



# SUPPLIER QUALITY MANUAL



Date	Modifications	Author	Issue	Modified Sheets	Approved		
					By	Date	Signed
04/02/2025	New Document	PD	A	N/A	TS	04/02/2025	T.Statham
23/04/2025	3.1 Additional explanation of when a PPAP will be required	PG	B	3	PD	23/04/2025	P.Dance
09/04/2026	Addition of counterfeit parts prevention clause added as clause 15, Archiving Periods moved to clause 16 from 15.	CW	C	1	PD	09/04/26	P.Dance

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## Scope

The supplier quality manual describes bf1group (hereby referred to as bf1systems) requirements from its critical supply chain in order that it may operate effectively in its chosen area of activity, at the same time providing safe and defect free products to its customers.

It does not refer to any specific quality requirements which will be agreed and included in any Service Level Agreement (SLA) and subsequent Purchase Orders relating to specific projects or products but allows us to simplify and accelerate the mutual acceptance of broad quality expectations.

Where applicable supplier acceptance of adherence to the supplier quality manual, forms part of bf1systems Supplier Approval Process PR007.

## 1 Introduction

- 1.1 The quality manual describes broad quality rules that the supplier and bf1systems. must apply for a successful partnership to achieve the goal of zero-defects.

- 1.2 Quality Manuals are used for mutual understanding between customers and suppliers regarding co-operation in the areas of Technology, Quality and Responsiveness.
- 1.3 Therefore, this supplier quality manual contains only topics relevant to the areas detailed in 1.2.
- 1.4 Contractual quality requirements will be made with individual critical suppliers to bf1systems as part of an SLA that detail specific quality and delivery requirements.
- 1.5 Therefore, specific quality requirements and targets (specifications, data sheets) are not part of this supplier quality manual. The order of precedence of related documents needs to be defined in advance.
- 1.6 Components supplied for use in harsh environments must be suitable for these applications in the worldwide market and meet all relevant criteria. To support the zero-defect approach bf1systems will inform the supplier about the applications and intended use along with any pertinent market/customer requirements as part of the initial supplier discussions.
- 1.7 The cooperation with our critical suppliers often requires the exchange of confidential information. Therefore, a Non-Disclosure-Agreement (NDA) is a prerequisite between bf1systems and the relevant supplier.

## 2 Advanced Product Quality Planning (APQP)

APQP is a key element for new part introduction (NPI) at bf1systems.

- 2.1 The supplier shall cooperate with bf1systems upon request to work on the Design FMEA and/or Process FMEAs.
- 2.2 bf1systems requires suppliers to adopt APQP or other suitable NPI project format to be used for all new critical component requests. Although the APQP content is confidential information, it may be reviewed by bf1systems on a regular basis.
- 2.3 Requested APQP details will be defined by bf1systems prior to sourcing with the supplier. The necessary qualification path shall be considered by bf1systems in respect to the application requirements and agreed with the supplier during the contract stage of the project.

## 3 Production Part Approval Process (PPAP)

- 3.1 Supplier PPAP shall be required when the supplier's product, whether a component or assembly, is bespoke (specifically design for the application), and / or incorporates features that are critical to the function, performance or safety of the finished product.

The PPAP level and content shall be agreed between bf1 and the supplier on a case-by-case basis, appropriate to the nature and risk of the product.

- 3.2 The requested level of PPAP submission must be agreed prior to design stage with the supplier. The default PPAP level is “level3” (as defined in the Automotive Industry Action Group (AIAG) PPAP manual) if not otherwise mutually agreed.
- 3.3 The basis for PPAP is set out in TS 16949 and the AIAG PPAP. The relevant version must be agreed mutually.
- 3.4 As part of a PPAP submission dependent on the project and bf1systems customer requirements, the supplier may be asked to supply the required information to allow bf1systems to make a submission on to the International Material Data System (IMDS). If an IMDS submission is required, this must be supported.

## 4 Process Control and Product Monitoring / Process Capabilities

- 4.1 To control and monitor production part quality levels, appropriate process control techniques may be expected to be used by the supplier dependent on the parts being supplied. Statistical Process Control (SPC) is a typical example of such process controls expected to be used during manufacturing at a component manufacturer.
- 4.2 Designated critical characteristics shall be subject to continuous ongoing Statistical Process Control. Other characteristics may be called out for initial or continuous ongoing SPC control. bf1systems selects special characteristics (dimensions, material) impacted by safety standards and/or critical to fit or function. Those are identified by symbols in product drawings and specifications. Capability studies and SPC shall be performed in accordance with the rules defined in the latest edition of the AIAG PPAP and SPC manuals.
- 4.3 To determine initial capability products are to be taken from pre-production at the manufacturing location(s) and analysed statistically. Parts from each unique production process e.g. duplicate assembly lines and/or work cells, each position of a multiple cavity die, mould or pattern, shall be measured and representative parts tested.
- 4.4 To ensure on-going control for critical or agreed characteristics where the process can be adjusted during the production run, SPC will be used to control the process output.
- 4.5 The supplier must ensure that the process capabilities will satisfy bf1systems quality requirements to meet the zero-defect to end customer target.
- 4.6 Where applicable bf1systems will request that a supplier provides a documented Control Plan, this will detail the following key requirements:

- Process Input Variables
- Process Output Variables
- Control Points (with limits)
- Measurement Methods
- Frequency of Measurement
- Reaction Plan

## 5 Notification of Engineering and Process Changes

- 5.1 The supplier shall provide bf1systems with parts produced using the manufacturing processes, equipment and location as released for series production by bf1systems and as detailed in the Part Submission Warrant (PSW) which must be submitted by the supplier to bf1systems as part of the PPAP process.
- 5.2 If a change to part design, process, component/raw material, or site occurs then a formal engineering change request must be made to and authorised by bf1systems Engineering and/or Safety, Health, Environment & Quality (SHEQ) departments before the change takes place. The supplier must ensure they are in receipt of written approval prior to delivery of parts affected by the change.
- 5.3 An engineering change request (ECR) must be submitted well in advance of the intended date of implementation to account for the re-qualification effort by bf1systems, allow all consequences and alternative solutions to be considered, and subsequent bf1systems customer approval.
- 5.4 Change management during the design and development process must be defined separately between customer and supplier. This is valid also for devices not qualified and/or not having a series release status at customer side.
- 5.5 bf1systems will ensure an initial response is issued to the supplier within two weeks of the initial engineering change request by the supplier. Final confirmation will be no longer than six weeks. Nevertheless, a supplier should not assume the change has been approved if feedback has not been received. Approval must be in writing. The supplier is responsible for following up/progressing change approvals with bf1systems.

## 6 Traceability

- 6.1 The aim of traceability is to minimise the impact and consequences of quality concerns. Suppliers and bf1systems will maintain an appropriate traceability system.

- 6.2 When requested within the SLA components, sub-assemblies, assemblies, and finished products for use in specific industries must be 100% traceable to raw material at sub-contractors.
- 6.3 **Forward Trace:** required information to identify already delivered suspect material to minimise the quantity, which needs to be caught as early as possible.
- Backward Trace:** required information to identify suspect source material and origin at sub- contractor.
- 6.4 If production/shipping requires splitting lots for processing/packing, those new sub-lots will be traced as separate lots and shall not be mixed.
- 6.5 Traceability information must be clearly visible on the label of the packaging and on the associated paperwork.
- 6.6 Backward traceability requires, as minimum information, the part number and additional information like trace code, lot number or date code.
- 6.7 The maximum time to provide the traceability information should be two working days.

## 7 Material Data Content & Certificate of Conformance (CofC)

- 7.1 The supplier must where requested provide material data sheets in the agreed-upon format and medium. The material content must comply with relevant legal requirements in the worldwide markets that bf1systems operate in.
- 7.2 A CofC where requested must be supplied either electronically or by hard copy with each shipment the following data / information must be included on each CofC:
- a) Supplier Legal Name / Corporate Logo / Quality Approval(s) / Address.
  - b) Unique Certificate or batch delivery identifier assigned by supplier.
  - c) Certificate Issue Date.
  - d) Supplier name and address and Customer name and address.
  - e) Sub-contract certificate(s) number.
  - f) Source of origin of standard off the shelf Part / Raw Material.
  - g) Purchase order / contract number and line item.
  - h) Item Part Number, its revision, description, S/N, batch number and qty.
  - i) Remarks related to product status upon its secondary release. e.g.,

Reworked, Replaced, and related NCR no.

- j) Authorised release person(s) name, title, and signature. A digital signature will be acceptable, but certificates must be fully traceable to a certifying supplier quality representative or authorised supplier company official.

**Note:** Conformity declaration should include the following critical statement conforming compliance to PO / contract. .... inspected, tested, and conforms to PO / contract, specification, drawing.....

## 8 Non-Conformances, Costs & Liabilities

- 8.1** No non-conforming product may be shipped to bf1systems without prior written agreement. If the supplier wishes to apply for a concession to repair or accept 'as is' any non-conforming product this must be requested from the engineering and/or SHEQ department and the product may not be dispatched until authorisation is granted, in writing. Where requested, the concession number must be quoted on the delivery note.
- 8.2** Any potential safety or reliability hazards, discovered, either in the design or production must be immediately reported to bf1systems.
- 8.3** As alluded to in 1.4 a separate contractual SLA shall be agreed with individual suppliers, and this will detail contractual requirements for claiming costs if bf1systems experiences losses because of a supplier issuing non-conforming materials, components, or products.
- 8.4** Therefore, non-conformance costs & liabilities are not part of this document, and the negotiation of any cost claim requires a separate SLA outside of this document.

