



PPAP 4th Edition

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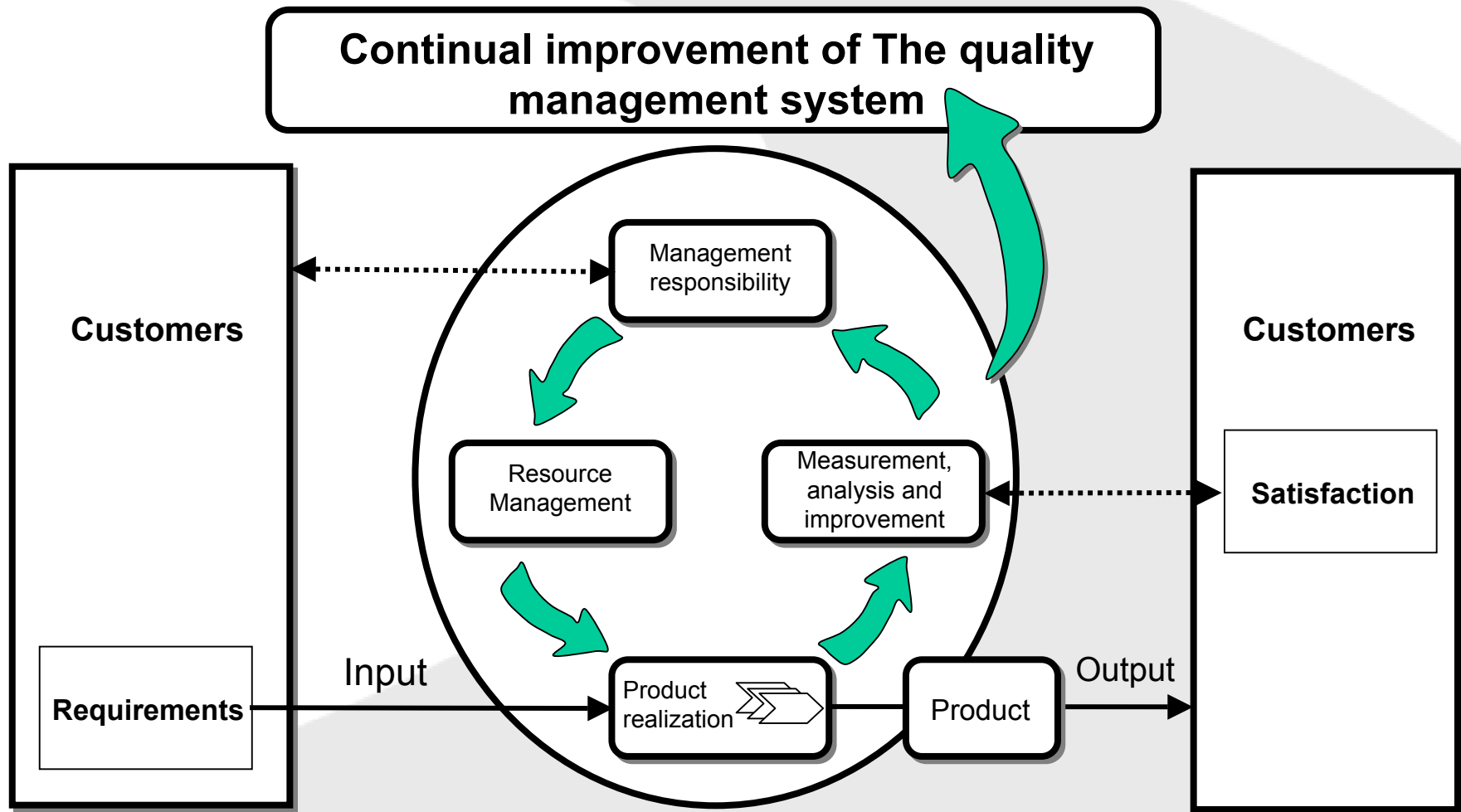
The Process Approach

