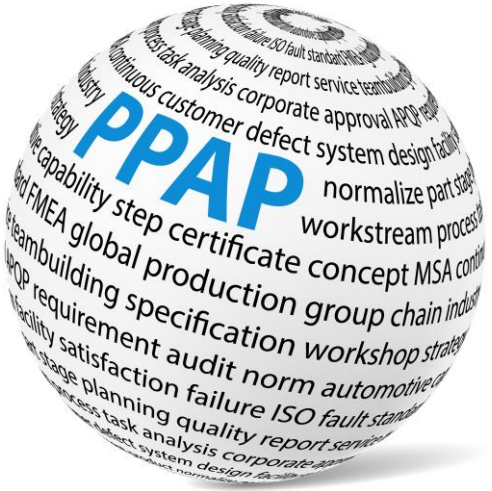
YOUR MISSION.
OUR HONOR

OSHKOSH DEFENSE SUPPLIER SYMPOSIUM 2023 PPAP

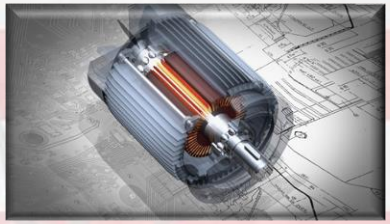
04/04/2023

Learning Outline

- Intro
- What is purpose of PPAP & when is it used?
- PPAP Benefits & things we've found using PPAP
- Oshkosh Expectations
- PPAP Elements
- Resources Available
- Questions at the end
- Breaks



What is the purpose of PPAP?



PPAP is Production Part Approval Process

- ***USED*** by Automotive industry
- ***VALIDATION*** of production parts to design specs
- ***CUSTOMER CONFIDENCE*** in production processes
- ***REQUIRED*** contractually for Defense programs

When is PPAP used?

PPAP is required for:

- New part/initial production
- Supplier change
- Revision change
- Manufacturing location change
- Interruption in receipts
- Reliance Change Management

PPAP Benefits & Oshkosh Discoveries

Benefits of PPAP:

- Quality considerations at start of production
- Useful tool for troubleshooting issues
- Validate part to design

Measurements

- CC feature stated all (3) measurements as “ok”
  - *ALL* were out of specification

Electrical

- Harness w/ CC feature was found to be out of specification
  - PPAP Master photo showed heat shrink tubing didn’t extend under the back-shell clamp (as required)

Plating

- Multiple instances where tin- plated copper was the requirement and suppliers used a tin-plated brass.

Steel

- 14% minimum requirement for Elongation – not met
  - Incorrectly tested transversely instead of longitudinally
- Incorrect steel grade used

Oshkosh Expectations

- Part Issues are not repeated in future submissions
  - Contact your Oshkosh Quality Engineer with questions *PRIOR* to PPAP due date
- Suppliers shall manage completion & submittal of PPAP's
  - L3 PPAPs are due (at a minimum) 7 calendar days prior to the PO *due date*
  - Submit through Oshkosh Reliance system

- Reliance Change Requests to be submitted at PO issuance
  - *NOT* to be submitted on PPAP due date
- Submission are complete *AND* correct
  - Use QC-112 to confirm

Example of PPAP Workbook

[Supplier Quality Core Tools | Oshkosh Corporation Supplier Network]

OSHKOSH | Core values | Supplier diversity | Supplier resources | Supplier sign in | Becoming a Supplier

Supplier Quality Core Tools

Forms, procedures, and trainings to enhance supplier performance

FORMS

PPAP Workbook

FMTV A2 E003 CFAT Plan

FMTV A2 E003 CFAT Report

JLTV CFAT PCN

JLTV E002 CFAT Plan

JLTV E003 CFAT Report

Click on: PPAP Workbook

Oshkosh PPAP Level Definitions

Level 1 PPAP:
- Part Submission Warrant (PSW) - One page document that "warrants" the part meets the design requirements

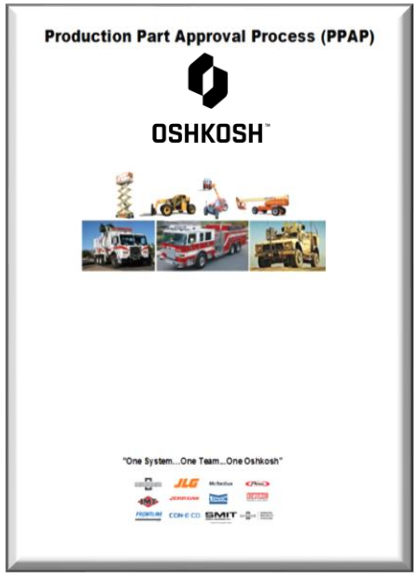
Level 2 PPAP: Includes Level 1 PPAP requirements PLUS…
- Part Submission Warrant
- Dimensional Results – 1 piece
- Design Records (Bubble Print)
- PPAP Samples – First production order / upon request prior to production order
- Print Notes (Attach copy of Raw Material Certification/Performance Test Report/Surface Finish/Labeling, Paint Process, Welding)
- Supplier Change Request (OSK-F1000) – if applicable

Level 3 PPAP: Includes Level 2 PPAP requirements PLUS…
- Dimensional Results – 3 pieces
- Process Flow Diagrams (PFD)
- Failure Mode and Effects Analysis' (PFMEA / DFMEA)
- Process Control Plans
- Initial Process Capability Studies – if applicable
- Measurement System Analysis – if applicable
- Appearance Approval Reports (AAR) – if applicable
- Checking Aids – if applicable
- Records of Compliance with Customer Specific Requirements
- Master Sample Photo Documentation of PPAP parts
- Tooling Photo Documentation – if applicable
- ***Supplier Quality Engineer Approves***

Manufactured Subcomponent L2 PPAP

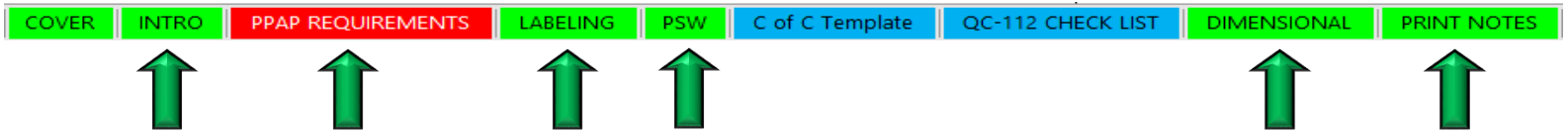
Long Term Benefit

Level 4 PPAP
- Part Submission Warrant (PSW)
- Dimensional Results – 1 piece
- Design Records (Bubble Print)
- PPAP Samples



