

Submission Requirements
Quick Reference
(For Internal Cooper use Only)

Note: This document is meant as a desk reference for Cooper Industries PPAP submissions. Complete guidelines and definitions are provided in the Cooper Industries PPAP manual. Application and defined requirements are at the discretion of your Cooper Divisional Quality Representative. Contact them with any additional questions.

Element Order	PPAP Requirements Add PPAP Fourth Edition	Level					Required Documents	Additional Comments and Clarity
		Level 1	Level 2	Level 3	Level 4	Level 5		
1	Part Submission Warrant (PSW)					AR	Cooper PSW only	Cooper PSW is required for all submissions and required on all Cooper designed parts.
2	Design Records & Substituted part print(s)					AR	Cooper Divisional Part Print	Include one clean copy of the current approved revision print with all dimensions, applicable specifications, and notes, substituted (circle with corresponding number) on the print for reference to dimensional report.
3	Approved Engineering Change Documentation					AR AR	Various engineering documentation	Any formal documentation that is not reflected in the current released print such as un-released marked up prints, formal engineering changes and any pertinent engineering correspondence.
4	Customer Engineering Approvals						Asst Required for Cooper Submissions	Not used with Cooper Industries submissions.
5	Design FMEA		AR			AR	Can be Cooper FMEA Format or an AIAG compliant DFMEA	Required only if supplier is responsible for part design.
6	Process Flow Diagrams					AR	Any standard flowchart format	Identifies all process steps from receiving to shipping/warehouse operations. Must include all offline and in process inspections and testing including ongoing routine performance checks such as annual dimensional layouts. Process steps must match the FMEA and Control Plan steps.
7	Process FMEA					AR	Can be Cooper PFMEA Format or an AIAG compliant PFMEA	FMEA must be AIAG or comparable format that contains the same information as the AIAG form. Process steps must match Process Flow Chart, Control Plan and address all characteristics associated with each operation. RPN numbers must be in accordance with AIAG guidelines with critical processes and inspections identified. Recommended Actions for high RPN totals are required.
8	Control Plan					AR	Can be Cooper Control Plan format or AIAG compliant format	Control Plan must be AIAG or comparable format that contains the same information. Must match the Flow Chart/FMEA, process steps and describe the actions of each phase of the manufacturing process from receiving to shipping/warehouse. All CTQ's and SPC items must be addressed within the corresponding process step. Any dedicated checking/testing fixtures that are used will be identified along with the numbered characteristics if measures/verifies/feeds on the print. All CTQ's must be identified in the control plan.
9	Measurement System Analysis Studies		AR			AR	Cooper GRR format or any statistical package format for gage RMR	Requires an analysis of the capability of all measuring tools identified in the Control Plan (in process or offline) used in the decision making process of normal production. As a minimum gauge RMRs, using percent of total tolerance must be included for all process tools used in determining acceptability of equipment measurement capability.
10	Dimensional Results					AR	Must be on Cooper Dimensional report format	Cooper Dimensional Data Sheet is only acceptable format.
11	Material, Performance Test Results		AR			AR	Industry Standard reports or test result formats designated by Cooper Industries.	Certificates of Analysis for all primary raw materials such as chemicals, plastic resins and rubber. Chemical composition test reports for all metals and controlled substances. Performance life testing results such as salt spray, impact testing, heat, humidity, electrical performance, etc. when required either by print, specification or specific request by Cooper representative to be submitted on AIAG forms (CPG-1004, CPG-1005, or equivalent). For Catalog Parts Generic or family data maybe substituted with prior approval. AEC Qualification testing or equivalent is required for semiconductor devices. Any gaps between supplier qualification testing and AEC qualification testing requirements should be documented and approved by Cooper prior to submission.
12	Initial Process Study (Cpk) Capability Studies		AR			AR	Process Capability Study using any statistical package or Cooper Capability Data Forms.	A short term study of process control capability (Cpk), must come from one continuous significant production run. At least 100 individual samples must be used for Cpk calculations. Multi-cavity tools would require a separate study per cavity. Supplier must have minimum Cpk value of 1.33 on all CTQ's. No attribute data will be accepted for any PPAP submissions or Initial Process Study. If CTQ's are HOC identified on the print, the supplier will identify a minimum of two characteristics that have a direct effect on fit, form, or function and perform Initial Process Studies on them.
13	Qualified Laboratory Documentation					AR	Lab Scope and outside lab proof of accreditation.	A Quality Record that contains the specific tests/evaluations/calibrations that your facility performs, a list of your personnel's competency to perform these tests/evaluations/calibrations, a list of all measuring equipment used during production, and a list of methods and standards used to calibrate those tools. NOTE: All outside calibration or testing labs are required to show proof of certification.
14	Appearance Approval Report	AR	AR	AR	AR	AR	AIAG format AAR	Needed only if part has color, grain, or some other cosmetic appearance requirement specified on the part print, or if specifically requested by Cooper to clarify a cosmetic requirement not clearly identified on a print. Format is AIAG form CPG-1002.
15	Sample Product Parts					AR	Parts tagged in accordance with Cooper PPAP reference manual	The organization shall provide 3 sample parts WITH EVERY submission unless otherwise requested. Multi-cavity tools require 1 part per cavity.
16	Master Samples						Required only for level 5	Not required for submission but must be maintained by the supplier.
17	Checking aids					AR	Checking and design prints and GRR for checking fixtures	Any part specific fixture, gauge, model or template. Tooling/gauges/fixtures must include design prints and a 3rd party layout confirming conformity to print.