**PPAP 4th Edition has been revised to
be consistent with the Process
Approach of ISO/TS 16949...**



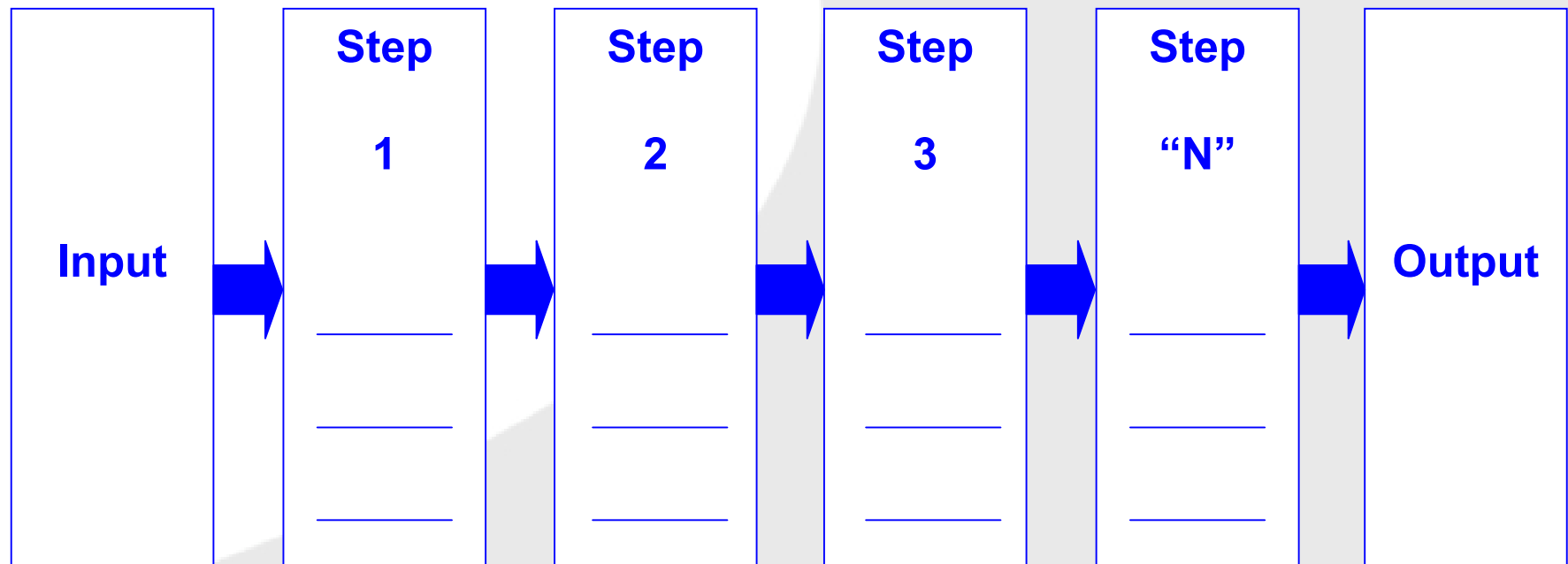