Oshkosh Corporation PPAP

PPAP Workbook – Level 2 Requirements



- **INTRO:** Type in Part / Supplier Information, this information transfers throughout the workbook.
- **PPAP REQUIREMENTS:** Outlines the PPAP submission requirements. (Informational only)
- **LABELING:** Label used to Identify the PPAP sample part when shipped to OSK
- **PSW:** Documents/warrants that the Part Meets the design Intent; PPAP disposition communicates by way of Reliance

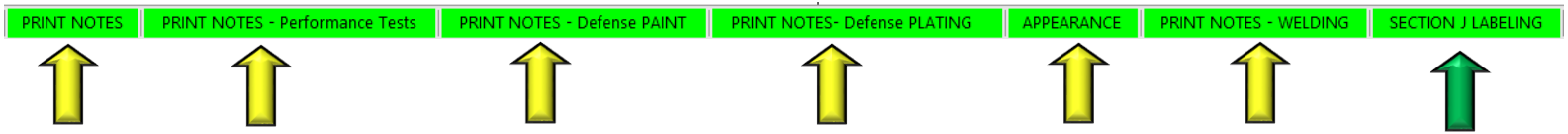
NOTE: If supplier is on Oshkosh Reliance NO signed PSW will be provided. Reliance software will show status of PPAP, (i.e. approved, rejection, interim approved, approve with an SCR). Supplier will also receive email when a PPAP is rejected or interim approved along with rejection codes, new due date and comments.

- **DIMENSIONAL:** This is used in conjunction with a “bubble print” to document the actual dimensions of the PPAP part.
- **PRINT NOTES:** This is used to document all the remaining notes on print (Attach copy of Raw Material Certification / Performance Test Report / Surface Finish / Labeling, Paint Process, Welding)
- ***Additional Requirements where applicable: Next Page***

Required Always

Required where applicable

PPAP Workbook – Level 2 Requirements – Cont.

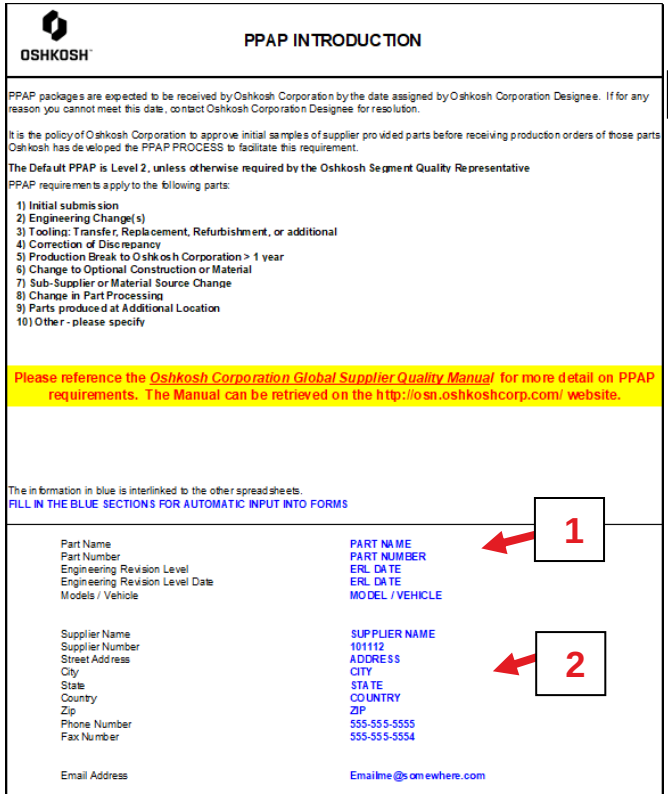


- ***PRINT NOTES – Performance Tests:*** This is optional depending if there are Print Notes specifying performance requirements.
- ***PRINT NOTES – Defense PAINT:*** This is optional depending if there are Print Notes specifying paint requirements for Defense Product.
- ***PRINT NOTES – Defense PLATING:*** This is optional depending if there are Print Notes specifying coating requirements.
- ***PRINT NOTES – APPEARANCE:*** This is optional depending if there are Print Notes specifying paint requirements for non-Defense Product.
- ***PRINT NOTES – WELDING:*** This is optional depending if there are Print Notes / Welding requirements specified.
- ***SECTION J LABELING:*** This is the labeling required for OSK to receive product into warehouses correctly.

Required Always

Required where applicable

Intro “TAB” – PPAP Workbook



OSHKOSH

PPAP INTRODUCTION

PPAP packages are expected to be received by Oshkosh Corporation by the date assigned by Oshkosh Corporation Designee. If for any reason you cannot meet this date, contact Oshkosh Corporation Designee for resolution.

It is the policy of Oshkosh Corporation to approve initial samples of supplier provided parts before receiving production orders of those parts. Oshkosh has developed the PPAP PROCESS to facilitate this requirement.

The Default PPAP is Level 2, unless otherwise required by the Oshkosh Segment Quality Representative

PPAP requirements apply to the following parts:

1) Initial submission
2) Engineering Change(s)
3) Tooling: Transfer, Replacement, Refurbishment, or additional
4) Correction of Discrepancy
5) Production Break to Oshkosh Corporation > 1 year
6) Change to Optional Construction or Material
7) Sub-Supplier or Material Source Change
8) Change in Part Processing
9) Parts produced at Additional Location
10) Other - please specify

Please reference the *Oshkosh Corporation Global Supplier Quality Manual* for more detail on PPAP requirements. The Manual can be retrieved on the http://osn.oshkoshcorp.com/ website.

The information in blue is interlinked to the other spreadsheets.
FILL IN THE BLUE SECTIONS FOR AUTOMATIC INPUT INTO FORMS

Part Name	PART NAME
Part Number	PART NUMBER
Engineering Revision Level	ERL DATE
Engineering Revision Level Date	ERL DATE
Models / Vehicle	MODEL / VEHICLE

1

Supplier Name	SUPPLIER NAME
Supplier Number	101112
Street Address	ADDRESS
City	CITY
State	STATE
Country	COUNTRY
Zip	ZIP
Phone Number	555-555-5555
Fax Number	555-555-5554
Email Address	Emailme@somewhere.com

2

1. Enter Part Information
2. Enter Supplier Information

Note: This information automatically transfers to all “like” fields in this PPAP Workbook.