## 9 Corrective Action Request (CAR)

- 9.1** bf1systems will notify the supplier immediately after a non-conformance has been identified at its premises or by its own customer. This will be followed up by a Supplier Non-Conformance (SNC) report being issued complete with a detailed failure mode description.
- 9.2** bf1systems will ensure the supplier is informed as soon as reasonably practicable: suspected quantity/percentage of non- conforming parts, replacement requirement dates and full circumstance of failure.
- 9.3** The non-conforming material (or sample) will be returned as soon as possible to allow the supplier to investigate the problem in its original condition.
- 9.4** bf1systems may wish to investigate the problem cause and analyse the

component/material, however, to ensure root cause analysis is identified correctly by the supplier it is imperative that un-modified examples are returned to the supplier for investigation.

- 9.5 On receipt of a notification of non-conformance, the supplier must immediately ascertain turnaround times for replacement of suspected non-conforming parts. The supplier shall co-operate in ensuring that the shipment of returned non-conforming material is minimised.
- 9.6 The supplier shall adopt the 8 Discipline (8D) approach, for containment and long-term preventive action for non-conformances reported by bf1systems, when requested. It is imperative that all reported non-conformances are investigated immediately, and appropriate actions are taken to ensure the problem is contained.

Once containment is successfully achieved it is expected that appropriate problem-solving techniques are used to identify root cause (i.e. Pareto, 5 Whys, Ishikawa/fish bone analysis etc.). Root causes must then be verified and acted upon in suitable time. While this process is underway, containment action will be expected to continue until evidence is provided to bf1systems that the preventative action has been successful. Containment action may include 100% test/inspection.

- 9.7 Containment action, preventive / corrective action and verification processes will be expected to be time-based with action due dates agreed with bf1systems. In cases where additional analysis needs to be conducted the supplier will inform bf1systems immediately and provide regular updates and estimated completion date.
- 9.8 In the absence of any pre-agreement with the supplier, the required failure analysis and response times are as follows:

Problem notification and submission of component to supplier by bf1systems	Starting Point
Formal acknowledgement by supplier that reported problem has been received	1 day*
Receipt of samples at supplier's premises	3 days
Initial supplier problem verification complete and communicated to bf1systems	4 days
Interim containment plan communicated to bf1systems	5 days
Supplier failure or problem analysis completed, and results communicated to bf1systems	10 days
Supplier corrective action plan communicated to bf1systems	20 days
Supplier corrective and preventive action implemented and verified	Per plan

**\*\* Days\*\* indicate cumulative working days after problem submission by bf1systems.**

## 10 Failure Rates

- 10.1 Defects can be measured in absolute or relative numbers, pieces, or parts per million (PPM).

- 10.2** It is the goal of bf1systems to reach zero-defect failure rate, and to achieve this, bf1systems, expects its suppliers to support the same goal.
- 10.3** Expected supplier performance levels will be agreed as part of the SLA. bf1systems will monitor SNC's by total number, if it is felt that the number of SNC's falls outside of the expected supplier performance level, bf1systems will request that the supplier provides a detailed analysis of current performance levels and if confirmed to be below expectation a plan to achieve expected performance levels within an agreed timeframe.
- 10.4** Returned defects not caused by the supplier will be taken out of the supplier statistics.
- 10.5** Suppliers continually not meeting agreed performance levels may be subject to process audits by bf1systems or an appointed representative.
- 10.6** Continued failure to meet agreed levels of supplier performance will affect supplier rating scores and may lead to loss of current or future contracts, as specified within the SLA.
- 10.7** Total SNC numbers and time to respond and close out an SNC, will also be monitored as part of the supplier performance measurement.

## 11 Audits

### Systems Audits:

- 11.1** bf1systems expects that the quality system of the supplier must conform to a minimum of BS EN ISO 9001:2015 or a recognised equivalent. In exceptional circumstances bf1systems will collaborate with critical suppliers who are not certified to this standard; however, this would only be after completion of a satisfactory systems audit by bf1systems SHEQ team.
- 11.2** In addition, depending on the contractual requirements applicable suppliers will be required to be certified to TS 16949 for automotive products or, AS9100 for aviation products. The relevant version must be agreed mutually. Dependent on supplier type, bf1systems may accept quality system audits conducted by an approved certification body, where deemed appropriate bf1systems will request to conduct an onsite Supplier Audit in line with bf1systems Supplier Audit Process PR069.