Process Model

ISO 9001:2000 Model of a Process-Based Quality Management System





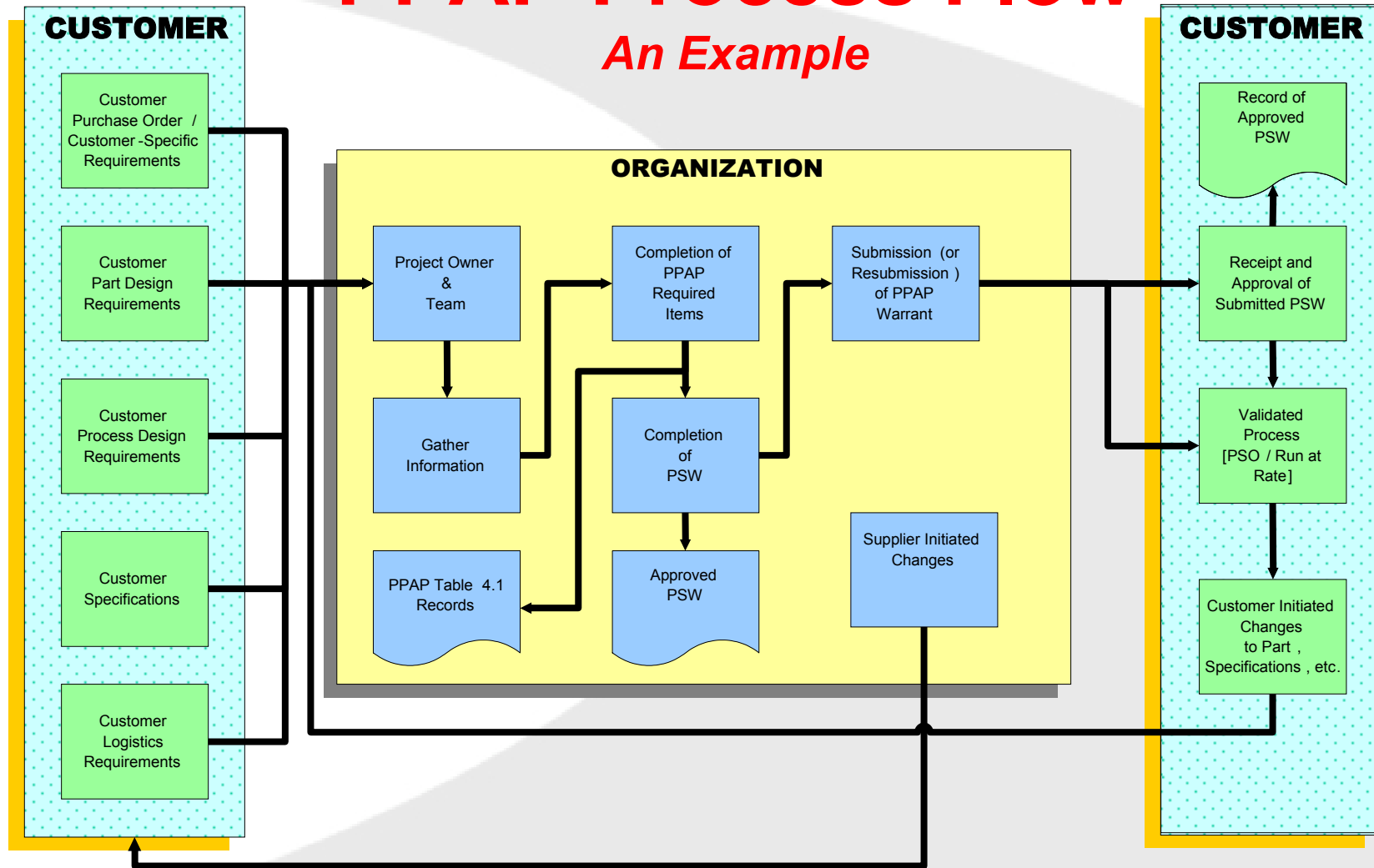
Process (Typical)