Required Always

Required where applicable

PPAP Submission Requirements

Oshkosh Corporation
PPAP Part Submission Requirements

Part Number:	PART NUMBER	Purchase Order No.	
Revision Level:	ERL D	Part Description:	PART NAME
Supplier Name:	SUPPLIER	Reason for Request:	
Supplier Number:	101	OSK Program:	MODEL / VEHICLE
Date Issued:		Submission Due Date:	

ALL PPAP CRITERIA MUST CONFORM TO Oshkosh Corporation Customer Specifics defined in the Global Supplier Quality Manual

1

UNLESS OTHERWISE SPECIFIED IN WRITING BY OSHKOSH CORPORATION:

Default PPAP Submission Level 2 - Unless Otherwise Specified by Oshkosh Corporation
(Segment Specific Requirements may vary)
S = Supplier Must Send Items to Oshkosh Corporation for Approval
* = Applicable material info required (material certification, Certificate of Compliance, or catalog page) with PSW
N/R= Documents are not required for development or submission

2

PPAP Submission Requirements and Detail Description	Submission Level 1	2	3	4
1.) Part Submission Warrant (PSW)	S	S	S	S
2.) Dimensional Results	N/R	S	S	S
3.) Design Records (Bubble Print)	N/R	S	S	S
4.) PPAP Samples - *first production order / upon request prior to production order*	N/R	S	S	S
5.) Print Notes: (Attach copy of Raw Material Certification / Performance Test Report / Surface Finish, Paint Process, Welding Documentation such as WPS/PQRs/Welder Certs)	*	S	S	*
6.) Supplier Change Request (OSK-F1000) - *if applicable*	S	S	S	S
7.) Design Failure Modes effects Analysis (DFMEA) - *if supplier is design responsible*	N/R	N/R	S	N/R
8.) Process Flow Diagram (PFD)	N/R	N/R	S	N/R
9.) Process Failure Modes Effects Analysis (PFMEA)	N/R	N/R	S	N/R
10.) Initial Process Capability - *for major / critical characteristics - if applicable*	N/R	N/R	S	N/R
11.) Measurement System Analysis (MSA) - *for major / critical characteristics - if applicable*	N/R	N/R	S	N/R
12.) Process Control Plan	N/R	N/R	S	N/R
13.) Appearance Approval Report (AAR) - *if applicable*	N/R	N/R	S	N/R
14.) Checking Aids (Fixture, gage, template, etc) - *if applicable*	N/R	N/R	S	N/R
15.) Records of Compliance with Customer Specific Requirements - *if applicable*	N/R	N/R	S	N/R
16.) Photo Documentation (Master Sample of PPAP parts & Section J-Labeling)	S	S	S	N/R
17.) Tooling Photo Documentation - *if applicable*	N/R	S	S	N/R
18.) QC-112 PPAP Check List	N/R	N/R	S	N/R
Additional Submission Instructions below:				

1. Level 2 Submission is the Default PPAP level.
2. List of what is Required based on submission level (Level 1, 2, 3, 4)

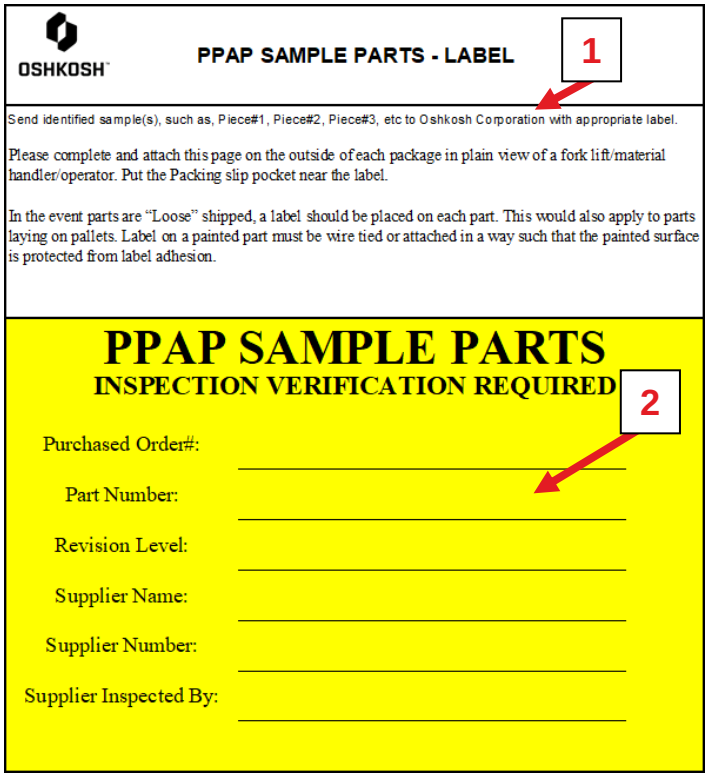
Note: Level 4 PPAP - commonly used for New Product Development (Prototype parts)

Any deviation from Oshkosh requirements (specification, material, print notes, etc) must be approved by use of the Reliance Change Management prior to PPAP submission!

Required Always

Required where applicable

PPAP Parts Labeling Requirements



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PPAP SAMPLE PARTS - LABEL

1

Send identified sample(s), such as, Piece#1, Piece#2, Piece#3, etc to Oshkosh Corporation with appropriate label.

Please complete and attach this page on the outside of each package in plain view of a fork lift/material handler/operator. Put the Packing slip pocket near the label.

In the event parts are "Loose" shipped, a label should be placed on each part. This would also apply to parts laying on pallets. Label on a painted part must be wire tied or attached in a way such that the painted surface is protected from label adhesion.