18	Customer Specific Requirements						Documents as specified by Cooper Industries	
A	Tooling Information Form					AR	Specific Cooper Document	Applies to all Cooper owned tooling. Typical application includes information and pictures on production tools such size, maximum cycles, ownership etc.
B	Packaging Form					AR	Specific Cooper Document	Used to outline and verify both external and internal packaging requirements including any related testing.
C	Inspection Plan (All features only)	AR	AR	AR	AR		Specific AIAG Format	Specific format used by many AEC suppliers to document quality inspections
D	Specification Deviation Form	AR	AR	AR	AR		Specific Cooper Document	Used for any requirement that is non-conforming and requires review by Cooper to provide for approval of the PPAP submission. The supplier must provide a recommended action plan for any issue identified on the Specification Deviation Form.
E	Supplier PPAP Checklist					AR	Specific Cooper Document	To be submitted with every submission level except level 1 and must be signed by supplier representative. Used as both a reference/checklist tool as well as a verification that the right documentation is provided at the time of submission.

Cooper Industries PPAP Submission Levels (in compliance with AIAG Fourth Edition PPAP March 2008 release)

Level 1	Warrant only and Appearance Approval Report as requested submitted to the customer. Applied to: Non-critical parts, non-critical resins/rubber material or catalog commodity parts for electrical applications, and re-certification of existing parts previously approved by Cooper at levels 3, 4 or 5. Also used for Self Certification.
Level 2	Warrant with product samples and limited supporting data submitted to the customer. Applied to: Critical Bulk products such as Plastic/Powder/Chemicals, critical fasteners, simple material changes, simple revision level only changes or simple print updates not affecting form-fit-function. This level can also be applied to low and medium risk parts within a product family.
Level 3	Warrant with product samples and complete supporting data submitted to customer. Default Cooper Industries Submission Level. Applied to: All new parts on Cooper programs. All changes affecting form-fit-function, reliability, or performance. All product resources to new suppliers, initial production parts, existing high risk parts undergoing a part number change.
Level 4	Warrant and other requirements as defined by the customer. This level is reserved for special applications only. Applied to: This level can only be applied with prior approval from the designated Divisional Cooper Quality PPAP representative.
Level 5	Warrant with product samples and complete supporting data reviewed at the supplier's manufacturing location. Applied to: On site review as requested by each Cooper Division

