Carlex facility. Failure to comply may result in a negative impact to delivery performance.

You will ship purchased components and services to the exact quantity per the release. Bulk material quantities will be within 5% of the requirement indicated per the release.

You must have appropriate processes in place to notify Carlex if there is a deviation that could affect the fulfillment of current or future orders. You must immediately contact the receiving Carlex plant in the event that a required quantity cannot be met.

### 7.2 Excess Freight Charges

If we incur excess freight charges due to the fault of the supplier, the supplier will be responsible for these excess charges.

You are responsible for the freight when multiple shipments are required due to your inability to meet our production schedule.

### 7.3 Packaging and Labeling

All suppliers shall follow any and all Carlex provided packaging and labeling requirements. Carlex barcode labeling requirements can be found at <http://www.carlex.com/process.php>. You are responsible for making sure that all shipments of Hazardous Materials or parts/components containing Hazardous Materials comply with U.S. Department of Transportation (DOT) Haz Mat laws, rules and regulations.

**PACKING LIST:** One copy of the packing list must be provided with the Invoice, AND a second copy must be placed on/in the first carton/box. The packing list shall state in adequate detail what merchandise is contained in each individual package, including the quantity and net and gross weights. Shipments

containing multiple cartons and packing lists shall be accompanied by a master packing list summarizing the entire shipment.

Note: If the nature of the goods or shipment precludes the need for a packing list, e.g. one part number being shipped in one box, no packing list is required provided the invoice contains the box count and net and gross weights.

**CONTAINER SEALS and SOLID WOOD PACKAGING:** For full-container shipments, vendors are required to seal the container using a high security seal that meets or exceeds PAS ISO 17712 standards for high security seals. Seal numbers must be listed on the invoice, packing list, and bill of lading or other transportation

## 7.4 Import Requirements

All suppliers importing parts and/or materials into the United States must be in compliance with US Customs regulations and the import and export laws and regulations of the United States and those of any other jurisdiction or country as may be applicable. Requirements include completion of annual NAFTA Certificate of Origin for all parts supplied, C-TPAT (Customs-Trade Partnership Against Terrorism) questionnaire, TSCA (Toxic Substance Control Act) certification and any other applicable laws or regulations. The supplier shall retain records which shall be made available to Carlex within 24 hours upon request.

The United States government requires that Carlex and our suppliers importing parts and/or materials into the United States utilize pallets that have been certified as having been constructed from wood that has been treated / fumigated. The pallets need to bear a seal, showing certification. The US requirement affects all inbound shipments into the United States.

**Note:** Replacement merchandise which is shipped by the vendor to satisfy a prior short-shipment must be fully declared to CBP at time of entry even if furnished free of charge. CBP requires that each import entry accurately reflect the merchandise being imported at that time; it is not permissible to balance out past shortages or overages by declaring an adjusted quantity on two or more entries. Each import entry must reflect the actual quantity and merchandise received.

## 7.5 Material Certification

Material certifications in the form of Certificates of Analysis, Certificates of Conformance, Certificates of Compliance or other material results reporting format may be required by Carlex. Any Carlex specification requirements regarding material certification shall be fulfilled by the supplier upon request.



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### 8.0 Tooling and Equipment

Detailed tooling and equipment drawings, including processing parameters and list of perishable tooling, must be provided for all Carlex funded investments.

In order to receive payment, a copy of the tooling drawings / pictures must be provided to Carlex. Also our purchase order and approved sample submission paperwork, complete with our full approval signature must be attached to your invoice. In addition, the following statement must appear on your invoice: "The tools included in this invoice have been stamped or inscribed with a tool number and our part number & are clearly labeled; "Property of Carlex."

Carlex funded investments must permanently be identified and readily visible with the following information; "Property of Carlex" and "Part Number xxx." All PPAP's must include digital photos as evidence of the above requirements.

All Tools considered "Production Tools" are required to meet the quoted Run @ Rate/8hr shift at 100% efficiency. Parts must pass a 300 consecutive piece run with capable R&R and dimensional data.

Tooling and equipment purchased by Carlex must be kept in suitable condition to produce product capable to meet all specifications as defined in the approved PPAP. Tooling and Equipment maintenance records must be maintained and be available upon request from Carlex.

The right, title and interest to all supplies, materials, tools, jigs, dies, gauges, fixtures, molds, patterns, equipment, designs, drawings, gages, specifications, spare parts, trial parts, ancillary products, or items owned by Carlex (or by its customer) and other items furnished by Carlex (or by its customer) ("Bailed Tools") to supplier for use in manufacturing the goods, or for which supplier is reimbursed by Carlex (or its customer), shall be and remain the property of Carlex (or its customer). In the event that Carlex issues a Tooling Purchase Order, all right, title, and interest in and to any part of the Tooling, including any and all supplies, materials, tools, jigs, dies, gauges, fixtures, molds, patterns, equipment, designs, drawings, specifications, spare parts, trial parts and ancillary products, shall pass to Carlex as soon as it is acquired or fabricated in accordance with a Tooling Purchase Order or other written documentation issued by Carlex ("Carlex-owned Tooling", together with Bailed Tools are collectively referred to herein as "Tools"). During the term of a Purchase Order, all Tools in the possession of supplier shall be deemed to be bailed property and shall not be deemed to be a fixture or a part of supplier's real property. Supplier shall bear the risk of loss of and damage to Carlex's property, including but not limited to any Tools.