PPAP SAMPLE PARTS

INSPECTION VERIFICATION REQUIRED

2

Purchased Order#: _____

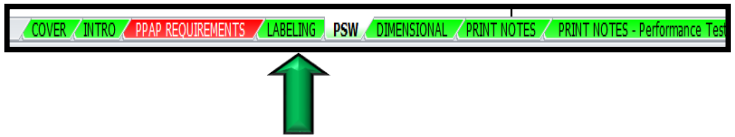
Part Number: _____

Revision Level: _____

Supplier Name: _____

Supplier Number: _____

Supplier Inspected By: _____

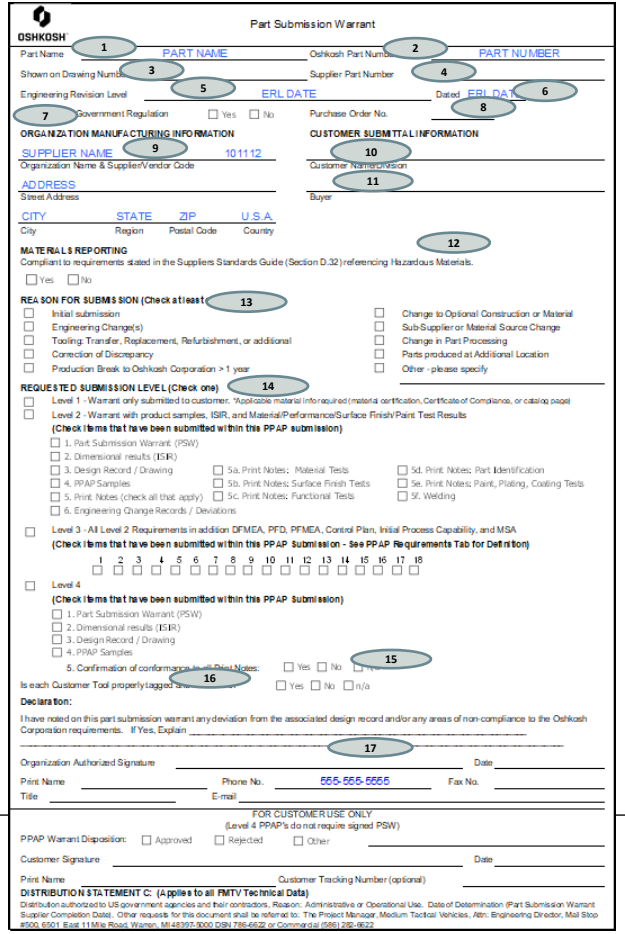


1. Tag All PPAP sample parts with this label on the part and/or on the box.
2. Document all the appropriate Part/Supplier/PO information on the label.

Required Always

Required where applicable

PSW – Part Submission Warrant



Part Submission Warrant

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Part Name 1 PART NAME — Oshkosh Part Number 2 PART NUMBER

Shown on Drawing Number 3 — Supplier Part Number 4

Engineering Revision Level 5 ERL DATE — Dated ERL DATE 6

7 Government Regulation ☐ Yes ☐ No — Purchase Order No. 8

ORGANIZATION MANUFACTURING INFORMATION

SUPPLIER NAME 9 101112
Organization Name & Supplier/Vendor Code

ADDRESS
Street Address

CITY STATE ZIP U.S.A.
City Region Postal Code Country

CUSTOMER SUBMITTAL INFORMATION

10 Customer Name/Division

11 Buyer

MATERIALS REPORTING 12

Compliant to requirements stated in the Suppliers Standards Guide (Section D.32) referencing Hazardous Materials.

☐ Yes ☐ No

REASON FOR SUBMISSION (Check at least 13

- ☐ Initial submission
- ☐ Engineering Change(s)
- ☐ Tooling: Transfer, Replacement, Refurbishment, or additional
- ☐ Correction of Discrepancy
- ☐ Production Break to Oshkosh Corporation > 1 year
- ☐ Change to Optional Construction or Material
- ☐ Sub-Supplier or Material Source Change
- ☐ Change in Part Processing
- ☐ Parts produced at Additional Location
- ☐ Other - please specify

REQUESTED SUBMISSION LEVEL (Check one) 14

☐ Level 1 - Warrant only submitted to customer. *Applicable material info required (material certification, Certificate of Compliance, or catalog page)

☐ Level 2 - Warrant with product samples, ISIR, and Material/Performance/Surface Finish/Paint Test Results

(Check items that have been submitted within this PPAP submission)

- ☐ 1. Part Submission Warrant (PSW)
- ☐ 2. Dimensional results (ISIR)
- ☐ 3. Design Record / Drawing
- ☐ 4. PPAP Samples
- ☐ 5. Print Notes (check all that apply)
- ☐ 6. Engineering Change Records / Deviations
- ☐ 5a. Print Notes: Material Tests
- ☐ 5b. Print Notes: Surface Finish Tests
- ☐ 5c. Print Notes: Functional Tests
- ☐ 5d. Print Notes: Part Identification
- ☐ 5e. Print Notes: Paint, Plating, Coating Tests
- ☐ 5f. Welding

☐ Level 3 - All Level 2 Requirements in addition DFMEA, PFD, PFMEA, Control Plan, Initial Process Capability, and MSA

(Check items that have been submitted within this PPAP Submission - See PPAP Requirements Tab for Definition)

1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16 ☐ 17 ☐ 18 ☐

☐ Level 4

(Check items that have been submitted within this PPAP Submission)

- ☐ 1. Part Submission Warrant (PSW)
- ☐ 2. Dimensional results (ISIR)
- ☐ 3. Design Record / Drawing
- ☐ 4. PPAP Samples
- ☐ 5. Confirmation of conformance to all Print Notes: ☐ Yes ☐ No ☐ n/a 15

Is each Customer Tool properly tagged 16 ☐ Yes ☐ No ☐ n/a

Declaration:

I have noted on this part submission warrant any deviation from the associated design record and/or any areas of non-compliance to the Oshkosh Corporation requirements. If Yes, Explain _____

17

Organization Authorized Signature _____ Date _____

Print Name _____ Phone No. 555-555-5555 Fax No. _____

Title _____ E-mail _____

FOR CUSTOMER USE ONLY
(Level 4 PPAP's do not require signed PSW)

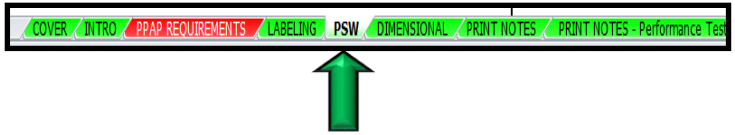
PPAP Warrant Disposition: ☐ Approved ☐ Rejected ☐ Other _____

Customer Signature _____ Date _____

Print Name _____ Customer Tracking Number (optional) _____

DISTRIBUTION STATEMENT C: (Applies to all FMTV Technical Data)

Distribution authorized to US government agencies and their contractors, Reason: Administrative or Operational Use. Date of Determination (Part Submission Warrant Supplier Completion Date). Other requests for this document shall be referred to: The Project Manager, Medium Tactical Vehicles, Attn: Engineering Director, Mail Stop #500, 6501 East 11 Mile Road, Warren, MI 48397-5000 DSN 786-4622 or Commercial (586) 282-4622



Note: All fields must be completed. if an area is not applicable mark as "N/A."
Below is a definition of what each "numbered" section represents.

