



Bridgestone Americas

Supplier Quality Manual

Dear valued suppliers and potential vendors,

At Bridgestone Americas ("BSAM"), we are committed to working with our suppliers to ensure the highest quality products for our customers. Our philosophy is to develop and maintain a collaborative relationship with suppliers based on excellent communication, transparency and mutual benefit. Therefore, the purpose of this manual is to provide BSAM's quality assurance expectations to supplier executive management and to create a common level of understanding between BSAM and its suppliers. All suppliers are expected to comply with the stated requirements herein.

BSAM's quality mission of "Creating Customer Value & Trust" provides guidance for enhancing all aspects of our business, and it is integrated into our company business strategy. Our suppliers are an essential link in the supply chain that creates value, therefore BSAM respects its suppliers and treats them as an extension of our business.

This manual describes the quality system requirements for current and prospective suppliers of parts and materials, and tooling to all manufacturing plants, divisions and subsidiaries of BSAM. This document is part of the commercial terms and conditions of the purchasing agreement with the supplier and is supplemental to any other terms and conditions, unless specifically exempted by contractual agreement.

Thank you,

Bridgestone Americas

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1.0 SUPPLIER APPROVAL PROCESS

1.1 QMS Requirements

As SBU applicable, the supplier is required to be registered to and compliant with ISO 9001 quality management system. (Reference documents BR026 for BATO, QUA-SP-015 for FSBP, QP060018 for FSIP, WS-RMAT-006 for Bandag, and BY050 for Outsourcing). The supplier must maintain its certification with an accredited registrar and must furnish copies of its registration certificates.

Regardless of SBU applicability for ISO certification, the supplier must have an effective quality management system in place. In addition, the supplier must meet all other requirements of this manual.

1.2 Quotation Process

Procurement determines the material requirements (demand) for a raw material or a group/class of raw materials. Procurement also advises potential suppliers of volumes, payment and shipping terms, packaging requirements, validity period, and required response date. Quotes will be summarized and counter-offers and/or negotiations will be utilized when applicable.

1.3 Supplier Qualification and Approval

The Qualification and Approval process is divided into two segments:

- 1) Technical/Material approval. Evaluation, testing and approval is conducted by each SBU's Technical Center. This process ensures that all material properties meet the fundamental properties required for the final, finished product and application.
- 2) Supplier Qualification and Approval is led by an assigned Supplier Quality Engineer (SQE) in Corporate Quality Assurance. The SQE works in conjunction with Technical, Procurement and Manufacturing. Depending upon the requirement of each SBU, the SQE will access the supplier's producing location's quality management system (QMS) by means of a combination of documentation, certification and/or on-site audit.

Depending on SBU, specific QMS certification requirements, i.e. ISO, IATF, etc, will be communicated by Quality Assurance (QA). If the material is approved by product development and QA, product development will send the supplier a specification sign-off form. Final approval and release in the raw materials database occurs when the completed sign-off form is returned.

Additionally, Technical and Quality will jointly review all new proposed suppliers to determine if an audit of the production facility is required prior to

final approval. The audit requirement will be determined based on risk assessment: material type, supply volume, new technologies, etc.

Upon delivery of parts, product, or material, BSAM may request supplier test results and approval or compliance documentation when deemed necessary.

1.4 PPAP

If required by SBU, PPAPs will be requested from corresponding SBU personnel who are engaged in the PPAP process. Suppliers shall only submit PPAP packages for production-released engineering drawings and/or specifications. Suppliers are expected to maintain and have readily available records of all PPAP documentation submitted including approved PPAP parts.

The purpose of PPAP is to determine that all BSAM engineering design records and/or specification requirements are understood and proven capable by the supplier's manufacturing process. Additionally, PPAP will prove the supplier's potential to produce product consistently meeting these requirements during an actual production run.

All PPAP submissions shall, at a minimum, comply with AIAG's latest manual and apply to internal and external sites supplying production parts, service parts, production materials, or bulk materials.

Suppliers may be required to furnish samples along with PPAP documentation in advance of first production shipments under the following conditions:

- Initial submission
- Change in sub-tier or material source
- Changes to form, fit, or function
- Change in test methods
- Engineering changes
- Replacement or refurbished tooling

BSAM will determine the number of samples needed for PPAP submission. Initial samples must be approved in writing prior to shipments of production parts. For automotive and select products as defined by BSAM, suppliers are required to utilize the process and forms referenced in the most current revision of the AIAG PPAP manual to demonstrate product and process conformance to BSAM product specifications. In such situations, suppliers will be notified in writing of which level PPAP submission is required for approval prior to shipment of production material or components.

