



Supplier  
Requirements  
Manual

**Introduction**

**Crucial Commodity Supplier** (Crucial Supplier) is defined as a supplier that provides a product or service that directly affects the Quality of the finished goods sold to ByTec's Customers.

As a Crucial Commodity Supplier or Potential Crucial Commodity Supplier to ByTec Incorporated you are receiving this manual. The purpose of this manual is to communicate ByTec's requirements and fundamental quality expectations to existing and potential suppliers. Ensuring that suppliers are capable of meeting and exceeding our requirements and our customer's requirements through continuous improvement and performance planning. ByTec expects its suppliers to meet or exceed the requirements and expectations of this Manual. ByTec expects and requires a zero defects, zero incidents and flawless delivery issues with immediate response to any issues that may arise. ByTec will continually measure and rate a supplier's performance over the life of any product sourced. These measurables are reviewed monthly with top-level management. All future sourcing is based on these measurables. This document and some of the clauses within may not be relevant to ALL suppliers and their business scope. ByTec Incorporated considers the differences between manufacturers and commodity suppliers and the requirements of this manual. It is the Suppliers responsibility to ensure they have the latest version of this document. This latest version is available on ByTec's Web Site at [www.bytecinc.com](http://www.bytecinc.com). Please check the site often as this document is changed annually at a minimum.

ByTec expects and requires its Crucial Suppliers to have in place or be actively pursuing 3<sup>rd</sup> Party certification / registration in one of the following Quality / Business Management Systems.

Indicators of acceptable quality control / systems include:

- ISO / TS 16949:2002 Certification
- ISO9001:2000 Certification
- Supplier Assessment to ISO9001:2000

At a minimum all new suppliers to ByTec, Inc must be registered ISO9001:2000 per guidelines of clause 7.4.1.2 of ISO / TS 16949:2002.

**BYTEC INCORPORATED CONTACT INFORMATION**

**Materials Department**

Materials Manager	586-228-9410 x207
Materials Expediting	586-228-9410 x212

**Quality / Laboratory Department**

Manager - Quality / Laboratory	586-228-9410 x236
Quality Engineer	586-228-9410 x222

**Engineering Department**

Engineering Supervisor	586-228-9410 x215
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**Accounting**

Account Receivables	586-228-9410 x218
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**Table Of Contents**

<b>SECTION</b>	<b>CONTENTS</b>	<b>PAGE</b>
	<b>Introduction .....</b>	<b>2</b>
	<b>ByTec, Inc. Contact Information .....</b>	<b>2</b>
<b>1.0</b>	<b>Product Planning and Product Realization .....</b>	<b>4</b>
1.1	Design and Document Control .....	4
1.2	Quality Planning .....	4
1.3	Control Plan .....	4
1.4	PPAP Package Submissions .....	4
1.5	Product Submission Status .....	5
1.6	Subcontractor Requirements.....	6
<b>2.0</b>	<b>Product Realization &amp; Production Control.....</b>	<b>6</b>
2.1	Production Scheduling .....	6
2.2	Lot Tracability .....	6
2.3	Material Certification Requirements .....	7
2.4	Process Control and Capability .....	7
2.5	Receiving Inspection Procedure.....	9
2.6	Material Storage and Packaging .....	9
<b>3.0</b>	<b>Supplier Performance Monitoring .....</b>	<b>9</b>
3.1	Delivery and Performance .....	9
3.2	Supplier Evaluation.....	9
3.3	Supplier Assessment.....	10
3.4	Supplier Annual Layout Requirement .....	10
3.5	Supplier On Site Review / Visitation.....	10
<b>4.0</b>	<b>Supplier Quality Problem Solving .....</b>	<b>10</b>
4.1	Non-Conforming Material Procedure .....	10
4.2	Controlled Shipping .....	11
4.3	Customer Warranty .....	11

**Associated Documents**

**(Provided Upon Request)**

A-1	QSF-240B	Supplier PPAP Requirements and Disposition
A-2	QSF-220	ByTec Supplier Assessment
A-3	QAI-280A	Notice of Non-Conforming Material

**1.0 Product Planning and Product Realization****1.1 Designs and Document Control**

All Suppliers to ByTec shall have an appropriate documented system in place to monitor receipt, control, and status of all ByTec supplied drawings and specifications. This system shall be compatible with the ISO9001:2000 specification unless otherwise specified by ByTec, Inc.