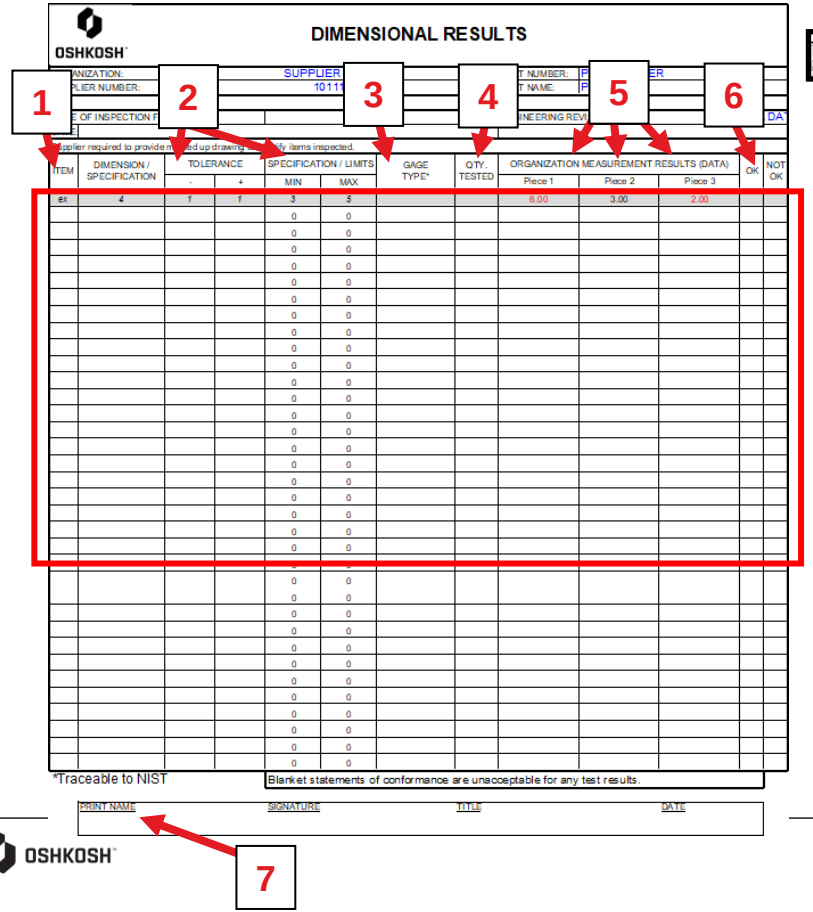
1.) Name of part on drawing
2.) Oshkosh part number on PO/drawing
3.) Oshkosh part number on drawing
4.) Supplier part number if applicable (n/a if not)
5.) Engineering change level (ex. Rev B, this will be on the drawing / PO)
6.) Engineering date (ex. 4/7/11, this will be on the drawing / PO)
7.) Is this is Safety / Government regulation (ex. Drawing will indicate if it is FMVSS, or other industry standard safety regulation.
8.) PO number from Oshkosh driving demand for this part / PPAP.
9.) This section requires all applicable Supplier location information.
10.) Oshkosh Corporation – Segment Division (ie Oshkosh Corporation – Defense, Oshkosh Corporation – Pierce, etc)
11.) Buyer Name
12.) Materials Reporting, acknowledgment the parts meet the hazardous material restrictions outline per the drawing, Supplier Standards Guides or other contract Flow down requirements.
13.) Check the reason for the PPAP submission
14.) Check the Level of PPAP that was requested by Oshkosh Corp. and check what documents in the PPAP have been submitted that are applicable for this component.
15.) If Supplier has Oshkosh Corp. owned tooling document here.
16.) Supplier Point of Contact Information
17.) Oshkosh Reviews and provides PPAP disposition through Reliance QMS.

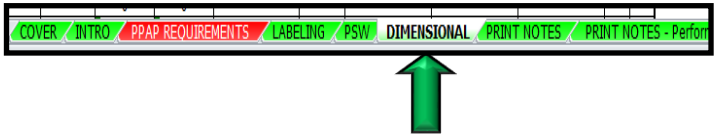
****DO NOT LEAVE ANY SECTIONS BLANK. N/A IS OK WHERE NECESSARY****

Required Always

Required where applicable

Dimensional Results





1. ITEM: Numbering needs to match Design Record / "Bubble Print"
2. DIMENSION / SPECIFICATION:

> **User:**
> Mark Dim/Spec, -/+ tolerances, Gage Type, Qty Tested and up to 3 pc measurements. DO NOT CHANGE the MIN/MAX fields (they allow the conditional formating to work)

3. GAGE TYPE: Appropriate gauges used. Measurement device appropriate for correct number of decimal places specified
4. QTY TESTED: Mark how many parts measured
5. DATA: Mark actual measurement results
6. OK / NOT OK: Check each measurement as good or bad by marking OK / NOT OK appropriately
7. SIGNATURE SECTION: Fill in Name, Signature, Title and Date for supplier sign off

