

PRODUCTION PART APPROVAL PROCESS (PPAP) – Section 2

PRODUCTION SUBMISSION REQUIREMENTS (PPAP)

- Refer to the AIAG’s *Production Part Approval Process (PPAP) manual*, (latest edition).
- The default submission level for suppliers to Powers & Sons is Level 3 for all initial submissions, and a Level 4 for all other submissions.
- The requested PPAP level, PPAP required timing, and required PPAP submission categories, will be identified via email or via the Powers and Sons electronic PPAP system.
- PPAP documentation and samples are to be submitted to Powers & Sons’ Purchasing Department.
- If requested by Powers and Sons LLC Purchasing department – submit PPAP’s through Electronic System – Refer to instructions within this section
- All applicable notes, test requirements, and specifications must be cascaded to sub-suppliers.

RESUBMISSION

- If changes are made to pertinent PPAP documentation, or if the tooling has been inactive for 12 months or more, a new PPAP must be submitted for P&S approval (see APQP Section of the Supplier Information Manual and AIAG *PPAP Manual* for guidance.)

SIGNIFICANT PRODUCTION RUN

- For production parts, product for PPAP shall be taken from a significant production run with production tools and equipment, production operators and at production rates.
- This should be from one to eight hours of production and amount to a minimum of 300 (or more) consecutive parts, unless otherwise specified by P&S.

SHIPPING REQUIREMENTS

- Ship samples and documents in a separate shipping package. Do not ship Engineering or layout samples in the 300-piece container of parts.
- Mark packing slip as “PPAP Sample Submission Parts”
- Send submission to the attention of the Powers & Sons Purchasing Department.
- The 300-piece production run of parts is to be held at the supplier location until authorized to be shipped to Powers & Sons by Powers & Sons.
- The 300 pieces shall be clearly marked with Powers & Sons Blue PPAP Alert Form

PPAP REQUIREMENTS:

PPAP Binder

- There are eighteen required sections for PPAP submission, which mirror the eighteen sections required by the AIAG PPAP manual, (latest edition).
- A binder shall be sent in that is in order to reflect the required sections. This makes it very easy to find information for both the supplier as well as Powers and Sons.
- An E file can also be submitted – pre-approved at APQP.

Table of Contents

- Include a Table of Contents that matches the documentation below.
- Any section that does not require documentation must be explained by one of the following two methods:
- May be explained on the Table of Contents page. Example: if not design responsible, simply put Not Applicable in Item 4 of the Table of Contents page.
- Insert a page that indicates the section is Not Applicable under the tab for that section

1. Blueprint (Design Record)

- The blueprint shall be the one supplied and approved by Powers & Sons OR
- Supplier blueprint shall be approved for use (signed and dated) by Powers & Sons Engineering.
- Each and every feature must be “ballooned” or “road mapped” to correspond with the inspection results (including all print notes, and specifications, and anything else relevant to the design of the part)," if not using the DCP numbers already provided on the print for this purpose.

2. Engineering Change Documents (if any)

- Any authorized engineering change document not yet incorporated in the design record, but incorporated into the part. (i.e., SREA’s, Engineering Alerts, Approved Deviations, Approved Permanent Change Request, memo’s, letters, etc.)
- Must include copy of Purchase Order

3. P&S Design Engineering Approval

- When specified on the B/P.
- Powers & Sons Engineering shall evaluate PPAP parts if required

4. Design D-FMEA (If Product-Design Responsible)

- Shall track entire process from receipt of raw material through to finish product shipped

5. Process Flow Diagrams

- Shall track entire process from receipt of raw material through to finish product shipped.
- Must include all outside processes

6. Process P-FMEA

- Shall follow the process flow (Process or Flow Diagram number)
- Reference AIAG *Failure Mode and Effects Analysis Manual*, (latest edition).

7. Control Plan(s)

- All pass-through characteristics on the blueprint, shall be addressed.
- All significant characteristics (see section 1 of the SIM) shall be labeled.
- Shall follow the process flow.
- Shall follow AIAG format (see *AIAG PPAP Manual*).
- Shall utilize the DCP numbers applied to the P&S blueprints.

- Shall include ES test frequencies and testing.
- Include Annual Layout documentation
- Shall indicate checking 3 pcs initially - at start up or set-up.
- Alternatively, shall check 1 pc initially, followed by periodic SPC checks

8. Measurement System Analysis Studies (MSA), (latest edition).

- An MSA Study is required for every gage listed in the Control Plan.
- Checking aids are considered to be gages

Variable Gage R&Rs

- Required: 10 parts, 3 operators, 3 repetitions.
- Required: Percent GR&R
- Required: The GR&R shall be 10% or less.
- Required: ndc of 5 or greater (may require ANOVA method)

Attribute Gage R&Rs

- Use 50 parts, 3 operators, 3 repetitions.
- The distribution of the parts should be as follows: 10% (5 parts) should be utilized in the GRR study both above as well as below the upper and lower spec limit.
- The gage must reject all parts that are outside the specification limits.