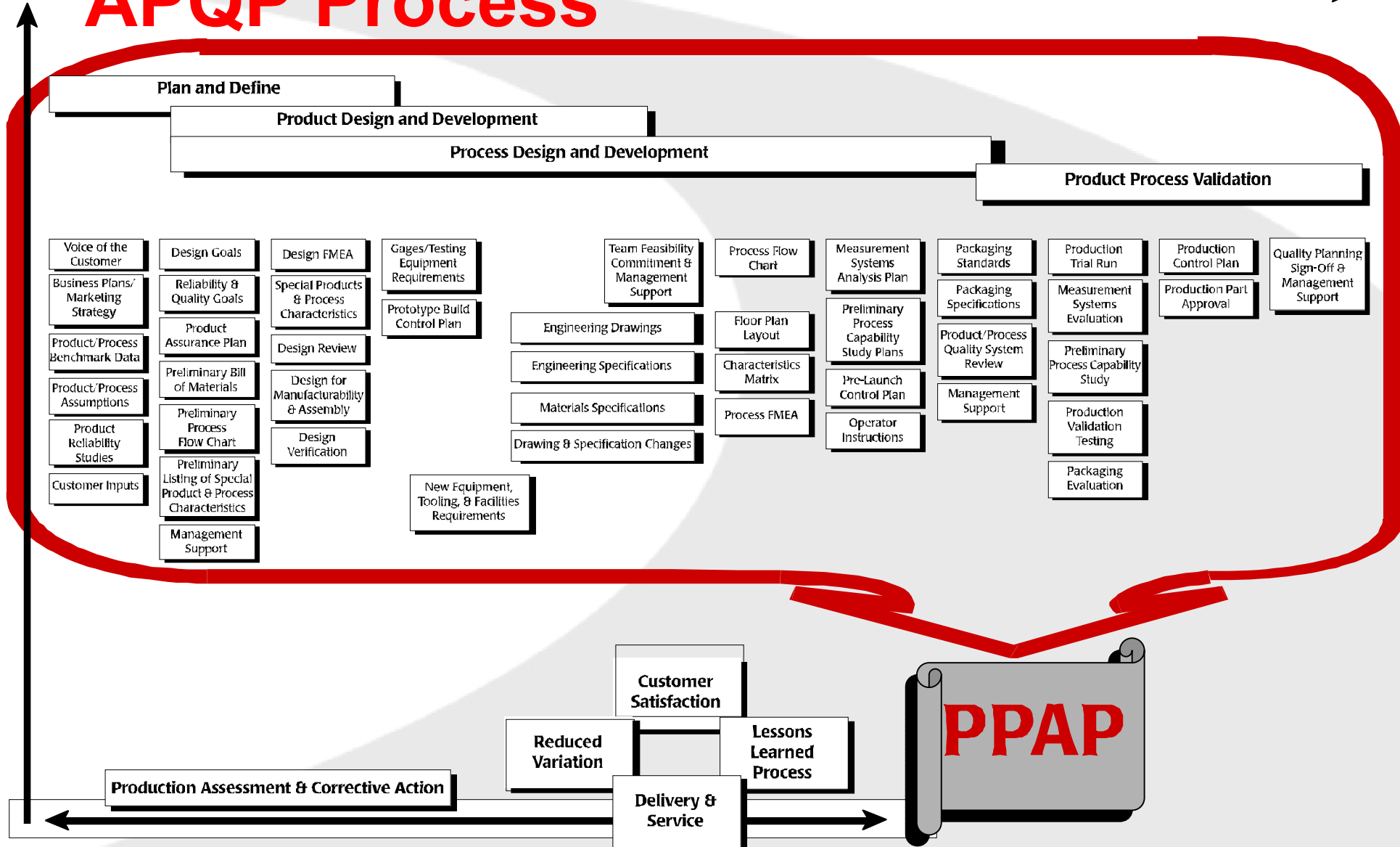
PPAP Process Flow

An Example





APQP Process





Critical Elements of the Process Approach

- ☐ **Process owner exists**
- ☐ **Process is defined**
- ☐ **Process is documented**
- ☐ **Linkages of process established**
- ☐ **Process monitored, analyzed and improved**
- ☐ **Records maintained**



PPAP's Purpose

PPAP's purpose continues to be to provide the evidence that all customer engineering design record and specification requirements are properly understood by the organization and that the process has the potential to produce product consistently meeting these requirements during an actual production run at the quoted production rate.



Applicability

PPAP shall apply to internal and external organization sites (see Glossary) of bulk materials, production materials, production or service parts.

For bulk materials, PPAP is not required unless specified by the authorized customer representative.*

****Ford Motor requires PPAP of Bulk Material Suppliers.***



Approach

The word “should” now indicates a recommendation

For purposes of PPAP, the terms and definitions given in ISO/TS 16949 and the PPAP Glossary apply



Effective Date

The PPAP Fourth Edition replaces the Third Edition effective...

June 1, 2006

unless otherwise specified by your customer.



Changes in the 4th Edition

The Fourth Edition of PPAP includes the following changes:

- **Identified issues in the application of PPAP**
- **Removal of QS-9000 references**
- **Necessary edits including typographical or grammatical corrections**



Changes in the 4th Edition

- **Alignment of PPAP to the ISO/TS 16949:2002 process approach, including:**
 - **Aligning the order of the PPAP requirements with the automotive product development and manufacturing process**
 - **Inclusion of an example process flow for PPAP**



Changes in the 4th Edition

- **Relocation of Customer Specific Instructions to the appropriate websites, (e.g. OEM portals, AIAG site @ www.aiag.org, and IAOB site @ www.iaob.org) to provide current requirements**



Changes in the 4th Edition

- **Update of Truck OEM requirements ... moved to Appendix H**



Changes in the 4th Edition

- Alignment of PPAP 4th Edition terminology to the ISO/TS 16949:2002 terminology...