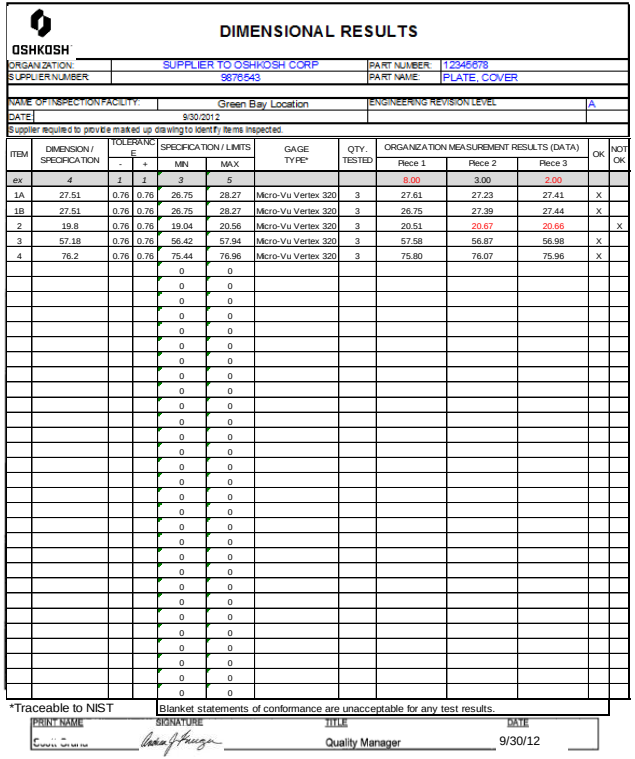
All dimensions on the print must be verified as OK by the Supplier prior to submission!

****Key Note****
(1) Piece required for Level 2
(3) Pieces required for Level 3

Required Always

Required where applicable

Dimensional Results: Sample



DIMENSIONAL RESULTS

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ORGANIZATION:	SUPPLIER TO OSHKOSH CORP	PART NUMBER:	12345678
SUPPLIER NUMBER:	9876543	PART NAME:	PLATE, COVER
NAME OF INSPECTION FACILITY:	Green Bay Location	ENGINEERING REVISION LEVEL	A
DATE:	9/30/2012		

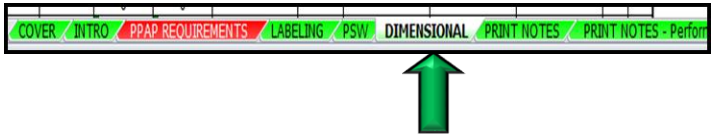
Supplier required to provide marked up drawing to identify items inspected.

ITEM	DIMENSION / SPECIFICATION	TOLERANCE -	TOLERANCE +	SPECIFICATION / LIMITS MIN	SPECIFICATION / LIMITS MAX	GAGE TYPE*	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA) Piece 1	Piece 2	Piece 3	OK	NOT OK
ex	4	1	1	3	5			8.00	3.00	2.00		
1A	27.51	0.76	0.76	26.75	28.27	Micro-Vu Vertex 320	3	27.61	27.23	27.41	X	
1B	27.51	0.76	0.76	26.75	28.27	Micro-Vu Vertex 320	3	26.75	27.39	27.44	X	
2	19.8	0.76	0.76	19.04	20.56	Micro-Vu Vertex 320	3	20.51	20.67	20.66		X
3	57.18	0.76	0.76	56.42	57.94	Micro-Vu Vertex 320	3	57.58	56.87	56.98	X	
4	76.2	0.76	0.76	75.44	76.96	Micro-Vu Vertex 320	3	75.80	76.07	75.96	X	

*Traceable to NIST

Blanket statements of conformance are unacceptable for any test results.

PRINT NAME	SIGNATURE	TITLE	DATE
[illegible]	[signature]	Quality Manager	9/30/12



- ALL fields filled in
- Appropriate gauges used
- Measuring device appropriate for correct number of decimal places specified
- Dimensions measured
- Form signed and dated

Required Always

Required where applicable

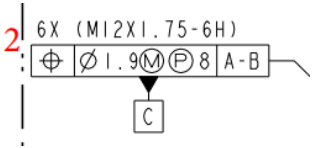
Dimensional Results- GD&T

B.) ***Best Practice:*** *True Position specifications. To facilitate better understanding, and standardize documentation, it is recommended to list both the "x" and "y" basic dimensions, the hole/feature size, and true position tolerance zone as shown below. Also, express "Bonus Tolerances" as a separate line item within the dimensional PPAP worksheet. The example below expresses the allowable bonus tolerance that can be added to the True Position feature frame when a maximum material condition (MMC) exists.*

ITEM	DIMENSION / SPECIFICATION	TOLERANCE		SPECIFICATION / LIMITS		GAGE TYPE*	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)			OK	NOT OK
		-	+	MIN	MAX			Piece 1	Piece 2	Piece 3		
88	60.33	Basic	Basic	Basic	Basic	CMM	1	60.266			X	
89	22.23	Basic	Basic	Basic	Basic	CMM	1	22.220			X	
90	9.53	0.500	0.500	9.030	10.030	CMM	1	9.526			X	
91	⌖ Ø0.5Ⓜ A B C	GD&T	GD&T	0	0.500	CMM	1	0.130			X	
	Bonus Tol	GD&T	GD&T	GD&T	GD&T	CMM	1	0.496			X	

Dimensional Results- GD&T, alternate

Example Print Requirement:



FARO/CMM report:

Object Name	Control	Nom	Meas	Tol	Dev	Test
plane_#1	⌓ 3.000 A B C		1.082	3.000	1.082	Pass
plane_#1	⌓ 2.000		0.528	2.000	0.528	Pass
circle #2.1	⌖ Ø 1.900 AB		1.591	1.900	1.591	Pass
circle #2.2	⌖ Ø 1.900 AB		1.538	1.900	1.538	Pass
circle #2.3	⌖ Ø 1.900 AB		0.817	1.900	0.817	Pass
circle #2.4	⌖ Ø 1.900 AB		1.545	1.900	1.545	Pass
circle #2.5	⌖ Ø 1.900 AB		0.543	1.900	0.543	Pass
circle #2.6	⌖ Ø 1.900 AB		1.598	1.900	1.598	Pass

