

Supplier Readiness Directive

Version 1.0
Edition 2017



Preface

Supplier Readiness is a specialized extension to the APQP process that is specifically designed to manage components with high risk or special priority and their respective suppliers through all levels of the Global Development and Product Evolution Process (GDPEP). The Supplier Readiness concept is to take a proactive and collaborative approach to ensure that the identified ZF suppliers are fully ready to support production on schedule.

The goal of this program is to secure the right part, in the right quantity, in the right quality and at the right location for pre-series, ramp-up and the start of series production. When properly executed, the Supplier Readiness process allows ZF and the supplier to identify and address potential issues early in the process, thereby reducing the cost impact and chance of delay.

In the event that a supplier is selected for the Supplier Readiness process, the participation is mandatory.

The purpose of this manual is to provide a clear and concise description of the Supplier Readiness process for current and prospective ZF suppliers.



Dr. Michael Karrer

Head of Supplier Management ZF Group

Table of Contents

01

PREFACE

1	PREFACE	2
1.1	Index of Terms	4

02

INTRODUCTION TO SUPPLIER READINESS

2	INTRODUCTION TO SUPPLIER READINESS	5
2.1	Roles in Readiness Project	6
2.2	Tools & Guidelines	6

03

SUPPLIER READINESS PROCESS

3	SUPPLIER READINESS PROCESS	7
3.1	Technical Review	7
3.2	APQP Kick-off Meeting	7
	Meeting Preparation	8
	Meeting Output	9
3.3	Supplier Readiness Project	
	Status Tracking	9
	SupplyOn (eAPQP) or VIN (PTS)	9
	Milestone Meetings	10
	Change Management	10
3.4	Sub-Supplier Readiness	10
3.5	Run@Rate	11
3.6	Project Closure and Process Release	12

04

APPENDIX

4	APPENDIX	13
4.1	Checklist	13

1.1 Index of Terms

APQP	Advanced Product Quality Planning
BoM	Bill of Material
PEP	Product Evolution Process
PPAP	Production Part Approval Process
PTS	Program Tracking System
RFQ	Request for Quotation
SDB	Sourcing Decision Board
SDE	Supplier Development Engineer
SOP	Start of Production
VIN	Vendor Information Network

2 Introduction to Supplier Readiness

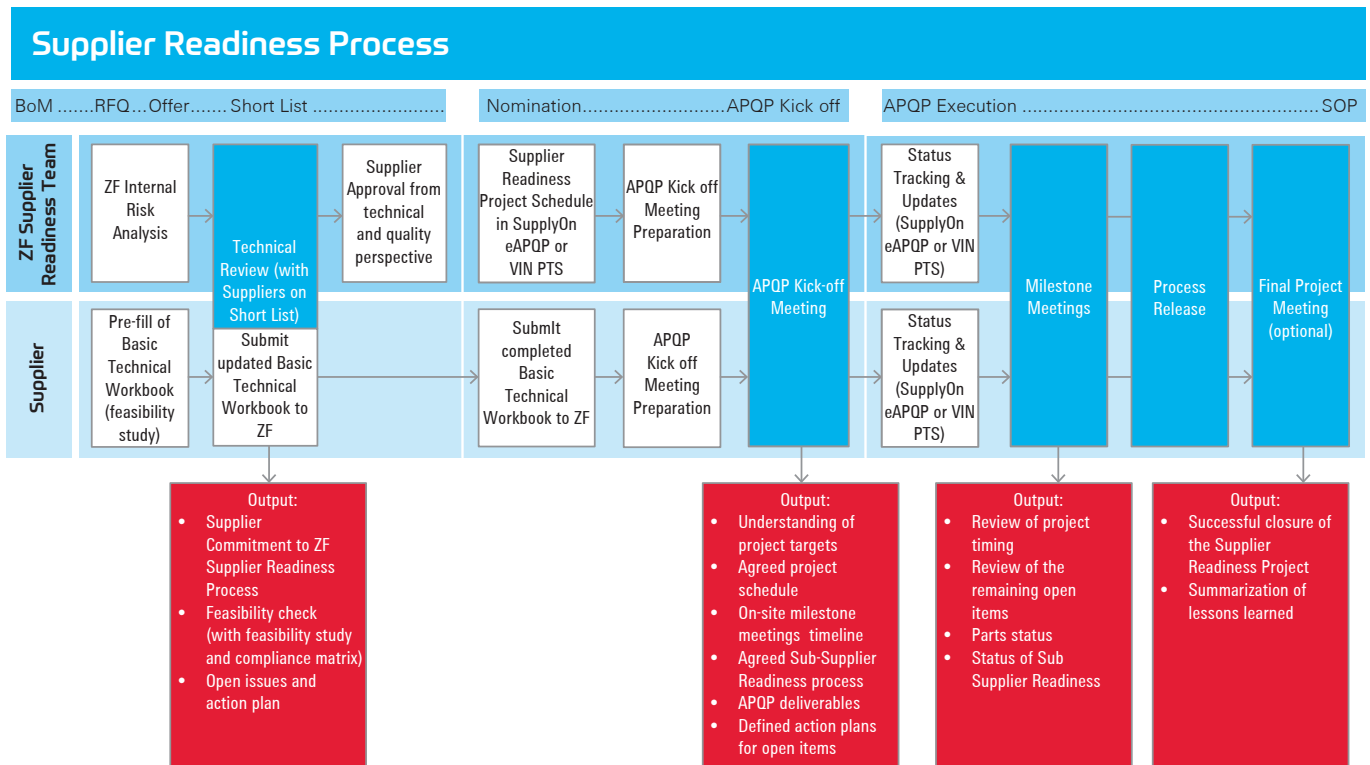
This manual will cover each stage of the Supplier Readiness process shown in the diagram below.