9. Dimensional Results

- A Layout form is included in the SIM, which documents all P&S requirements.
- Six (6) parts are required to be evaluated or agreed upon quantity of part(s).
- The Supplier's form can be used as long as all of the P&S requirements are included.
- All dimensions, notes, and specifications must be addressed per the drawing. These items must be identified with their associated DCP numbers on the drawing, or the "ballooned" or "road mapped" numbers assigned by the supplier to correspond with the inspection results.
- Need to supply layout to support each unique manufacturing process – including machines, materials, molds, cavities – all dimensions and notes.
- The blueprint revision date/level must be denoted on the Layout Form.
- Clearly highlight or circle all out-of-specification dimensions.
- The "Accept-Reject" results for each item must be clearly indicated.
- The Layout Report must be identified by name of person responsible for report and dated.

**10. Certifications - **Material
Heat Treat
Plating****

- Certifications must be submitted for all Suppliers/Sub-Suppliers.
- The Supplier/Sub-Supplier is responsible to review and approve all certifications against the specification /drawing.
 - Certification must have the specification number denoted on the cert
 - Supplier must denote the spec number on the cert if not present.
 - Certification must be signed (not initialed) and dated
 - Signature indicates approval
 - Electronic signatures are acceptable if it is designated as electronic
 - Supplier or Sub-Supplier signature is acceptable
- Supplier/Sub-Supplier (whoever approved the certification) will ensure all other requirements documented on the blueprint are documented on the material certification.

Performance Test Results

- Performance/Durability/Physical test results if applicable, must comply with the latest specification and revision level, which must be recorded on the report. (Reference Supplier Information Manual: CQI / Pass Through Requirements Section)
- Test results must then be signed off (not initialed) by the Supplier's Representative to indicate compliance of the results with that requirement.

11. Initial Process Capability Studies

- All studies shall be placed in this section per APQP. For instructions on how to determine capability, number of pieces, variable/ attribute, please reference Section 4 of the Supplier Information Manual.

12. Qualified Laboratory Documentation

- If you have an ISO/IATF 16949 laboratory accreditation certificate signifying that an independent auditor has verified this requirement please submit the certificate.
- Supplier shall provide a copy of the qualified laboratory scope and documentation showing that the laboratory, including gage lab and engineering test lab, is qualified for the type of measurements or tests conducted.

13. Appearance Approval Report (AAR), if applicable

- For parts with color, grain or surface requirements by the customer.
- Not applicable for Powers & Sons parts unless specifically indicated.

14. Sample Product

- Document the number of samples submitted with the PPAP paperwork
- 6 samples, or agreed upon quantity of part(s).
- Exception: one piece per die cavity / impression or production process.
- Each piece shall be clearly identified and numbered.
- Document the number of parts produced for the PPAP run

15. Master Sample

- Retain Master Sample(s). Either denote this on the Table of Contents page or insert a page into this section, signifying compliance.

16. Checking Aids

- Any Checking Aid used must be documented in the Control Plan.

17. Customer-Specific Requirements

- Suppliers are responsible to cascade and communicate all quality requirements throughout the sub-tier supply chain.
- Suppliers must submit the cover page only to the latest CQI assessment of your facility / sub-supplier(s) within the last 12 months. The CQI assessments listed below must be submitted. This would include the company name, date assessment completed, and score obtained.
- CQI 9, (latest edition).
- CQI 11, (latest edition).
- CQI 12, (latest edition).
- CQI 15, (latest edition).
- CQI 23, (latest edition).
- CQI 27, (latest edition).
- CQI 30, (latest edition).
- Tooling and Gages are to be identified including pictures per Customer Requirements and noted on the Warrant.
- Submit the SDS of any substance not specified on blueprints but have been applied to Powers & Sons parts (lube oil for threads, rust preventative, etc.).
- Packaging Data Sheet, approved by Powers and Sons Production Control Department.
 - Reference Production Control Requirements Section of the Supplier Information Manual to hyperlink the Packaging Data Sheet
- Capacity study required per APQP, will be dependent on the customer and what form is needed from the 300-piece significant production run.
- Along with the Capacity Form, the USMCA Certificate of Origin is required with initial submission and annually thereafter. This form can be found in “Forms Section”, of the Supplier Information Manual. Exceptions would be for Outside Processors, Coaters, Heat Treaters, etc.
- Bar code label form is to be filled out (ref. Production Control Requirements Section for examples)
- **Submit the approved IMDS & list IMDS number of PSW.**