PPAP 3rd

QS 9000

PPAP 4th

ISO/TS 16949:2002

Customer - - → **Customer** ← - - *Customer*

Supplier - - → **Tier 1** ← - - *Organization*

Subcontractor - - → **Tier 2+** ← - - *Supplier*



Changes in the 4th Edition

- Updated specific PPAP requirements, including:
 - Materials reporting and polymeric part identification requirements
 - Process capability index usage (C_{pk} and P_{pk})
 - The definition and approval of catalog parts and the definition of black box parts



Changes in the 4th Edition

- **Modified customer notification and submission requirements to align with OEM requirements (e.g., Section I.3.3 and Table I.3.3 from PPAP 3rd was removed)**
 - **This means no more “loopholes”...**



Changes in the 4th Edition

**Customer Notification is now required for
ALL proposed changes**



Changes in the 4th Edition

- **Clarified and commonized Appendices C, D, and E to match the PPAP reporting requirements**
 - Production Part Approval, Dimensional Results Form
 - Production Part Approval, Material Test Results Form
 - Production Part Approval, Performance Test Results Form
- Actual test data is required
 - *“Blanket statements of conformance are unacceptable for any test results”*



Changes in the 4th Edition

- Revised Tire Appendix to allow OEM specification of applicability and to eliminate duplications with allowances already provided in the PPAP requirements

Note: The Tire Appendix is not applicable to organizations supplying tires to Ford Motor Company.

Changes in the 4th Edition

- Reorganized and updated Appendix F to stress the importance of the Bulk Materials Checklist

Note: Ford Motor Company requires all organizations supplying bulk material to Ford Motor Company to comply with PPAP.



Changes in the 4th Edition

- **Revised Table Of Contents**

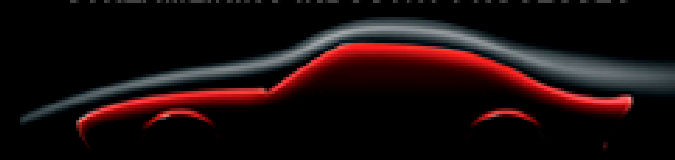


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- GLOSSARY



Changes in the 4th Edition

- **Reorder of PPAP Process Requirements (Section 2)**



PPAP Process Requirements

The organization shall also meet all customer-specific instructions

- 2.2.1 Design Record
- 2.2.2 Authorized Engineering Change documents
- 2.2.3 Customer Engineering Approval
- 2.2.4 Design Failure Mode and Effects Analysis (Design FMEA)
- 2.2.5 Process Flow Diagram(s)
- 2.2.6 Process Failure Mode and Effects Analysis (Process FMEA)
- 2.2.7 Control Plan
- 2.2.8 Measurement System Analysis Studies
- 2.2.9 Dimensional Results
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- 2.2.11 Initial Process Studies
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- 2.2.13 Appearance Approval Report (AAR)
- 2.2.14 Sample Production Parts
- 2.2.15 Master Sample
- 2.2.16 Checking Aids
- 2.2.17 Customer-Specific Requirements
- 2.2.18 Part Submission Warrant (PSW)



Changes in the 4th Edition

- **Revised Glossary to be consistent with the updates in the text**



Glossary

Aligned, Revised, and Simplified

- Deletions:
 - Agreement**
 - Critical Characteristic (both Ford and GM definitions)**
 - Customer Product Approval Activity**
 - Documentation**
 - Environment**
 - Full Approval**
 - Gage Repeatability & Reproducibility (Gage R&R)**
 - Initial Sample**
 - Interim Approval**



Glossary

Aligned, Revised, and Simplified

- Deletions (continued)
 - Key Characteristics (All four)**
 - MSA Studies**
 - Rejected**
 - Remote Location**
 - Repeatability and Reproducibility**
 - Safety Characteristics**
 - Self Certifying Supplier**
 - Subcontractor**
 - Tooling Maintenance**
 - Tooling Refurbishment**



Glossary

Aligned, Revised, and Simplified

- Revised:
 - Approved
 - Attribute Data
 - Customer
 - Initial Process Study
 - Part Submission Warrant
 - Process
 - Process Flow Diagram
 - Quality Indices
 - Saleable Product