**1.1.1 Record Retention**

All records of inspection, testing, gauge calibration, control plans inspection instructions, must be retained for a minimum of one year from end of product life. Records relating to safety, federal regulations or PPAP are to be retained for five years from end of product life or as required by the end customer (See End Customer Specific requirements to TS16949:2002). The storage area must be such as to prevent / protect the documents from damage or loss.

**1.2 Quality Planning**

Because of ByTec's commitment to ISO/TS requirements we require our suppliers to utilize the Advance Product Quality Planning (APQP) process in all aspects of product planning. The reference manual "Advanced Product Quality Planning and Control Plan - APQP" is Available from the Automotive Industry Action Group (AIAG). This is a required tool to meet the requirements of realizing a quality product.

Upon Business award the supplier shall implement an Advanced Quality Planning Procedure that outlines all the departmental activities and utilizes a flowchart or project timeline to illustrate the steps taken from the time of quoting, through to the time of production start-up. The procedure shall define responsibilities, and contain a tracking system to ensure that the following are developed: Team Feasibility Review, Control Plans, FMEAs, Operator Instructions, Inspection Instructions, SPC Characteristics, Process Flow Diagrams and Gauge Studies.

**1.3 Control Plans**

The suppliers to ByTec Incorporated will be required to furnish documented results of quality planning activities. The supplier should submit an approved control plan detailing specific control activities for each significant characteristic identified by the Quality Planning Team.

The Control Plan shall be developed utilizing processes and procedures as stated in the "Advanced Product Quality Planning and Control Plan - APQP" manual available from the AIAG. The control plan must be available for review and approval by the ByTec Incorporated Quality Assurance Department, upon request. The supplier control plan shall be a description of the system used to measure and control process and product variation. A supplier control plan is required for every crucial manufactured supplier part and must be maintained throughout the product life.

The plan shall be documented by the supplier using the AIAG form or equivalent, and submitted as part of the supplier sample submission package (PPAP).

**1.4 PPAP Package Submissions**

All suppliers shall follow the instructions provided in "Production Part Approval Process (PPAP) Forth Edition" manual and use the appropriate AIAG forms where applicable.

For components supplied to ByTec, Inc., Purchasing and Quality shall provide direction for submission of PPAP packages. All initial and subsequent submissions shall include a full package at level three (3) unless otherwise directed. Submissions must include all documentation and meet all requirements of the PPAP manual and use of appropriate AIAG forms where applicable.

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Form QSF-240B – Supplier PPAP Requirements and Disposition may be provided to the supplier at issuance of the purchase order. This form outlines PPAP requirements for the product awarded. All Submissions shall be bound in a report binder with cover indicating Part Number and Supplier Information. The report shall be divided into sections in the order of the listed requirements in the PPAP Manual Forth Edition. If assistance is required please contact the ByTec, Inc. Quality Department (See Contact Information Pg 3).

Please note that not all of the requirements listed in the PPAP Manual are required for all Level 3 PPAP submissions. Any questions regarding the required items may be directed to the ByTec, Inc. Quality Department (See Contact Information Pg 3).

**1.4.1 PPAP Submissions**

All PPAP Submissions are to be sent to the following address:

ByTec Incorporated  
Attn: Purchasing  
44801 Centre Court East  
Clinton Township, MI 48038

All containers are to be marked “PPAP Samples Enclosed”. Unless otherwise notified Six (6) samples from each production tool cavity shall be measured and 3 of those included with the PPAP submission. Supplier shall retain 3 additional Samples for their own records.