Sample submissions are to be clearly identified with the following information:

- Label indicating "PPAP Samples Included"
- Sample Recipient Name
- Purchase Order Number
- Part Number
- Manufacturing Date or Lot#
- Quantity

Deviations from these requirements shall be approved in writing through the SBU's deviation approval procedure.

2.0 BUSINESS REQUIREMENTS

2.1 Safety and Environment

BSAM expects suppliers to provide a healthy and safe work environment for all employees based on sound safety and health practices and adopt a responsible environmental management system to prevent pollution, manage and control environmental impacts and avoid the depletion of natural resources. Suppliers are expected to be aware of and in compliance with all applicable environmental, health and safety regulations and laws and ensure that they obtain the necessary approvals, permissions and consents related to the environmental impact of their operations. All materials supplied to BSAM should comply with all applicable government standards and regulations including, but not limited to, those issued by the Occupational Safety & Health Association (OSHA) and Environmental Protection Agency (EPA). For items with inherent hazards, safety notices must be clearly observable. As applicable, SDS sheets must be provided during the material approval process. When visiting or working in BSAM facilities, suppliers are expected to follow local site environmental and safety requirements.

2.2 Business Continuity

BSAM requires critical suppliers to maintain and routinely test comprehensive business continuity plans to ensure appropriate and timely recovery of services to BSAM during times of business interruption.

A business continuity plan must address methods to minimize the impact of an event on the health and safety of BSAM employees, customers and the community to ensure consistent quality performance and service from essential suppliers.

A business continuity plan should be reviewed and updated as required by operational needs but in no case less frequently than once per year. Revisions should address changes to technology, functions, procedures, or personnel that could impact the integrity and viability of the recovery plan.

The supplier is responsible for ensuring that its subcontractors and suppliers maintain and test their business continuity plans. Upon request, the supplier must provide its business continuity plan to BSAM for review.

2.3 Process Capability

BSAM's requirement for Critical To Quality Characteristics is a Cpk/Ppk target value of 1.33, with a minimum value of 1.00.

BSAM's Critical To Quality Characteristics will be identified and communicated to the supplier during the approval process by each SBU. Depending on the SBU and the material, suppliers may be required to submit Cpk/Ppk on a quarterly or otherwise agreed-upon basis.

Data should be calculated on production materials sent to BSAM. Characteristics with a CpK < 1.00 must be accompanied with the appropriate corrective action plan to achieve the target and minimum values. If the corrective action plan will not achieve the target or minimum CpKs, then specification changes or modifications must be negotiated with BSAM in order to avoid disqualification as a source. Any supplier with CpK < 1.33 will be targeted for supplier development for improvement.

When determined to be of value by the BSAM business unit for which the material or product is intended, the supplier may be required to submit process capability data on a routine basis. The BSAM business unit will communicate the critical quality characteristics which are to be monitored, the frequencies and details of this monitoring, and the action the supplier is expected to take if process capability goals are not met. This may include corrective action on the part of the supplier or a reassessment of the product specifications, to be negotiated with BSAM.

2.4 Lot Traceability

Suppliers must plan for traceability of product. Suppliers must identify product by suitable means through the manufacturing process and in all inventory locations. Suitable means may include (but not limited to) cards, tags, signs, lot numbers, or bar codes. The status of the product must be identified throughout the manufacturing process to mitigate the risk of suspect, nonconforming, or unapproved product being used or shipped.

Suppliers shall have an effective system of traceability that ensures delivered product can be traced from a finished product in the customer application back to specific lots, sub-components, parts, and raw material. The depth of traceability required must be considered for each part and the amount of detail recorded must be related to the risk.

In addition to product traceability, the system must be capable of providing the production history of a lot or serial number. This history must include test records, process parameters, and machine settings influencing conformance.

The supplier will also specify how components will be marked with serial or lot numbers and date codes if required, or how containers will be identified with lot numbers or date codes if component marking is not required.

2.5 Record Retention

The supplier shall maintain all quality records (example: test results, traceability, capability, quality indices) for the manufacture of product for a time period as specified per SBU requirements. Records must be available for review upon request. In some cases, the supplier will be required to provide capability on a routine basis.

2.6 Packaging

Packaging requirements are addressed during the quotation process. If there are any changes during supply, the supplier is to review and obtain approval with Procurement.

2.7 Sub-tier Supplier Requirements

Suppliers to BSAM are encouraged to utilize sub-tier suppliers that are certified to ISO 9001 latest version through recognized 3rd party Certification Body (CBs). At minimum, sub-tiers throughout the supply chain shall be compliant to the aforementioned quality management system. The sub-tier supplier shall have systems in place for evaluating, selecting, and monitoring their sub-tier suppliers to ensure compliance and supply continuity throughout the supply chain. Additionally, the supplier shall ensure all sub-tier suppliers are capable of meeting BSAM's quality objectives. BSAM reserves the right to audit sub-tier supplier facilities on an as-needed basis.