Ppap 4 Edition Aiag

Herman Tang



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Quality Management in Engineering Jong S. Lim, 2019-07-30 This book introduces fundamental advanced and future oriented scientific quality management methods for the engineering and manufacturing industries It presents new knowledge and experiences in the manufacturing industry with real world case studies It introduces Quality 4 0 with Industry 4 0 including quality engineering tools for software quality and offers lean quality management methods for lean manufacturing It also bridges the gap between quality management and quality engineering and offers a scientific methodology for problem solving and prevention The methods techniques templates and processes introduced in this book can be utilized in various areas in industry from product engineering to manufacturing and shop floor management This book will be of interest to manufacturing industry leaders and managers who do not require in depth engineering knowledge It will also be helpful to engineers in design and suppliers in management and manufacturing all who have daily concerns with project and quality management Students in business and engineering programs may also find this book useful as they prepare for careers in the engineering and manufacturing industries Presents new knowledge and experiences in the manufacturing industry with real world case studies Introduces quality engineering methods for software development Introduces Quality 4 0 with Industry 4 0 Offers lean quality management methods for lean manufacturing Bridges the gap between quality management methods and quality engineering Provides scientific methodology for product planning problem solving and prevention management Includes forms templates and tools that can be used conveniently in the field

Probabilistic Design for Optimization and Robustness for Engineers Bryan Dodson, Patrick Hammett, Rene Klerx, 2014-10-06 Probabilistic Design for Optimization and Robustness Presents the theory of modeling with variation using physical models and methods for practical applications on designs more insensitive to variation Provides a comprehensive guide to optimization and robustness for probabilistic design Features examples case studies and exercises throughout The methods presented can be applied to a wide range of disciplines such as mechanics electrics chemistry aerospace industry and engineering This text is supported by an accompanying website featuring videos interactive animations to aid the readers understanding

Functional Safety for Road Vehicles Hans-Leo Ross, 2016-07-25 This book highlights the current challenges for engineers involved in product development and the associated changes in procedure they make necessary Methods for systematically analyzing the requirements for safety and security mechanisms are described using examples of how they are implemented in software and hardware and how their effectiveness can be demonstrated in terms of functional and design safety are discussed Given today s new E mobility and automated driving approaches new challenges are arising and further issues concerning Road Vehicle Safety and Road Traffic Safety have to be resolved To address the growing complexity of vehicle functions as well as the increasing need to accommodate interdisciplinary project teams previous development approaches now have to be reconsidered and system engineering approaches and proven management systems need to be supplemented or wholly

redefined The book presents a continuous system development process starting with the basic requirements of quality management and continuing until the release of a vehicle and its components for road use Attention is paid to the necessary definition of the respective development item the threat hazard and risk analysis safety concepts and their relation to architecture development while the book also addresses the aspects of product realization in mechanics electronics and software as well as for subsequent testing verification integration and validation phases In November 2011 requirements for the Functional Safety FuSa of road vehicles were first published in ISO 26262 The processes and methods described here are intended to show developers how vehicle systems can be implemented according to ISO 26262 so that their compliance with the relevant standards can be demonstrated as part of a safety case including audits reviews and assessments

Automotive Process Audits D. H. Stamatis,2021-04-29 With a detailed discussion on the preparation and tools needed for an automotive process audit this book addresses the fundamental issues and concerns by focusing on two objectives explaining the methods and tools used in the process for the organization and provide a reference or manual for dealing with documenting quality issues This book addresses the fundamental issues and concerns for a successful automotive process audit and details specifically how to prepare for it It presents a complete assessment of what an organization must do to earn certification in ISO standards industry standards and customer specific requirements It also focuses on the efficiency of resources within an organization so that an audit can be successful and describes the methodologies to optimize the process by knowing what to do what to say and how to prove it A road map is offered for the process audit and the layered audit and defines a clear distinction between the preparation details for each This book is intended for those that conduct audits those who are interested in auditing and those who are being audited It specifically addresses how to prepare for an automotive process audit for readers who are involved in quality manufacturing and operations management and those who work with suppliers

Quality Planning and Assurance Herman Tang,2021-11-19 QUALITY PLANNING AND ASSURANCE Discover the most crucial aspects of quality systems planning critical to manufacturing and service success In Quality Planning and Assurance Principles Approaches and Methods for Product and Service Development accomplished engineer Dr Herman Tang delivers an incisive presentation of the principles of quality systems planning The book begins with an introduction to the meaning of the word quality before moving on to review the principles of quality strategy and policy management The author then offers a detailed discussion of customer needs and the corresponding quality planning tasks in design phases as well as a treatment of the design processes necessary to ensure product or service quality Readers will enjoy explorations of advanced topics related to proactive approaches to quality management like failure modes and effects analysis FMEA They ll discover discussions of issues like supplier quality management and the key processes associated with quality planning and execution The book also includes A thorough introduction to quality planning including definitions discussions of quality system and an overview of the planning process A comprehensive exploration of strategic planning

development including strategic management risk management and analysis and pull and push strategies Practical discussions of customer centric planning including customer oriented design quality function deployment and affective engineering In depth examinations of quality assurance by design including the design review process design verification and validation and concurrent engineering Perfect for senior undergraduate and graduate students in technology and management programs Quality Planning and Assurance will also earn a place in the libraries of managers and technical specialists in a wide range of fields including quality management