There are five meeting types within the Supplier Readiness process (blue boxes):

1. Technical Review (for suppliers which are candidates for nomination)
2. APQP Kick-off meeting (for nominated suppliers)
3. Regular Milestone Meetings
4. Process Release
5. Final Project Meeting (optional)

In preparation for the Technical Review the supplier is obliged to update the Basic Technical Workbook, provided by ZF Commodity Purchasing.

Throughout the APQP process, the status and action items are recorded and monitored through ZF’s supplier communication portals (SupplyON or VIN).



2.1 Roles in Readiness Project

As a successful SOP depends on many varied factors, Supplier Readiness requires the expertise of a cross-functional team involving representatives both from supplier and ZF side. The supplier is expected to provide support and the appropriate resources to the ZF Supplier Readiness team.

2.2 Tools & Guidelines

There are a number of available tools provided by ZF to assist and guide the supplier through the Supplier Readiness process.

Quality Directive QD83

The guiding document that outlines the general ZF supplier quality requirements, expectations and processes is the Quality Assurance Directive for Purchased Items, also known as QD83. ZF Group's standard Advanced Product Quality Planning (APQP) is a core element of Supplier Readiness and is outlined in this publication.

Basic Technical Workbook

The Basic Technical Workbook is a document that shall be completed prior to the Technical Review Meeting. It contains the following elements:

- Basic Data Sheet (mandatory): information about the project itself, the milestones and the involved parties.
- Feasibility study (mandatory): already sent out with the RFQ.
- Compliance Matrix (mandatory for high and medium risk components): confirmation of feasibility for all items on the drawing.
- Sub-Supplier Tree (for high risk components and upon request by ZF): risk assessment for complete supply chain (see Chapter 3.4).

A tutorial for working with the Basic Technical Workbook is available upon request.

ZF Template for Risk Assessment (VDA Maturity Level Assurance)

This template should be used as standard for evaluation of risks along the supply chain; equivalent templates can also be accepted.

Supplier Readiness Checklist

ZF provides a Supplier Readiness Checklist (appendix

4.1) to guide the supplier through the process steps of Supplier Readiness. This checklist will be provided to the supplier during the Technical Review prior to nomination.

ZF Supplier Communication Portals

The APQP phase of the Supplier Readiness process is managed through the electronic communication platforms of ZF, SupplyOn (eAPQP) and VIN (PTS). Suppliers selected for this process will be required to utilize these tools to track and report the status of the agreed project milestones.

3 Supplier Readiness Process

Purpose of the Supplier Readiness Process is to ensure a flawless launch into serial production.