**1.4.2 PPAP Drawing / Design Records**

All PPAP Submissions shall be made to the ByTec Incorporated Design Record. Submissions shall include and utilize the ByTec supplied drawing. This drawing may be a customer drawing. All dimensional results shall be reported per the ByTec Inc. provided design record or drawing unless other wise agreed upon by ByTec Quality and Purchasing.

**1.5 Product Submission PPAP Status**

Product shipments will not be received if the PPAP status is not “Approved” or “Interim Approved”. A signed warrant must be on file with ByTec Purchasing. At no time is a PPAP to be assumed approved until a signed warrant has been received.

**1.5.1 PPAP Approval Notification**

A Signed Copy of the Part Submission Warrant (PSW) will be returned to the Supplier with effective date notification. All Purchasing agreements will then become effective.

**1.5.2 PPAP Rejection / Interim Approval Notification**

A PPAP submission will be rejected for the following:

- Supplied samples do not meet design requirements or specifications.
- More than 50% of the required documentation is missing from the PPAP package.

A PPAP Submission will receive Interim Approval under the following conditions:

- Supplied samples meet all Design Requirements and Product Specifications
- Minor errors exist in the paper work or there is missing documentation.

In the event of an Interim Approval or Rejection of a PPAP Submission the warrant will be returned to the supplier noting PPAP Status at the bottom of the form. Included with the rejected or interim PSW, form QSF-240B will outline the missing information or concerns that have prompted the non-approval of the submission. A copy of QSF-240B Supplier PPAP Requirements and Disposition form is available from ByTec Quality / Laboratory by request. An expiration date will be provided for the

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Interim Approval. A request for extension must be submitted prior to the expiration date. Both ByTec and the supplier will agree upon expiration dates of Interim PPAP Approvals.

**1.6 Subcontractor Requirements**

It is the requirement of all suppliers to ByTec that their suppliers and subcontractors be held to the same expectations and requirements.

The supplier shall have in place a system that assures all purchased or subcontracted materials and services provided to ByTec Inc. conform to all specifications and purchase order requirements. The supplier shall have a notification procedure with a follow-up program for rejected material / service received from a sub-supplier / sub-contractor.

The supplier shall require certification of all incoming materials including laboratory test data for significant characteristics as agreed upon. Material warrants shall be verified either internally or by an accredited outside source as required by the Quality Plan.

The supplier shall encourage the use of SPC by its suppliers and review their SPC data when submitted for accuracy. Discrepancies noted should be discussed with the supplier in a timely manner. Surveys of sub-suppliers should be conducted at a frequency that ensures an adequate quality system is in effect. The survey must include corrective action with follow-up for any discrepancies found.

The supplier shall have an effective system to select and assess its suppliers / subcontractors quality and management systems and implement a method of monitoring the performance of its suppliers / subcontractors and their development in areas that require improvement.

**2.0 Product Realization & Production Control****2.1 Production Scheduling**

Scheduled release dates will always reflect in house requirements. It is the supplier's responsibility to insure scheduled release dates allow for transportation. Premium freight attributed to behind schedules will result in freight charge backs.

**2.2 Lot Tracability**

Suppliers are required to maintain a system that provides for material identification throughout the manufacturing operation. Each lot of material shall have a unique number assigned to it by suppliers and must appear on the shipping labels and documents. Records of lot shipments shall be maintained. Lot traceability procedures must be written into control plans and submitted to ByTec, Inc. during sample submission (PPAP). The lot number must be identified as the "Lot Number" on all shipping labels and documents.

**2.2.1 Labeling of Shipments**

Each shipment of material or components to ByTec shall include a label or sticker on each carton or container that identifies the material or components as conforming to the certification. In addition, lot numbers and expiration dates shall be included on labels, and shall be identified as such. The ByTec Part Number must appear on all shipping labels and documents. Any other useful information for tracability may also be encoded on labels, with an explanation of that information and code provided to ByTec, Inc.