2.8 Product and Process Change Notification

In an effort to ensure the quality of finished products, any changes to a part or product, its specification, or the process by which it is manufactured must be approved by BSAM. These changes may materially impact the form, fit, function, durability, or performance requirements of the product. Respective BSAM business units are required to provide the supplier appropriate contacts for change notification.

To receive approval for the change, the supplier must submit a request to the appropriate BSAM contact. The request must include:

- Details of affected products
- Type of changes
- Quality confirmation plan
- Timing for changes
- Associated benefits

BSAM will notify the supplier if evaluation for the change is necessary. The supplier must not implement the process change until approval is granted by BSAM. While implementing the change, the supplier is required to maintain sufficient production for the current product.

Examples of changes may include, but are not limited to:

CHANGES	TYPE of CHANGE
Machine	a) New Machines b) Machine Modifications c) Initial transfer of an existing process to different type of processing equipment d) Tooling changes e) Equipment relocation within same plant or outside plant
Material	a) New raw materials b) New in-process materials c) Specification d) Manufacturing location
Method	a) New operating methods b) Revised operating procedures c) New assurance methods
Transportation/ Packaging	a) Delivery method b) Packaging or containers c) Identification
Inspection Method	a) Inspection equipment b) Testing method

Once all requirements have been fulfilled and approval is given, the supplier is permitted to ship the product. BSAM must be notified of the first product delivery after corresponding process change. The supplier confirms the product conforms to all quality requirements before shipping. Change records and confirmation data must be retained by the supplier and may be requested by BSAM.

2.9 Non-conforming Parts

Suppliers are fully responsible for their products; this is including any work completed by sub-contractors. They are responsible for ensuring that their products and materials meet BSAM and all its subsidiaries' standards, current specifications, drawings, and any other agreed upon standard. Suppliers must ensure that all data provided to BSAM is accurate.

For all suppliers, zero defects are the expectation, but if a non-conformance is discovered through receiving inspection, incoming material testing, review of certificate of analysis, use, consumption, assembly, packaging, or if a customer complaint is confirmed to be the fault of the supplier; the supplier will be notified by BSAM personnel with a Quality Problem Report (QPR) or similar root cause/corrective action document.

If a supplier discovers a suspected non-conformance, the supplier shall report the non-conformance to the BSAM respective business unit's Quality Manager and Procurement Manager within 24 hours of discovery.

The preferred communication method shall be made by both email and phone.

The supplier must have a system and process for containment, reporting, and verification, to ensure that all suspect products/materials are identified and quarantined to prevent introduction into the production streams. When a non-conforming material has possibly been shipped to BSAM facilities, a containment plan must be formulated by the supplier and communicated to all affected BSAM plants and corporate personnel within 24 hours of initial receipt. Containment includes material at the supplier's locations, product/material in transit to customers, in transit to BSAM plants, and held at off site warehouses. The supplier will be responsible for managing outside sources for sorting when requested. The supplier will also be responsible for scrap and waste costs, related to non-conforming material. Any rework or repair of any material/product, where allowed, must meet the original specifications.

2.10 Corrective and Preventive Actions

When it has been determined by either the supplier or BSAM that non-conforming materials or parts have been shipped to a BSAM facility, a Corrective and Preventative Action Plan (CAPA) must be submitted based on the root cause analysis to prevent reoccurrences. The CAPA is a component of the QPR as described in section 2.7 (Non-Conforming Parts).

BSAM encourages the use of standard quality tools including 5 Why, 8D etc. Submitted CAPAs will be reviewed by issuing plant and QA. Evidence regarding suitable measures can be requested and must be submitted within a fixed period (e.g. cpk indices, work instructions, changes in the production control plan, project plans, etc.). The supplier will be notified if the CAPA is

accepted or rejected. If rejected, the plant will communicate the reason and advise a revised response due date.

2.11 Continuous Improvement

Supporting BSAM's goal of Dan-Totsu (the absolute and clear leader in all aspects of business), all suppliers are expected to have measures and methodologies in place that can be used to identify opportunities for improvement, monitor performance levels, identify sources of variation and quantify the effects of continuous improvement activity. Listed below are some of the more common techniques used in industry to monitor processes and product performance. They can be instrumental in continuous improvement of the process/product.