Glossary

Aligned, Revised, and Simplified

- Revised (continued):
 - Significant Production Run**
 - Site**
 - Special Characteristics**
 - Specification**
 - Stable Process**
 - Suppliers**
 - Statistical Control**
 - Submission Level**
 - Variables Data**



Glossary

Aligned, Revised, and Simplified

- Added:
 - Authorized Customer Representative(s)**
 - Black Box**
 - Organization**
 - Production Rate**



PSW Revised and Reorganized

Part Name 1		Cust. Part Number 2a	
Shown on Drawing No. 3		Org. Part Number 2b	
Engineering Change Level 4		Dated _____	
Additional Engineering Changes 5		Dated _____	
Safety and/or Government Regulation <input type="checkbox"/> Yes 6 <input type="checkbox"/> No		Purchase Order No. 7 Weight (kg) 8	
Checking Aid No. 9		Checking Aid Engineering Change Level 10 Dated _____	
ORGANIZATION MANUFACTURING INFORMATION		CUSTOMER SUBMITTAL INFORMATION	
11		13	
Supplier Name & Supplier/Vendor Code 12		Customer Name/Division 14	
Street Address _____		Buyer/Buyer Code 15	
City _____	Region _____	Postal Code _____	Country _____
MATERIALS REPORTING		Application _____	
Has customer-required Substances of Concern information been reported? 16 <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> n/a			
Submitted by IMDS or other customer format: _____			
Are polymeric parts identified with appropriate ISO marking codes? 17 <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> n/a			
REASON FOR SUBMISSION (Check at least one) 18			
<input type="checkbox"/> Initial Submission		<input type="checkbox"/> Change to Optional Construction or Material	
<input type="checkbox"/> Engineering Change(s)		<input type="checkbox"/> Supplier or Material Source Change	
<input type="checkbox"/> Tooling: Transfer, Replacement, Refurbishment, or additional		<input type="checkbox"/> Change in Part Processing	
<input type="checkbox"/> Correction of Discrepancy		<input type="checkbox"/> Parts Produced at Additional Location	
<input type="checkbox"/> Tooling Inactive > than 1 year		<input type="checkbox"/> Other – please specify _____	
REQUESTED SUBMISSION LEVEL (Check one) 19			
<input type="checkbox"/> Level 1 – Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.			
<input type="checkbox"/> Level 2 – Warrant with product samples and limited supporting data submitted to customer.			
<input type="checkbox"/> Level 3 – Warrant with product samples and complete supporting data submitted to customer.			
<input type="checkbox"/> Level 4 – Warrant and other requirements as defined by customer.			
<input type="checkbox"/> Level 5 – Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.			
SUBMISSION RESULTS 20			
The results for <input type="checkbox"/> dimensional measurements <input type="checkbox"/> material and functional tests <input type="checkbox"/> appearance criteria <input type="checkbox"/> statistical process package			
These results meet all design record requirements: <input type="checkbox"/> Yes <input type="checkbox"/> NO (If "NO" – Explanation Required) 21			
Mold / Cavity / Production Process 22			
DECLARATION			
I affirm that the samples represented by this warrant are representative of our parts, which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of 23 24 hours.			
I also certify that documented evidence of such compliance is on file and available for review. I have noted any deviations from this declaration below.			
EXPLANATION/COMMENTS: 25			
Is each Customer Tool properly tagged and numbered? <input type="checkbox"/> Yes <input type="checkbox"/> No 26			
Organization Authorized Signature 27		Date _____	
Print Name _____		Phone No. _____ FAX No. _____	
Title _____		E-mail _____	
FOR CUSTOMER USE ONLY (IF APPLICABLE)			
PPAP Warrant Disposition: <input type="checkbox"/> Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Other _____			
Customer Signature _____		Date _____	
Print Name _____		Customer Tracking Number (optional) _____	

March
2006

CFG-1001

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Part Submission Warrant

- **Revised PSW (Part Submission Warrant) to:**
 - **Provide a more logical flow for the part information description fields...**