**2.2.2 Label Required Fields**

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The following fields must be included in the labels applied to carton shipped to ByTec, Incorporated. Any deviation to this procedure must be approved in writing by the Purchasing Department. The label must contain:

- ByTec Part Number
- Quantity
- Product / Component Rev. Level and Date
- Purchase Order Number (P.O.)
- Production “Lot Number” (See Above)
- Production / Manufacturing Date

If parts are to be mixed on a skid or pallet, this pallet shall be marked “MIXED LOAD”

**2.3 Material Certification Requirements**



All material shipped to ByTec, Inc. must be certified by the supplier on a regular basis. The frequency of the certifications will be determined by ByTec based on the critical nature of the material or component to ByTec’s manufacturing process. An internal or external laboratory with approved third party accreditation shall perform this certification. ByTec, Inc. will sometimes require pre-approval of a material prior to PPAP Approval. It is noted that some materials do not reach their requirements until fully processed. This will be considered during the initial APQP Process and timelines will reflect this requirement.

Suppliers, when requested, are required to supply pre-shipment samples of material to the ByTec, Inc material testing laboratory. ByTec, Inc may reject any lot if nonconforming material is identified based on the test results.


**2.4 Process Control and Capability**

Suppliers may be required to provide evidence of continuous control of their process through the use of recognized statistical methods. If requested by ByTec, Inc, the supplier must provide process capability data in accordance with AIAG Statistical Process Control (SPC) Reference Manual 1995 Edition. Refer to ISO/TS 16949:2002, Clause 7.5.2 “Validation of Processes for Production and Service Provisions” for general requirements. Special attention must be given to:

- The Following is a list of the Characteristics and their respective requirements that may be seen on ByTec drawings.

	<p><b>Critical Characteristic:</b> Dimension critical to the fit and or function of the component. 300pc Capability must be <math>\geq 1.67</math> PPK. Ongoing capability <math>\geq 1.33</math> PPK. Monitoring of Critical Characteristics is to be performed with the Control Plan approval from of ByTec, Inc. Engineering and Quality.</p>
	<p><b>Key Characteristic:</b> These dimensions are noted as key to the fit and function of a component in its final assembly. Control of these dimensions will be determined during APQP and will at a minimum require short-term capability <math>\geq 1.67</math> CPK Initial Only – during launch. Additional control may be required to maintain production capability <math>\geq 1.33</math> CPK.</p>

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	<p><b>Safety Item:</b></p>	<p>Designates an item that may affect the safety of the end customer. These items will be controlled and monitored as determined during the APQP process. Special attention and testing may be required.</p>
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- Appropriate selection of charting type to help study variation (e.g. X-bar & R-bar versus X and moving range versus short run SPC application).
- Sample size and frequency of sample for charting to be followed as prescribed in the Control Plan, consecutive sampling, correct plotting of data points and calculations of control limits frequency will be included in the Control Plan
- Establishment of process stability through SPC charting, where all the data points are within the control limits with no trends nor undesired patterns. Any out of control conditions must be investigated, any corrective actions noted on the chart.
- The implementation of statistical process control shall require a formalized training program, either in-house or by an outside agency.
- The identification of significant characteristics shall be the responsibility of the supplier and/or ByTec, Inc. The characteristics shall be chosen on the basis of function, design intent, manufacturing process and historical data.
- When a significant characteristic is identified on drawings, specifications, or purchase orders provided by ByTec, Inc., the supplier will be required to submit SPC / Capability Reports on that characteristic to the Supplier Quality Engineer. Control charts are to be sent at the end of each month or as required by the Quality / Control Plan or ByTec Quality / Laboratory Department. Process to be determined during APQP Process.
- The supplier is encouraged to employ a continuous improvement program aimed at achieving a CPK  $\geq$  1.33.

2.4.1 Gage R & R

In addition, specific gauges that are used to measure significant control characteristics must exhibit acceptable GR&R, per the criteria described in the AIAG standard manual, "Measurement System Analysis". Annual GR&R studies to verify gauge acceptability are also required.