Lean Six Sigma for Hospitals: Improving Patient Safety, Patient Flow and the Bottom Line, Second Edition Jay Arthur, 2016-09-05 Simple Steps to Improve Patient Safety Patient Flow and the Bottom Line A Doody's Core Title for 2021 This thoroughly revised resource shows step by step how to simplify streamline analyze and optimize healthcare performance using tested Lean Six Sigma and change management techniques Lean Six Sigma for Hospitals Second Edition follows the patient from the front door of the hospital or emergency room all the way through discharge The book fully explains how to improve operations and quality of care while dramatically reducing costs often in just five days Real world case studies from major healthcare institutions illustrate successful implementations of Lean Six Sigma Coverage includes Lean Six Sigma for hospitals emergency departments operating rooms medical imaging facilities nursing units pharmacies and ICUs Patient flow and quality Clinical staff Order and claims accuracy Billing and collection Defect and medical error reduction Excel power tools for Lean Six Sigma Data mining and analysis Process flow charts and control charts Laser focused process innovation Statistical tools for Lean Six Sigma Planning and implementation

QS-9000 Answer Book Rob Kantner, 1997-01-02 An in depth accessible guide to the intricacies of QS 9000 With QS 9000 certification deadlines just around the corner you want to be sure your company is on the right track to meeting requirements This timely and indispensable guide answers the most commonly asked questions about QS 9000 compliancy offering in depth explanations as well as capsule answers for quick reference What are the characteristics of a QS 9000 quality system A QS 9000 quality system is a documented self improving union of resources and activities that governs every aspect of a process that affects quality What firms are required to register with QS 9000 Direct suppliers of production materials parts or key finishing services and certain other suppliers must register What are the advantages or benefits of QS 9000 registration It improves customer confidence provides access to markets improves competitive standing and reduces supplier quality assurance program costs What quality tools and techniques are mandated by QS 9000 QS 9000 requires the use of mistake proofing methods disciplined problem solving methods and the use of cross functional teams for decision making What are some of the common perils and pitfalls to effective system implementation Pitfalls you should avoid include trying to implement from the bottom up doing just enough to get registered getting carried away with documentation and springing the system on the work force all at once

Automotive Engineering International, 2000 *Quality System Requirements, QS-9000*, 1998 The QS-9000 Answer Book Radley M. Smith, 1998