### Process Audits:

- 11.3** Supplier audits will be arranged and conducted in line with bf1systems Supplier Audit Process PR069, they must be mutually agreed after the following announcement times:
- Minimum 10 working days in advance
  - On short notice for problem audits
  - On short notice for continually exceeding agreed supplier performance levels (ref: section 10.7)

- On short notice for inadequate/no response to non-conformance issues (ref: section 8)
- Relocation of production sites without notification and discussion with bf1systems.
- Improper quality performance because of insecure internal or external processes.
- Accompanying preventive action if necessary.

**11.4** Audit type, participants and their functions will be announced in time before the audit.

**11.5** The number of auditors in sensitive manufacturing areas like a clean room will be carefully chosen; a minimum of two auditors should be accepted. Suppliers' operation instructions will be respected.

**11.6** The information exchanged during an audit is confidential. An audit report shall not be shared or passed to third parties without mutual agreement from all parties involved.

**11.7** Audits at subcontractors need to be enabled by the supplier upon request (Para. 11.3. to 11.6. apply). However, bf1systems expects suppliers to manage their supply chain and will normally leave problem investigation and audits to the supplier unless in exceptional circumstances.

After the Audit:

**11.8** An Audit report must be provided at the end of an Audit either during the common wrap-up discussion with the involved participants, or if time prohibits this then as soon as practicable afterwards.

Confidentiality:

**11.9** All audit reports and results are treated as strictly confidential. However, if the audit is in response to a problem or a new supplier, bf1systems may be asked by a customer to share audit results. In these situations, this shall be discussed with the supplier in advance of the audit to agree any limits and exclusions to processes and products that are not directly pertinent to a specific problem or process/product range.

## 12 Tools & Gauges Labelling

**12.1** All tools, gauges, and other property of bf1systems, or belonging to bf1systems on the behalf of bf1systems customers, must be properly labelled by the supplier to ensure clear traceability of the items and in line with any requirements detailed within the bf1systems purchase order. bf1systems minimum label requirements are:

Property of bf1systems Ltd			
Tool part number	F1-AAA-BBB-CC-DDDD-X		
Component part number	F1-AAA-BBB-CC-DDDD-X		
Component description	DESCRIPTION		
Tool number	#	OF	#
Date commissioned	DD/MM/YYYY		

- 12.2** Location and status of tooling will be monitored by bf1systems via the use of a SharePoint based tooling register.
- 12.3** Where tooling is in place it must be maintained to a standard that ensures that parts made fall within the defined process output parameters in line with 4.6.

## 13 Continuous Improvement

- 13.1** Continuous improvement in the quality of products and/or manufacturing processes are key to be a supplier to bf1systems. The supplier should maintain documented evidence of continuous improvement for review upon request by bf1systems representative. All suppliers shall show a proactive approach that supports driving the reduction of process variation and waste within their business, utilising continuous improvement tools and techniques.

## 14 Product Safety

- 14.1** Suppliers to bf1systems have the responsibility for all product safety and product liability in delivered parts, including their sub-suppliers that are used in finished bf1systems products. The supplier shall implement an organisation, a process and tools to ensure the product safety of its parts and their sub-supplier's parts to minimise product liability risks.

## 15 Counterfeit Parts Prevention

- 15.1** Suppliers shall implement and maintain a documented, risk-based process to prevent the introduction of counterfeit or suspect counterfeit parts into bf1systems products, including parts supplied by sub-tier suppliers.
- 15.2** Counterfeit or suspect counterfeit parts are defined as unauthorised copies, substitutes, or parts misrepresented in relation to their origin, material, performance, age, or certification status.
- 15.3** Parts and materials shall be procured only from Original Equipment Manufacturers (OEMs), Original Component Manufacturers (OCMs), or their authorised distributors, unless formally approved in writing by bf1systems. Where alternative sources are approved, the supplier shall implement appropriate verification and authentication controls proportional to the

assessed risk.

- 15.4 Suppliers shall maintain appropriate traceability and verification records, including Certificates of Conformance and supporting inspection or test records, sufficient to enable identification, containment, and withdrawal of counterfeit or suspect counterfeit parts.
- 15.5 Any confirmed or suspected counterfeit part identified at any stage of the supply chain shall be immediately reported to bf1systems and shall not be knowingly delivered under any circumstances.
- 15.6 Suppliers shall ensure relevant personnel are trained in counterfeit part awareness and prevention, shall flow down applicable requirements to sub-tier suppliers, and shall remain responsible for the conformity and authenticity of all supplied parts.
- 15.7 Non-compliance with counterfeit part prevention requirements may be treated as a serious non-conformance and may result in corrective action, increased audit activity, or impact supplier approval status in line with the agreed SLA.

## 16 Archiving periods for quality relevant document and records

- 16.1 Process verification and inspection records shall be maintained and be available for bf1systems upon request. All records shall be retained in line with the agreed requirements within the SLA. As a minimum during the serial production, the supplier shall maintain:
  - Process changes records
  - Ongoing quality control records
  - Production records