2.4.2 Process Control Plan

The suppliers to ByTec, Inc. are required to furnish documented results of quality planning activities. The supplier shall submit an approved control plan detailing specific control activities for each significant characteristic identified on the ByTec, Inc. Supplied Drawing, Specification and /or Purchase Order.

The control plan must be available for review and approval by the ByTec, Inc. Quality / Laboratory Department, upon request. The supplier control plan shall be a description of the system used to measure and control process and product variation. Unless otherwise directed a supplier Control Plan is required for every purchased part and must be maintained throughout the product life.

Please reference "Advanced Product Quality Planning and Control Plan - APQP" which is available from the Automotive Industry Action Group (AIAG). The plan shall then be

**ByTec, Inc.**

documented by the supplier using the AIAG form or equivalent, and submitted as part of the supplier sample submission package (PPAP).

**2.5 Receiving Inspection Procedures**

The supplier shall have in place a procedure at receiving that ensures all shipments meet specified requirements. The date, supplier, lot number, and part/material number should be recorded and verified against the bill of lading.

**2.6 Material Storage and Packaging**

The supplier should perform periodic dock audits that include part to label verification. The supplier shall provide for the handling and storage of material that will allow for first in, first out (FIFO) and preserve product quality at all times with adequate packaging and good housekeeping.

The supplier shall package all shipments in conformance to the AIAG Standard. The label must correctly identify all shipments with the ByTec Incorporated part number, quantity, and date of manufacture. The shipment shall be palletized according to the AIAG Standard, using polypropylene or polyethylene banding as required. Steel banding is acceptable only with prior approval from ByTec Incorporated.

**3.0 Supplier Performance Monitoring****3.1 Delivery and Performance**

Suppliers are required by ByTec Incorporated to deliver 100% of their shipments on time. Shipments designated due by release date must be received on that date. Shipments will be considered delinquent if received outside the specified window. Any shipment received early will be rejected unless approved otherwise by ByTec Material Control.

Whenever delayed deliveries or short-shipments are anticipated, the supplier shall immediately notify ByTec.

The supplier should use a system to track production schedule attainment and document actual to scheduled shipment times, as well as track the cost of premium or excess freight. The results of the tracking system will be made available to ByTec upon request. Suppliers found to continually be delinquent with shipments will be issued a Non Conformance. Corrective Action and Root Cause analysis will be required in order to close the Non-Conformance. If in the event that a late or delinquent shipment causes ByTec to miss a customer shipment, ByTec will hold supplier financially responsible for all costs associated.

ByTec will utilize a monthly reporting measurable to determine supplier overall performance. This internal report will use number of lots received vs. number rejections (NCs) per month. A percentage is calculated and tracked. Suppliers receiving the largest number of rejects will propagate to the top of the list. The list is presented to, and reviewed by the management review team on a monthly basis. Actions will be taken as appropriate for the occurrences.

**3.2 Supplier Evaluations**

ByTec shall annually evaluate the performance of all crucial suppliers on delivery, PPM, and general quality of material shipped to ByTec. The evaluations will be used as a guideline when considering continued use of suppliers to ByTec. Results of these evaluations will be sent to the supplier for review and comment, if desired.

**ByTec, Inc.****3.3 Supplier Assessment**

Upon notification ByTec Incorporated reserves the right to conduct an assessment of existing and potential new suppliers facilities for effective Quality, SPC, Delivery, Technology, Cost Control, Management Systems and Current Customer Performance Measurables.

ByTec uses two (2) types of assessment programs:

1. Supplier Self-Assessment

The supplier may be required to complete the ByTec Incorporated – Supplier Assessment (QSF-220) when being considered as a potential supplier to ByTec. The completed Supplier Assessment must be submitted to ByTec's Quality Department for review prior to placing of business.