3.1 Technical Review

After determination of the components of increased risk, ZF schedules a meeting with the respective suppliers in order to discuss the identified focus points. The Basic Technical Workbook will be reviewed and completed in the Technical Review and pre-development measures will be addressed and documented. The output of this meeting shall be a feasibility check, an action plan in order to close identified gaps and the supplier's commitment to the ZF Supplier Readiness process.

A completed technical review with an approval from ZF is required for a supplier to be considered for sourcing.

3.2 APQP Kick-off Meeting

The APQP Kick-Off meeting is the official start of the APQP execution between ZF and the nominated supplier.

Meeting Preparation

The APQP Kick-off meeting will be organized by ZF and can be held at the supplier or at a ZF location. The supplier shall be given advance notice of the meeting to allow for adequate preparation. The invitation to this meeting shall be sent by ZF to the supplier and will contain an agenda and the necessary templates.

The following table outlines ZF's expectations to the supplier with regards to that preparation:

Preparation by Supplier

Project Organization	<ul style="list-style-type: none"> • Cross-functional team defined • Team members' responsibilities defined • Escalation Path defined
Part Introduction	<ul style="list-style-type: none"> • DFMEA (initial, when applicable) • PFMEA (initial) • Understanding about part and process (derived from released drawings & specifications)
Machine and Process Planning	<ul style="list-style-type: none"> • Measurement & Testing Equipment Concept (initial) • Manufacturing Equipment & Tooling Concept (initial)
Identified Items / Actions from Technical Review (Feasibility Study & Compliance Matrix)	<ul style="list-style-type: none"> • Closed action items • Open tasks
Project Schedule	<ul style="list-style-type: none"> • Initial Project and Milestone Planning
Sub-Supplier Readiness	<ul style="list-style-type: none"> • Detailed sub-supplier information
Conditions for Process Release	<ul style="list-style-type: none"> • Necessary documentation defined

Meeting Output

The expected results of the Kick-off meeting are as follows:

- Clear understanding of all project targets
- Agreed project schedule
- On-site milestone meeting timeline to realize the APQP process, including the integration of the sub-supplier readiness process
- APQP deliverables
- Open issue list / action plan
- Finalization of prioritized sub-supplier structure by updating the Sub-Supplier Tree with risk categorization.

3.3 Supplier Readiness Project Status Tracking

The preferred tools for status monitoring of the Supplier Readiness project are the SupplyOn Project Management module (eAPQP) or VIN (PTS).

SupplyOn (eAPQP) or VIN (PTS)

The Supplier Readiness project is set up by the Supplier Readiness Manager (ZF Program SDE) in SupplyOn. For suppliers to Division A, APQP will be tracked through VIN PTS. Suppliers selected for this process will be required to utilize these tools to track and report the status of the project. After each gate, the work packages will be rated (red, yellow, green) and the rating results will be shown in SupplyOn or VIN (PTS) as project status. The project members will be notified automatically by email about status changes of work packages.

According to the status of work packages, the following measures may be taken per the below chart:

Status in SupplyOn/VIN	Status Tracking Measures (Frequency depends on problem)
Red	• Status report from supplier
	• Telephone conference
	• Additional on-site visit
Yellow	• Status report from supplier
	• Telephone conference
Green	• No special measures – regular check at SR milestone meetings

Supplier Readiness Project Status Tracking

Milestone Meetings

Within the Kick-off meeting, milestone meetings and their frequency are defined to achieve the APQP requirements.

Key points of the milestone meetings are:

- Review project timing
- Review and resolve any remaining open issues

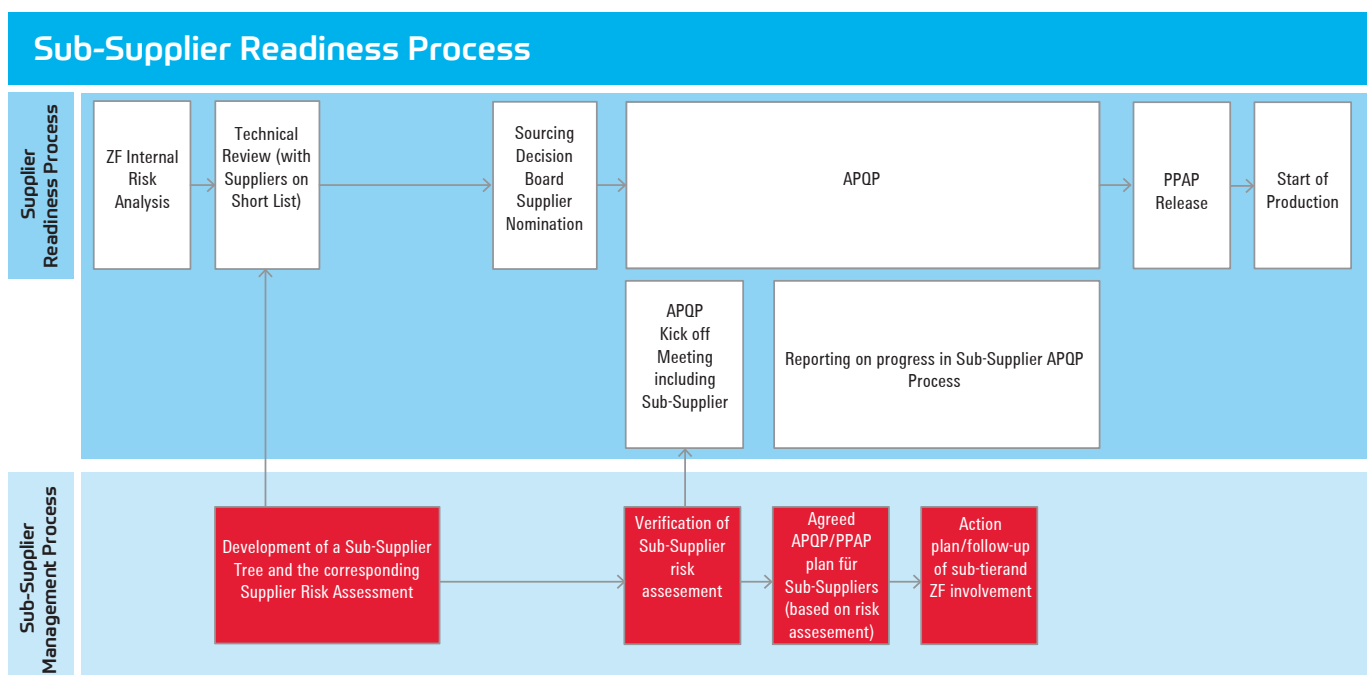
- Parts review
- Sub-supplier Readiness
- Factory visit

Change Management

Design changes influence the Supplier Readiness Process in that different measures or process steps may need to be reviewed or repeated. Design changes will be monitored within the status tracking process. A new feasibility check is required for each new drawing release.

3.4 Sub-Supplier Readiness

Responsibility for sub-supplier APQP remains the responsibility of the direct supplier to ZF. However, the Sub-Supplier Readiness Process helps define risk and ZF may require additional activities to be carried out to minimise risk. ZF will identify when the Sub Supplier Readiness process is required.



The starting point of the Sub-Supplier Readiness process is the Sub-Supplier Tree including risk classification, which determines the risk of each sub-supplier and creates the critical paths within the Sub-Supplier Tree.

Upcoming tasks include identifying and eliminating weaknesses in the supply chain. In addition it is necessary to track and document sub-supplier status and report to ZF on a regular basis. Based on the reporting, ZF may require additional actions (e.g. joint supplier meetings, visits or audits).

The ZF supplier remains fully responsible for the performance of the sub-supplier, this includes directed suppliers.

3.5 Run@Rate

Run@Rate is a capacity measurement under volume production conditions that, at the time of implementation, assists in verifying that the production

processes of a supplier are capable of supplying products in the agreed volume and quantity. This process takes into account production equipment, employees, tools and logistics processes.

The Run@Rate must be applied at the bottleneck of the process chain. It is considered to be successfully passed if the contracted peak volume over life time is verified with production of the required quantity and quality and there are no significant deviations in the production process. It is conditionally passed if the peak volume in the first 12 months after SOP is verified with production of the required quantity and quality and an agreed capacity plan with ZF commodity buyer to cover peak volume is available.

The supplier is requested to do a self-assessment. However, ZF may decide to execute the assessment on-site at the supplier.