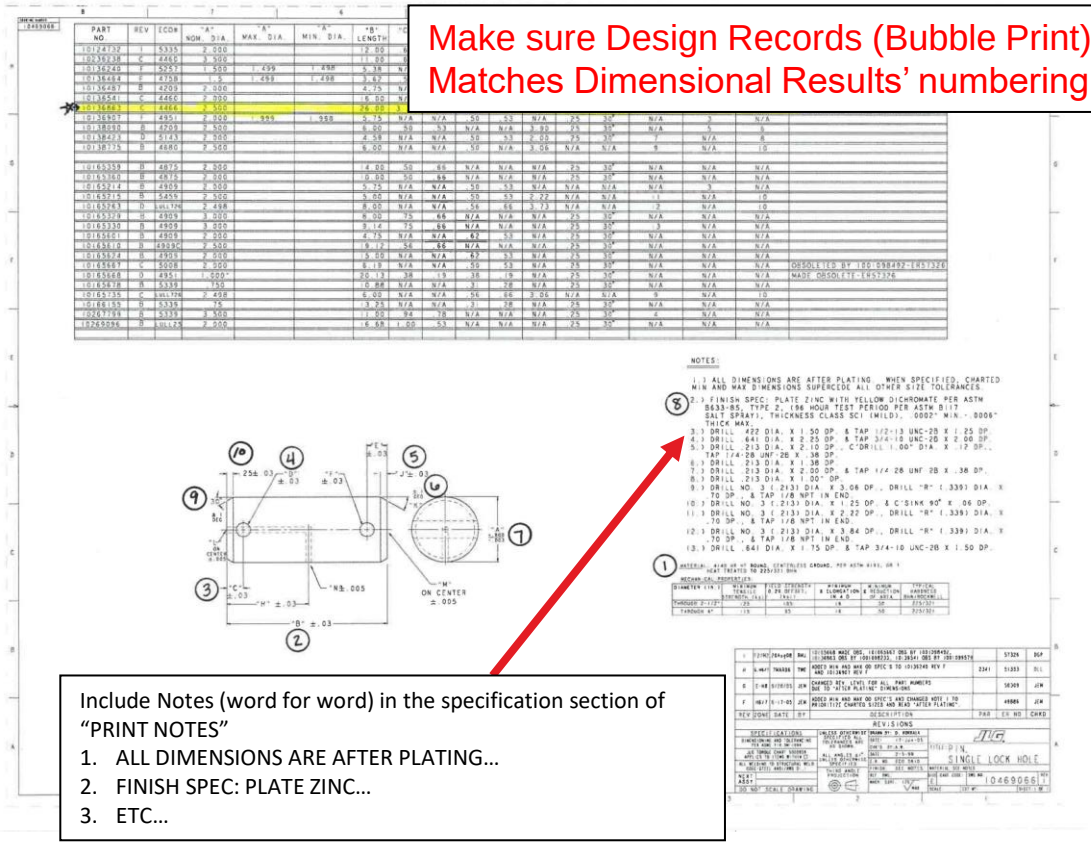
How to show on Dimensional page:

ITEM	DIMENSION / SPECIFICATION	TOLERANCE		SPECIFICATION / LIMITS		GAGE TYPE*	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)			OK	NOT OK
		-	+	MIN	MAX			Piece 1	Piece 2	Piece 3		
1	0	0	3	0	3	Faro Arm	3	1.082	0.795	0.628	OK	
2.1	0	0	1.9	0	1.9	Faro Arm	3	1.591	1.012	1.373	OK	
2.2	0	0	1.9	0	1.9	Faro Arm	3	1.538	1.606	1.335	OK	
2.3	0	0	1.9	0	1.9	Faro Arm	3	0.817	0.692	1.03	OK	
2.4	0	0	1.9	0	1.9	Faro Arm	3	1.545	1.513	1.68	OK	
2.5	0	0	1.9	0	1.9	Faro Arm	3	0.543	0.7	1.037	OK	
2.6	0	0	1.9	0	1.9	Faro Arm	3	1.598	1.767	1.78	OK	

Design Record / Bubble Print: Sample

- LEGIBLE
  - Part Drawing, Notes & *ALL* Text
- COMPLETE
  - All sub-component prints included
- RELEASED
  - Only approved drawings used for PPAP submittals
- BUBBLED
  - All Dimensions, Notes & Material (if noted separately from Notes section)

Make sure Design Records (Bubble Print) Matches Dimensional Results' numbering



Include Notes (word for word) in the specification section of "PRINT NOTES"

1. ALL DIMENSIONS ARE AFTER PLATING…
2. FINISH SPEC: PLATE ZINC…
3. ETC…

OSHKOSH DEFENSE

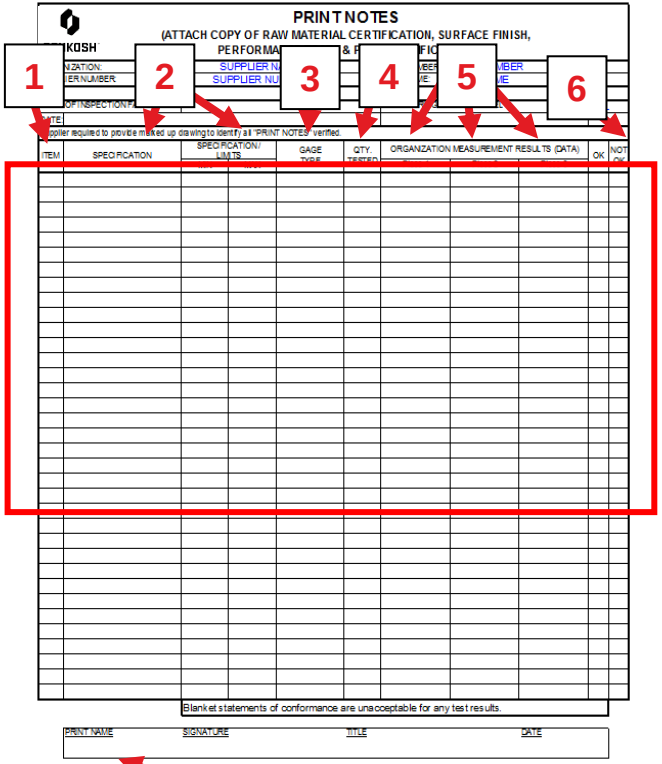
YOUR MISSION. OUR HONOR

QUESTIONS

10 MINUTE BREAK

Print Notes

(ATTACH COPY OF RAW MATERIAL CERTIFICATION, SURFACE FINISH, PERFORMANCE TESTS & PART IDENTIFICATION)



1. ITEM: Numbering needs to matches Design Record / "Bubble Print"
2. DIMENSION / SPECIFICATION: Mark the low & high values in the MIN / MAX respectively
3. GAGE TYPE: Mark the gage used to measure item
4. QTY TESTED: Mark how many parts measured
5. DATA: Mark actual results
6. OK / NOT OK: Check each measurement as good or bad by marking OK / NOT OK appropriately
7. SIGNATURE SECTION: Fill in Name, Signature, Title and Date for supplier sign off

All dimensions on the print must be verified as OK by the Supplier prior to submission!