AIAG PPAP Simplified Biswanath Subhash Panda,2025-12-07 AIAG PPAP Simplified Understand Core PPAP Requirements Reduce Audit Failures and Enhance Process Capability Attain World Class Manufacturing Confidence Production Part Approval Process PPAP as defined by AIAG remains one of the most powerful quality assurance tools across the global supply chain But for many professionals PPAP still feels overwhelming confusing and overly technical AIAG PPAP Simplified removes the complexity It transforms the dense AIAG PPAP manual into a clear practical and easy to apply guide designed for manufacturing engineers supplier quality engineers IATF 16949 teams APQP leaders launch managers and automotive suppliers who need results not confusion If you are looking for a book that cuts through jargon simplifies documentation and guides you step by step through every requirement this is the resource you ve been waiting for AIAG PPAP Simplified solves challenges by offering Clear simplified explanations Straightforward instructions Real world examples Supplier focused best practices Templates checklists and step by step guidance Deep coverage of bulk materials special characteristics and customer communication Whether you re new to PPAP or an experienced quality professional this book equips you with clarity confidence and mastery What You Will Learn Inside This book breaks down every core element of PPAP from fundamentals to advanced concepts using simple language and actionable insights 1 PPAP Fundamentals Made Easy 2 How to Prepare a Perfect PPAP Submission 3 Mastering Customer Communication and Change Management 4 Bulk Material Requirements Simplified 5 Special Characteristics PFMEA and Control Plans 6 The Customer Plant Connection 7 Best Practices for Record Keeping Continuous Improvement Who Should Read This Book Supplier Quality Engineers SQE IATF 16949 professionals Automotive suppliers and Tier 1 Tier 2 manufacturers Quality managers and manufacturing leaders APQP and Launch teams Bulk material suppliers Production engineers and plant managers Consultants trainers and auditors If your work involves quality compliance customer communication or process validation this book will elevate your expertise Why This Book Stands Out Unlike other technical manuals this book offers Simple language with bullet points Clear breakdowns of all 18 PPAP elements Real world examples from automotive manufacturing Practical checklists and templates Bulk material specific guidance Customer focused best practices Unlock the True Value of PPAP With the right approach PPAP is not just a documentation package it is a robust quality assurance system that Prevents defects before production Ensures process capability Reduces launch risks Improves customer satisfaction Strengthens supplier OEM relationships Builds long term trust in the supply chain When implemented correctly PPAP becomes your strategic advantage not a burden Take the First Step Toward PPAP Mastery If you want to simplify your quality processes If you want faster approvals and fewer rejections If you want clarity confidence and excellence in every PPAP submission Then AIAG PPAP Simplified is your ultimate guide Start your journey to PPAP mastery today where clarity meets confidence in quality *Thomas Register of American Manufacturers* ,2003 Vols for 1970 71 includes manufacturers catalogs *AIAG APQP Simplified* Biswanath Subhash Panda,2025-11-21 AIAG APQP Simplified The Complete Step by Step Guide to Advanced Product Quality Planning

for Manufacturing Automotive Supplier Quality and IATF 16949 Excellence AIAG APQP Simplified is your definitive guide to understanding applying and mastering the five phases of Advanced Product Quality Planning Designed for professionals in automotive manufacturing supplier development quality engineering and IATF 16949 implementation this book translates the official AIAG framework into a simple actionable real world playbook If your goals include reduced variation robust launches supplier excellence audit readiness flawless PPAP submissions and continuous improvement this book is written for you Why This Book Matters AIAG APQP Simplified eliminates these challenges by breaking down the entire APQP process into a structured accessible and easy to apply methodology supported by best practices and industry benchmarks It is a roadmap built from practical manufacturing experience automotive requirements and quality engineering discipline Who This Book Is For Quality Engineers Supplier Quality Engineers SQE APQP Program Managers NPI Launch Managers Manufacturing Engineers Automotive Industry Professionals Production Managers IATF 16949 Auditors and Implementers Process Engineers Engineering Managers Plant Managers MSME and Tier 2 Tier 3 organizations What You Will Learn This book walks you through the entire APQP lifecycle phase by phase using simple language and real manufacturing scenarios You will develop mastery over the following Phase 1 Planning and Program Definition Understanding customer needs expectations Voice of Customer VOC CTQ QFD benchmarking Setting quality timing and performance targets Early risk analysis and feasibility Project management and gated reviews Phase 2 Product Design Development DFMEA creation and linkage Special characteristics identification Design robustness tools DVP R preparation Design for Manufacturability Serviceability Managing engineering changes Phase 3 Process Design Development Process Flow Diagrams PFMEA creation and cross links Control Plan development Prototype Pre Launch Production Process instructions tooling and equipment qualification Error proofing layout analysis line balancing Measurement systems MSA groundwork Phase 4 Product Process Validation Significant Production Run SPC capability performance MSA validation and interpretation Process capability Cpk Ppk PPAP requirements and Level 3 submission Production Validation Testing Safe Launch Planning Packaging validation and logistics readiness Phase 5 Feedback Assessment Continuous Improvement Managing customer feedback Warranty and field failure analysis Reducing variation common vs special causes Structured problem solving 8D DMAIC PDCA Lessons learned integration Continuous improvement and design standards updates Key Features of This Book APQP Explained AIAG IATF Aligned Templates Quality Engineering Best Practices Supplier Quality Excellence PPAP Readiness Guidance Control Plan Integration Leadership Gate Review Methods Continuous Improvement Tools Audit Ready Customer Ready Shop Floor Ready

Automotive Engineering ,1993-07

IEEE International Electric Machines and Drives Conference Record ,1997

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