3.6 Project Closure and Process Release

A formal process release at the end of the APQP is mandatory (e.g. VDA6.3 or Launch Readiness Audit). The requirements for the process release will be communicated to the supplier during the APQP Kick-off meeting.

ZF and the supplier may agree to schedule a final project meeting. The aim of this meeting is to evaluate the Supplier Readiness project. After the final project meeting, both ZF and the supplier will have a confirmation of the successful closure of the Supplier Readiness project documented in the meeting minutes. Lessons learned will likewise be summarized for further development.

4 Appendix

4.1 Checklist

Supplier Readiness Checklist



Project Nr.	Supplier Readiness Phases / tasks	Complete?	Remarks
1.0	Technical Review		
1.1	Detailed check of feasibility study incl. Compliance Matrix	<input type="checkbox"/>	
1.2	Action plan for closure of identified gaps out of risk analysis and feasibility study developed	<input type="checkbox"/>	
1.3	Sub-Supplier Tree including the risk analysis of the sub-supplier structure (if applicable)	<input type="checkbox"/>	
1.4	Supplier Commitment to ZF SR Process	<input type="checkbox"/>	
2.0	APQP Kick-Off Meeting Preparation		
2.1	Project Organization		
2.1.a	Defined cross-functional team (Engineering/Sales/Quality/Production/Logistics/Purchasing) including team member's responsibility	<input type="checkbox"/>	
2.1.b	Escalation Path is defined	<input type="checkbox"/>	
2.2	Part Introduction		
2.2.a	Design FMEA (initial, when applicable)	<input type="checkbox"/>	
2.2.b	Know-How about Part and Process prepared	<input type="checkbox"/>	
2.3	Machine and Process Capacity Planning		
2.3.a	Measurement & Testing Equipment Concept (initial)	<input type="checkbox"/>	
2.3.b	Manufacturing Equipment & Tooling Concept (initial)	<input type="checkbox"/>	
2.4	Identified items/actions from Technical Review (feasibility study/compliance matrix)		
2.4.a	Overview actions are already undertaken is prepared	<input type="checkbox"/>	

Supplier Readiness Checklist



2.4.b	Open tasks identified	<input type="checkbox"/>
2.5	Initial Project Schedule	
2.5.a	Initial Project and Milestone Planning prepared	<input type="checkbox"/>
2.6	Sub-Supplier Readiness (if applicable)	
2.6.a	detailed sub-supplier information <ul style="list-style-type: none"> • sub-supplier tree (sent to ZF before kick-off) • risk analysis sub-supplier/critical path • inclusion into the Initial Project and Milestone Planning • sub-supplier management process incl. reporting scheme to ZF is prepared 	<input type="checkbox"/>
2.7	Conditions for Process Release	
2.7.a	Necessary documentation defined	<input type="checkbox"/>
3.0	Regular Milestone Meetings	
3.1	Status Tracking	
3.1.a	common review of status within eAPQP (optional)	<input type="checkbox"/>
3.1.b	common review of project timing	<input type="checkbox"/>
3.1.c	remained problems check and resolve incl. topics from technical review and risk analysis	<input type="checkbox"/>
3.1.d	parts review	<input type="checkbox"/>
3.1.e	status of Sub-supplier Readiness	<input type="checkbox"/>
3.1.f	Factory visit plan and schedule defined	<input type="checkbox"/>
3.2	Change Management	
3.2.a	monitoring of the design change status until design freeze (fit/form/function/process)	<input type="checkbox"/>

Supplier Readiness Checklist



4.0	Project Closure and Process Release	
4.1	PPAP and process release	
4.2	Successful Run@Rate	<input type="checkbox"/>
4.3	Machine & Process capabilities	<input type="checkbox"/>
4.4	Sub-Supplier Readiness completed	<input type="checkbox"/>
4.5	List of remaining open items closed	<input type="checkbox"/>
4.6	Lessons Learned to be summarized	<input type="checkbox"/>
4.7	Final Project Meeting scheduled (optional)	<input type="checkbox"/>
4.8	Supplier Readiness project sign-off	<input type="checkbox"/>

ZF Friedrichshafen AG

88038 Friedrichshafen

Deutschland · Germany

Telefon/Phone +49 7541 77-0

Telefax/Fax +49 7541 77-908000

www.zf.com