2. On-site Assessment

Conducted at supplier locations to verify compliance to ByTec requirements. On-Site Assessment utilizes the same survey (QSF-220) as the Self-Assessment. This survey is conducted by a ByTec representative.

The results of these assessments will be used by ByTec Purchasing and Quality as a guideline for approving and/or maintaining ByTec suppliers.

Evaluation of prospective suppliers will be made prior to placing an order unless approved otherwise. This evaluation is made by the Quality Assurance, Materials, and Engineering departments.

If inadequate systems are found during the survey, the supplier will be requested to provide a corrective action plan with timing expectations. The supplier's management may be requested to attend regular meetings with ByTec Quality and /or Materials Department or APQP Team.

**3.4 Supplier Annual Layout Requirement**

ByTec Incorporated requires all current and future suppliers of Crucial Components to provide a full dimensional layout annually per the ballooned drawing submitted in most recent PPAP. This requirement shall be included in the process control plan. The Annual Layout Requirement is due on the one (1) year anniversary date of PPAP approval. It is the responsibility of the Supplier to track the due dates for Annual Layout requirements. This information is used to track changes in process and or material for the original PPAP. This requirement may be waived in writing by a ByTec Representative.

**3.5 Supplier On Site Review / Visitation**

ByTec Incorporated and its customer have authorization to enter the suppliers facility to review tools and/or processes at anytime with reasonable notification.

**4.0 Supplier Quality Problem Solving****4.1 Non-Conforming Materials Procedure**

In case of a rejection of supplied material, the supplier will be notified immediately of issuance of a Non-Conformance. A Non-Conformance (NC) is issued by ByTec whenever purchased material is identified to not meet specification or conform to ByTec requirements. The supplier shall be required to begin the corrective action process.

This process shall be tracked and reported via the supplier's normal Corrective Action process. The report shall be in the form of an 8D or 5 Phase. Per the QAI-280A - Notice of Non-Conforming Material, the initial response, containment and material disposition activity is required to protect

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ByTec from any further shipments of discrepant material within 24 hours of the notification. Immediate investigation as to the Root Cause of the Non Conformance is required. Long term corrective action is required within 10 days of the initial notification.

The supplier shall be responsible for all costs associated with administration, sorting and rework of non-conforming material in order to maintain production at ByTec and ByTec’s customer.

The supplier shall notify ByTec when / if supplier is placed on Level II or higher containment by another of the supplier’s Customers. This constitutes a major breach of quality assurance procedures and requires immediate notification and possible action.

The Supplier shall notify ByTec immediately upon the possibility of Non Conforming material being shipped to ByTec. Immediate actions shall be taken to identify and contain the non conforming material.

**4.2 Controlled Shipping**

Upon Notification of a Non Conformance, the Supplier is placed on Level 1 Controlled Shipping. Controlled shipping status is as follows...

- 4.2.1 Level 1 – Controlled Shipping  
Supplier is required to sort, rework or otherwise certify each carton of material prior to shipping to ByTec. Any Non Conforming part found in certified cartons will result in the Supplier being placed on Level 2 Containment as appropriate.
- 4.2.2 Level 2  
Supplier is required to have the material certified by a mutually agreed upon provider of certification services at a location other than the Suppliers plant. These requirements may be adjusted as the situation warrants. Any costs associated with this activity is solely the responsibility of the Supplier.

**4.3 Customer Warranty**

The supplier shall be responsible for all costs associated with administration, sorting and rework of non-conforming supplier material discovered in warranty claims reported by ByTec’s customer.

**Revision History:**

<b>Revision</b>	<b>Description</b>
6.2	Update of content: 1) Remove Acknowledgement section. 2) PPAP Manual Revision change, Third edition to Forth noted 3) Updated Non Conformance section to reflect Plexus Problem Control processes. 4) Removal of MQ1 References and Terminology, replaced with Plexus.
6.1	Removal of MQ1 Header field links. No changes to Doc.
6.0	Modification to clauses per Supplier suggestions.