DAIMLERCHRYSLER



Part Submission Warrant

Part Name	<u>①</u>	Cust. Part Number	<u>②a</u>
Shown on Drawing Number	<u>③</u>	Orig. Part Number	<u>②b</u>
Engineering Change Level	<u>④</u>	Dated	<u> </u>
Additional Engineering Changes	<u>⑤</u>	Dated	<u> </u>
Safety and/or Government Regulation	<input type="checkbox"/> Yes <input type="checkbox"/> No	Purchase Order No.	<u> </u> Weight (kg) <u> </u>
Checking Aid Number	<u> </u>	Checking Aid Eng. Change Level	<u> </u> Dated <u> </u>

• PART INFORMATION

1. Part Name and 2a. Customer Part Number: Engineering released finished end item part name and number.
- 2b. Org, Part Number: Part number defined by the organization, if any.
3. Shown on Drawing Number: The design record that specifies the customer part number being submitted.
4. Engineering Change Level & Date: Show the change level and date of the design record.
5. Additional Engineering Changes & Date: List all authorized engineering changes not yet incorporated in the design record but which are incorporated in the part.



DAIMLERCHRYSLER



Part Submission Warrant

Part Name	_____	Cust. Part Number	_____
Shown on Drawing Number	_____	Orig. Part Number	_____
Engineering Change Level	_____	Dated	_____
Additional Engineering Changes	_____	Dated	_____
Safety and/or Government Regulation	<input type="checkbox"/> Yes ^⑥ <input type="checkbox"/> No	Purchase Order No.	^⑦ _____
		Weight (kg)	^⑧ _____
Checking Aid Number	^⑨ _____	Checking Aid Eng. Change Level	^⑩ _____
		Dated	_____

- **PART INFORMATION**

6. Safety and/or Government Regulation: “Yes” if so indicated by the design record, otherwise “No.”

7. Purchase Order Number: Enter this number as found on the contract/purchase order.

8. Weight: Enter the actual weight in kilograms to four decimal places unless otherwise specified by the customer.

9./10. Checking Aid Number, Change Level and Date: If requested by the customer, enter the checking aid number, its change level and date.



Part Submission Warrant

- **Revised PSW (Part Submission Warrant) to:**
 - **Make the supplier address fields applicable to international locations...**



ORGANIZATION MANUFACTURING INFORMATION

⑪

Organization Name & Supplier/Vendor Code

⑫

Street Address

City

Region

Postal Code

Country

CUSTOMER SUBMITTAL INFORMATION

⑬

Customer Name/Division

⑭

Buyer/Buyer Code

⑮

Application

- **ORGANIZATION MANUFACTURING INFORMATION**

11. Organization Name & Supplier/Vendor Code: Show the name and code assigned to the manufacturing site on the purchase order/contract.

12. Street Address, Region, Postal Code, Country: Show the complete address of the location where the product was manufactured. For "Region," enter state, county, province, etc.

- **CUSTOMER SUBMITTAL INFORMATION**

13. Customer Name/Division: Show the corporate name and division or operations group.

14. Buyer/Buyer Code: Enter the buyer's name and code.

15. Application: Enter the model year, vehicle name, engine, transmission, etc.



Part Submission Warrant

- **Revised PSW (Part Submission Warrant) to:**
 - Include IMDS materials reporting to indicate reporting status...
 - Polymeric parts identification requirements...



MATERIALS REPORTING

Has customer-required Substances of Concern information been reported? (16) ☐ Yes ☐ No ☐ n/a

Submitted by IMDS or other customer format:

Are polymeric parts identified with appropriate ISO marking codes? (17) ☐ Yes ☐ No ☐ n/a

- **MATERIALS REPORTING**

16. Substances of Concern: Enter “Yes,” “No,” or “n/a”.

IMDS/Other Customer Format: Circle either “IMDS” or “Other Customer Format” as appropriate.

If submitted via IMDS include: Module ID #, Version #, and Creation Date.

If submitted via other customer format, enter the date customer confirmation was received.

17. Polymeric Parts Identification: Enter “Yes,” “No,” or “n/a”.



Part Submission Warrant

- Reason For Submission...