- A. Capability Indexes
- B. Control Charts
- C. Cumulative Sum Charting
- D. Design of Experiments
- E. Evolutionary Operation of Processes
- F. Cost of Quality
- G. Parts Per Million Analysis
- H. Value Analysis
- I. Benchmarking
- J. Mistake Proofing
- K. Internal Audits

Additionally, suppliers are expected to make effective use of quality performance data provided by BSAM supplier QPRs, supplier quality audits or reviews, and process capability data supplied to BSAM in the establishment and prioritization of continuous improvement activities.

3.0 MONITORING

3.1 Supplier Quality Validation Audits

BSAM Supplier Quality Teammates may conduct on-site audits in the event of:

- New Supplier Qualification – quality system assessment
- Quality Events – review of root cause analysis and countermeasures
- Low Supplier Quality Index (SQI) performance – chronic, recurring quality events
- Surveillance Audits – verification of countermeasures and effectiveness

ISO/IATF based audits will be used to confirm and evaluate QMS.

VDA based audits will be used to confirm and evaluate processes and process controls.

3.2 Supplier Performance Metrics

Performance metrics are judged using BSAM's Supplier Quality Index (SQI) process. SQI scores are mathematically calculated using the Risk Priority Number (RPN) assigned to each QPR issued to the supplier. The RPN calculation is Detectability X Severity X Recurrence. Definitions for each component is based on AIAG's guidelines. Should a suppliers SQI score fall below 70, or incidents with a high Severity rating, the supplier will be notified by Supplier Quality and a comprehensive improvement plan must be submitted. Suppliers are expected to maintain an SQI above 70. Failure to improve a score below the target may result in reduced allocation or disqualification.

3.3 Supplier Scorecard/Supplier Rating

Depending on SBU and the material, supplier metrics may be reported in a balanced scorecard shared at an established frequency as BSAM deems necessary.

3.4 Low Performing Suppliers

Depending on the SBU, a BSAM supplier quality team is responsible for reviewing and reporting to Procurement and Technical suppliers with chronic low SQI Scores and will be reviewed on a quarterly basis. Additional criteria that the supplier quality team may use to determine disapproval are:

- Where applicable, a supplier fails to maintain ISO 9001 or ISO/IATF registration.
- Supplier fails to respond to QPRs with root cause analysis and CAPAs.
- Supplier has a low SQI score over the last four consecutive quarters, and there are no signs of improvement.

The above criteria may be used in conjunction with criteria of other corporate and business departments to consider the need to disapprove a supplier. In other cases, feedback from supplier quality assurance activity, supplier complaints, changes to material requirements, as well as changes to the supplier's product, specifications, or method of manufacture may affect the status of supplier approval for ongoing supply.

APPENDIX

Glossary & Acronyms

AIAG – Automotive Industry Action Group – a not-for-profit association created to develop recommendations and framework for the improvement of quality in the North American automotive industry

CAPA – Corrective and Preventative Action - Action(s) taken to resolve a non-conforming condition and prevent recurrence

CB – Certification Body – an organization accredited by a recognized accrediting body for its competence to audit and issue certification confirming that an organization meets the requirements of a standard

Continuous Improvement - Evaluating for better ways to improve product and processes

Critical Supplier – single source or limited capacity supplier

Dan Totsu – Being the clear and absolute leader

Direct Material - Material used in production, which becomes part of the end product

Non-conforming Part - Part or material that does not meet specified BSAM requirements

QMS – Quality Management System - A formalized system that documents processes, procedures, and responsibilities for achieving quality goals and objectives, meeting customer requirements and improving efficiency and effectiveness on a continuous basis

QPR- Quality Problem Report – A method for documenting, reporting, and requesting corrective action, and the follow-up of those corrective actions for each nonconforming condition that has originated from the Supplier

Process Capability - The measured inherent variation of a material or product produced by a stable process

PPAP - Production Part Approval Process – a standardized process that aids in communication and approval of production designs and processes before, during, and after manufacture

RPN – Risk Priority Number – Product of occurrence, severity and detection and gives assessment of risk in a process

SBU – Strategic Business Unit – Distinct businesses or product lines within BSAM and its subsidiaries

SQI – Supplier Quality Index – A BSAM performance metric assigned to a supplier based upon calculation of RPN for each QPR issued to a Supplier

VDA – Verband Der Automobilindustrie – A German quality management system standard

5 Why – a problem solving technique for identifying the root cause of a problem

8D – a problem solving approach focused on product and process improvement through identification of root cause and corrective action to eliminate reoccurrence

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PURPOSE:

Provide BSAM's quality assurance expectations to supplier executive management and to create a common level of understanding between BSAM and its suppliers.

EXPLANATION OF CONTENT CHANGES**PAGE**

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