18a. Part Submission Warrant (PSW)

The latest AIAG Warrant form is preferred. See the included example — available on the P&S Web Site for downloading. Your own warrant must include all information per the AIAG requirements

- Document the reason for submission (if other than initial submission) beside EXPLANATION/COMMENTS
- Part Weight (Mass) must be in kilograms (Kg) to four decimal places (0.0000) unless otherwise specified by the customer.
- To determine the part weight for small parts, individually weigh 10 randomly selected parts and report the average weight. At least one part shall be weighed from each cavity, tool, line or process used.
- All sections of the Warrant must be filled out or indicated as non-applicable (N/A).
- Material Data Information - Indicate the IMDS (International Material Data System) number on the PSW form.

18b. Part Submission Warrant (PSW) - Sub-Suppliers

- An approved warrant must be submitted for each sub-supplier (paint, heat treat, etc.).

DISPOSITION OF PPAP SUBMISSION

The supplier will be notified of the disposition of a PPAP submission as soon as it is processed.

If approved, the Part Submission Warrant (PSW) will be signed by a Powers & Sons Representative and sent or e-mailed to the Supplier.

For an Interim Approval, the PSW will be signed by either the Powers & Sons Quality or Engineering Departments. In the Comments Section of the PSW, the conditions for the interim approval will be stated. The supplier's response should be the submission of corrective actions, and updating (or resubmission) of the PPAP to correct the condition(s) indicated.

**INSTRUCTION FOR SUBMITTING ELECTRONIC PPAP
THROUGH SUPPLIER PPAP WEB SYSTEM**

Purchasing will help supplier submit first PPAP. DO NOT SUBMIT AN ELECTRONIC PPAP THROUGH THIS SYSTEM WITHOUT AGREEMENT FROM PURCHASING DEPARTMENT.

There are 26 distinct electronic PPAP categories, and each category must be addressed for each PPAP submitted with either an uploaded document or the N/A box checked. Therefore, your submitted PPAP documents must be separated to match the 26 categories.

Due to the possibility of a lengthy wait and connection time if uploading up to the maximum of 26 documents at the same time, Powers and Sons has segregated the categories into their corresponding departments (*see table below*), and the process is completed in 4 separate uploads – one for each department. After the documents have been successfully uploaded for one department, you will be returned to the parts list where you have the choice of selecting the same part number again to continue immediately with the next department, or close the program and return later to continue.

Upload 1

Purchasing

Warrant/Sub-Supplier
Warrants
Sample Product
Master Sample
CQI Submissions
SDS / IMDS
Lab Scope
3rd Party Cert

Upload 2

Production Control

Capacity – USMCA Forms
Packaging Data Sheet
Bar Code Label

Upload 3

Engineering

Blueprint
Performance Tests
Eng Change Document – PO
P&S Design Eng Approval
Design D-FMEA
Process Flow Diagrams
Process P-FMEA
Control Plans
Dim Results – Supplier
Appearance Approval Report
Checking Aids
Cust Tool & Gage Marked Pics

Upload 4

Quality Assurance

Measurement Sys Analysis – GRR
Certifications – Material
Heat Treat (HT)
Plating
Capability Studies - Cpk Ppk

Only one (1) document can be uploaded for each category, but that document may contain multiple pages or tabs. For instance, if you have 3 pictures to upload for one category, scan them into one 3-page PDF document and upload the PDF. If you have multiple spreadsheets to upload for a category, copy them into one spreadsheet as separate tabs and upload the combined spreadsheet file.

Various document types are acceptable to upload (*i.e. PDF, Word, Excel, and most picture formats*), and you may use any combination of them. For engineering drawing files, the best method would be to convert to PDF and upload the PDF, as Powers and Sons may not have the native drawing software available to open it with.

Documents that are not acceptable to upload are various types of executable files (*i.e. exe, xls, msi, bat, etc.*), and they will be blocked. Zipped files are also not accepted, as the contents of a zipped file are unknown.

Finally, the file name cannot exceed 99 characters (*file.pdf = 8 chars*), and the full path name cannot exceed 256 characters (*C:\Users\George\Documents\file.pdf = 34 chars*).