REASON FOR SUBMISSION (Check at least one)

18

- | | |
|---|--|
| <input type="checkbox"/> Initial submission | <input type="checkbox"/> Change to Optional Construction or Material |
| <input type="checkbox"/> Engineering Change(s) | <input type="checkbox"/> Sub-Supplier or Material Source Change |
| <input type="checkbox"/> Tooling: Transfer, Replacement, Refurbishment, or additional | <input type="checkbox"/> Change in Part Processing |
| <input type="checkbox"/> Correction of Discrepancy | <input type="checkbox"/> Parts produced at Additional Location |
| <input type="checkbox"/> Tooling Inactive > than 1 year | <input type="checkbox"/> Other - please specify |

- **REASON FOR SUBMISSION**

18. Check the appropriate box(es). For bulk materials, in addition to checking the appropriate box, check “Other” and write “Bulk Material” in the space provided.



Part Submission Warrant

- **Submission Level...**



REQUESTED SUBMISSION LEVEL (Check one)

19

- ☐ Level 1 - Warrant only (and for designated appearance items, an Appearance Approval Report) submitted to customer.
- ☐ Level 2 - Warrant with product samples and limited supporting data submitted to customer.
- ☐ Level 3 - Warrant with product samples and complete supporting data submitted to customer.
- ☐ Level 4 - Warrant and other requirements as defined by customer.
- ☐ Level 5 - Warrant with product samples and complete supporting data reviewed at organization's manufacturing location.

- **SUBMISSION LEVEL**

19. SUBMISSION LEVEL: Identify the submission level requested by the customer.



Part Submission Warrant

- **Submission Results...**



SUBMISSION RESULTS (20)

The results for ☐ dimensional measurements ☐ material and functional tests ☐ appearance criteria ☐ statistical process package

These results meet all design record requirements: ☐ Yes ☐ NO (If "NO" - Explanation Required) (21)

Mold / Cavity / Production Process (22) _____

- **SUBMISSION RESULTS**

20. Check the appropriate boxes for dimensional, material tests, performance tests, appearance evaluation, and statistical data.

21. Check the appropriate box. If "no," enter the explanation in "comments" below.

22. Molds/Cavities/Production Processes: For instruction, see paragraph 2.2.18



Part Submission Warrant

- Declaration...



DECLARATION

I affirm that the samples represented by this warrant are representative of our parts, which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of 23 / 24 hours. I also certify that documented evidence of such compliance is on file and available for your review. I have noted any deviation from this declaration below.

EXPLANATION/COMMENTS: 25

Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☐ n/a

Organization Authorized Signature _____ Date _____

Print Name _____ Phone No. _____ Fax No. _____

Title _____ E-mail _____

- **DECLARATION**

23. Enter the number of pieces manufactured during the significant production run.

24. Enter the time (in hours) taken for the significant production run.

25. EXPLANATION/COMMENTS: Provide any explanatory comments on the Submission Results or any deviations from the Declaration. Attach additional information as appropriate.



DECLARATION

I affirm that the samples represented by this warrant are representative of our parts, which were made by a process that meets all Production Part Approval Process Manual 4th Edition Requirements. I further affirm that these samples were produced at the production rate of ____/____ hours. I also certify that documented evidence of such compliance is on file and available for your review. I have noted any deviation from this declaration below.

EXPLANATION/COMMENTS: _____

Is each Customer Tool properly tagged and numbered? ☐ Yes ☐ No ☐ n/a (26)

Organization Authorized Signature (27) _____ Date _____

Print Name _____ Phone No. _____ Fax No. _____

Title _____ E-mail _____

- **DECLARATION**
26 CUSTOMER TOOL TAGGING/NUMBERING: Are customer-owned tools identified in accord with ISO/TS 16949 and any customer-specific requirements, answer “Yes” or “No.” May not be applicable to OEM internal suppliers.
27 ORGANIZATION AUTHORIZED SIGNATURE: A responsible organization official, after verifying that the results show conformance to all customer requirements and that all required documentation is available, shall approve the declaration and provide Title, Phone Number, Fax Number, and E-mail address.



FOR CUSTOMER USE ONLY (IF APPLICABLE)

PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other _____

Customer Signature _____ Date _____

Print Name _____ Customer Tracking Number (optional) _____

- **FOR CUSTOMER USE ONLY (Leave blank)**



Changes in the 4th Edition - Bottom Line

- Sustained improvement at the OEM manufacturing and assembly centers...
 - *Warranty reduction*
 - *Elimination of supplier disruptions*
 - *Significant improvement in delivered part quality*
 - *Continual quality system improvement*