Begin by going to Powers and Sons LLC Supplier Web Page - <http://supplier.powersandsonslc.com>

- Select PPAP Login Page and log into the system
- Select Parts List
- The requested PPAP level, PPAP required timing, and required PPAP submission categories, will be identified in the Supplier Parts List.



Powers and Sons, LLC

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PPAP Submission Parts List

Last Update:
05/27/2017
16:00:02

Supplier: PIONEER FORGE DIV POWERS & SONS, LLC

Home	PART NO	SUPPLIER PART# *BOSS	DESCRIPTION	REV	PPAP REQ'D	DUE DATE	DEPTS SUBMITTED	LAST SUBMIT	LAST APPROVED	QTY ONHAND	LAST RECEIPT	NEXT RECEIPT	COMMENTS
Parts List	26072012	PS551	TESLA TRE MODEL S FORGING - COATED	B	A	02/08/2016	0 / 4	04/24/2015	07/07/2015	0	02/08/2016	0	Due Next Run
Contact US	22002001	PS430	PH96 3590 AC RAW FORGING	Z	A	05/19/2016	0 / 4	01/24/2014	02/11/2014	0	05/19/2016	10/02/2017	Due at next receipt
Edit Email / Password	26088002		TRE FORGING E-COATED RARE PARTS	A	A	05/25/2016	0 / 4	08/18/2015	07/29/2016	467	05/25/2016	06/02/2017	Due at next receipt
Log Out	34037001		DL FORG - 30MM BALL - OUTER - YETI JK EXTREME	C	A	08/24/2016	0 / 4	0	0	11	08/24/2016	0	Not due until next Annual
	02021661		1665022C1 RAW FORGING	C	A	01/19/2017	0 / 4	01/19/2016	01/29/2016	0	01/07/2016	05/30/2017	Due at next shipment
	26033002	PS527	TRE PNTFORG GENII 2003 D186/	I	A	03/07/2017	0 / 4	03/07/2016	04/12/2016	4502	09/26/2016	06/19/2017	Due next run



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PPAP Submission Options

Supplier:
Part - Rev:

Choose one of the options below...

NOTE: An Annual submission cannot include any Process/Material changes.
To submit changes, submit as a Process/Material Change and it will also satisfy your annual requirements.

[Submit Annual PPAP Documents](#)

[Submit Process/Material Change PPAP Documents](#)

[Return to Parts List](#)



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PPAP Submission File Upload

Supplier: 00451343 - PIONEER FORGE DIV POWERS & SONS, LLC
Part - Rev: 24026051 - I
AC34 3590 BA RAW FORG.

Purchasing
Production Control
Engineering
Quality Assurance

[Upload All Documents for Purchasing](#)

For each PPAP category below, check the 'Not Applicable' box -OR- select a file to upload with the 'Browse' or 'Choose File' button.

* Only one file per category can be uploaded.

* A file name cannot be longer than 99 characters (spaces and file extension included)

* You may change a file selection with the browse button, or override it by checking the N/A box before it is uploaded.

You must upload all 4 departments to complete your PPAP submission, even if there are no files for that department.

N/A

~ Sub-Supplier Warrants ~

[Browse...](#)

N/A

~ Sample Product ~

[Browse...](#)

N/A

~ Master Sample ~

[Browse...](#)

Part Submission Warrant

Part Name _____ Cust. Part Number _____	
Shown on Drawing Number _____ Organization Part Number _____	
Engineering Change Level _____	Date _____
Additional Engineering Changes _____ Date _____	
Safety and/or Government Regulation <input type="checkbox"/> Yes <input type="checkbox"/> No	Purchase Order No. _____ Weight (kg) _____
Checking Aid Number _____	Checking Aid Change Level _____ Dated _____
ORGANIZATION MANUFACTURING INFORMATION	CUSTOMER SUBMITTAL INFORMATION
Organization Code _____	Customer Name / Division _____
Supplier Name _____	Buyer/Buyer Code _____
Street Address _____	Application _____
City _____ State _____ Zip _____ Country _____	
MATERIALS REPORTING	
Has customer-required Substances of Concern information been reported? <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? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> n/a	
REASON FOR SUBMISSION (check at least one)	
<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 _____
REQUESTED SUBMISSION LEVEL (Check one)	
<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 of customer submitted to customer	
<input type="checkbox"/> Level 5 - Warrant with product samples and complete supporting data reviewed at supplier's manufacturing location.	
SUBMISSION RESULTS	
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 drawing and specification requirements: <input type="checkbox"/> YES <input type="checkbox"/> NO (If "NO" - Explanation Required)	
Mold / Cavity / Production Process _____	
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 at the production rate of _____ / _____ 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: _____	
Is each Customer Tool properly tagged and numbered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> n/a	
Organization Authorized Signature _____	Date _____
Print Name _____	Phone No. _____ Fax No. _____
Title _____	Email _____
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 No. (optional) _____

EXAMPLE ONLY - DO NOT USE

The checklist shown below is used within the Powers and Sons organization. When the supplier's PPAP arrives, it is logged in and passed along to the appropriate departments for their review and concurrence.

Please note that the numbering system to the checklist is similar to your PPAP table of contents.

PPAP Approval Form						
Supplier _____			QA Mgr Approval & Date _____			
P/N _____			SQD Mgr Approval & Date _____			
PPAP Reason	Issues	N/A	Initials	Date App.		
18/14	Warrant/Sub-Supplier Warrants	Pur				
14/15	Sample Product/Master Sample	Pur				
17	CQI-9 CQI-11 CQI-12 CQI-15 CQI-23 CQI-27 CQI-30	Pur				
17	SDS / IMDS	Pur				
12	Lab Scope/3rd Party Cert	Pur				
17	Packaging Data Sheet, Capacity Worksheet, Bar Code Label	Prod Cntrl				
17	USMCA Documentation	Prod Cntrl				
1	Blueprint	Proj Eng				
2	Engineering Change Documents SREA / FR	Proj Eng				
2	CR Required?	Proj Eng	No _____ CR #	Yes		
2	Cust PPAP Approval required?	Proj Eng	No _____	Yes		
3	P&S Design Engineering Approval	Proj Eng				
4*	Design D-FMEA	Proj Eng				
5*	Process Flow Diagrams	Proj Eng				
6*	Process P-FMEA	Proj Eng				
7	Control Plans	Proj Eng				
9a	Dim Results - Supplier	Proj Eng				
9b	Dim Results - P&S L/O Required	Proj Eng				
13	Appearance Approval Report	Proj Eng				
16	Checking Aids	Proj Eng				
17e	Cust. Tooling/Gages Properly Marked	Proj Eng				
8	Measurement System Analysis (GRR)	SQD				
9a	Dim Results - Internal	SQD				
10	Certifications - Material, Heat Treat, Plating, etc.	SQD				
10	Performance Tests	SQD				
11	Capability Studies (Cpk/Ppk)	SQD				

EXAMPLE ONLY - DO NOT USE

MATERIAL CERT EXAMPLE



Gerdaul Special Steel North America
5591 Morrill Rd
Jackson, MI 49201 USA
Monroe Mill: 3000 East Front Street
Monroe, MI 48161 USA

Certified Material Test Report

Lorita Romero 10/4/2022

Certified Material Test Report			
Customer Order Number	Customer Part Number	Customer Part Description	Date
590081	PS-665R		9/18/2022
Lot Number	Heat Number	Heat Code	
7900553804	79005538	79005538	

Report To
PIONEER FORGE
PO BOX 598
INDUSTRIAL AVENUE
PIONEER, OH 43554

Ship To
PIONEER FORGE
101 INDUSTRIAL AVENUE
PIONEER, OH 43554
USA

ORDERED

Grade	Size	Size U of M	Length	Length U of M
1541	1.62500	IN	20 ' 03 03 / 04 "	IN

Customer Specifications
MS.90028<S> REV D (1/15/21) EXCLD SEC 9.3; SAE J403(6/14)

CHEMISTRY CERT

C	Mn	P	S	Si	Ni	Cr	Mo
0.39	1.40	0.009	0.028	0.23	0.07	0.19	0.03
Cu	Al	V	Nb	DL_1_1E24			
0.16	0.006	0.039	0.001	2.62			

GRAIN SIZE

100% OF GRAINS MEET SPECIFICATION

ASTM E112 FINE GRAIN 5-8

MICROCLEANLINESS JK

AVERAGE	A		B		C		D	
	T	H	T	H	T	H	T	H
	1.8	0.5	1.4	0.0	0.5	0.1	1.0	0.5

MACROSTRUCTURAL FMB

	PLATE 1			PLATE 2 = NONE
	S	R	C	
FRONT	1	1	1	
MIDDLE	1	1	1	
BACK	1	1	1	

DECARB

F1_DECARB TOTAL IN = 0.014

REDUCTION RATIO

Page 1 of 3

We certify that these data are correct and in compliance with specified requirements. If there are any issues or concerns please contact Pat Doyle at pat.doyle@gerdau.com or (734) 384-6605

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Patrick J. Doyle

DOYLE, PATRICK

METALLURGY MANAGER GSN

Continued on next page.