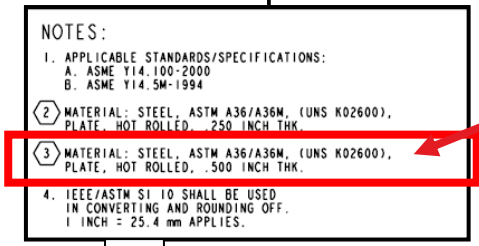
Note: This sheet to be used to document all Print Note requirements via the "bubble print" and reference any applicable Test report numbers in the PPAP Package.

OSHKOSH

Required Always

Required where applicable

Print Notes: Sample



NOTES:

1. APPLICABLE STANDARDS/SPECIFICATIONS:
   A. ASME Y14.100-2000
   B. ASME Y14.5M-1994

(2) MATERIAL: STEEL, ASTM A36/A36M, (UNS K02600), PLATE, HOT ROLLED, .250 INCH THK.

(3) MATERIAL: STEEL, ASTM A36/A36M, (UNS K02600), PLATE, HOT ROLLED, .500 INCH THK.

4. IEEE/ASTM SI 10 SHALL BE USED IN CONVERTING AND ROUNDING OFF. 1 INCH = 25.4 mm APPLIES.

1

2

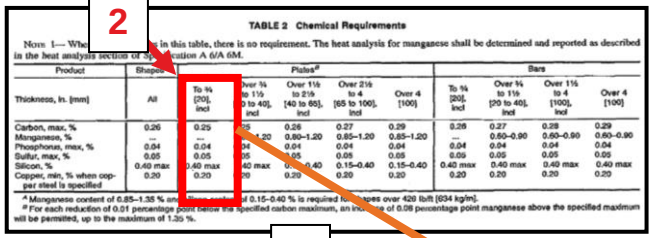
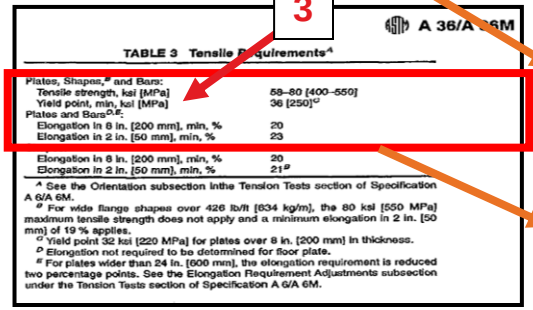


TABLE 2 Chemical Requirements

Product	Shapes	Plates[B]				Bars			
Thickness, in. [mm]	All	To ¾ [20], incl	Over ¾ to 1½ [20 to 40], incl	Over 1½ to 2½ [40 to 65], incl	Over 2½ to 4 [65 to 100], incl	Over 4 [100]	To ¾ [20], incl	Over ¾ to 1½ [20 to 40], incl	Over 1½ to 4 [100], incl	Over 4 [100]
Carbon, max, %	0.26	0.25	0.25	0.26	0.27	0.29	0.26	0.27	0.28	0.29
Manganese, %	...	...	0.80–1.20	0.80–1.20	0.85–1.20	0.85–1.20	...	0.60–0.90	0.60–0.90	0.60–0.90
Phosphorus, max, %	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Sulfur, max, %	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Silicon, %	0.40 max	0.40 max	0.40 max	0.15–0.40	0.15–0.40	0.15–0.40	0.40 max	0.40 max	0.40 max	0.40 max
Copper, min, % when copper steel is specified	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20

[A] Manganese content of 0.85–1.35 % and silicon content of 0.15–0.40 % is required for shapes over 426 lb/ft [634 kg/m].
[B] For each reduction of 0.01 percentage point below the specified carbon maximum, an increase of 0.06 percentage point manganese above the specified maximum will be permitted, up to the maximum of 1.35 %.

3



A 36/A 36M

TABLE 3 Tensile Requirements[A]

Plates, Shapes[B] and Bars:	
Tensile strength, ksi [MPa]	58–80 [400–550]
Yield point, min, ksi [MPa]	36 [250][C]
Plates and Bars[D,E]:	
Elongation in 8 in. [200 mm], min, %	20
Elongation in 2 in. [50 mm], min, %	23
Elongation in 8 in. [200 mm], min, %	20
Elongation in 2 in. [50 mm], min, %	21[F]

[A] See the Orientation subsection inthe Tension Tests section of Specification A 6/A 6M.
[B] For wide flange shapes over 426 lb/ft [634 kg/m], the 80 ksi [550 MPa] maximum tensile strength does not apply and a minimum elongation in 2 in. [50 mm] of 19 % applies.
[C] Yield point 32 ksi [220 MPa] for plates over 8 in. [200 mm] in thickness.
[D] Elongation not required to be determined for floor plate.
[E] For plates wider than 24 in. [600 mm], the elongation requirement is reduced two percentage points. See the Elongation Requirement Adjustments subsection under the Tension Tests section of Specification A 6/A 6M.

ITEM	SPECIFICATION	SPECIFICATION / LIMITS MIN	SPECIFICATION / LIMITS MAX	GAGE TYPE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA) Piece 1	Piece 2	Piece 3	OK	NOT OK
1	A36/A36M PLATE 0.5"									
	C - MAX weighed %	N/A	0.25	LAB	1	0.1800	N/A	N/A	X	
	MN - N/A	N/A	N/A	LAB	1	0.3400	N/A	N/A	X	
	P - MAX weighed %	N/A	0.04	LAB	1	0.0080	N/A	N/A	X	
	S - MAX weighed %	N/A	0.05	LAB	1	0.0120	N/A	N/A	X	
	SI - MAX weighed %	N/A	0.4	LAB	1	0.0200	N/A	N/A	X	
	CU - MAX weighed %	N/A	0.2	LAB	1	0.1400	N/A	N/A	X	
	Elongation (min %)	37	0	LAB	1	37%	N/A	N/A	X	
	Tensile (ksi)	58	80	LAB	1	69300	N/A	N/A	X	
	Yield (ksi)	38	N/A	LAB	1	46600	N/A	N/A	X	

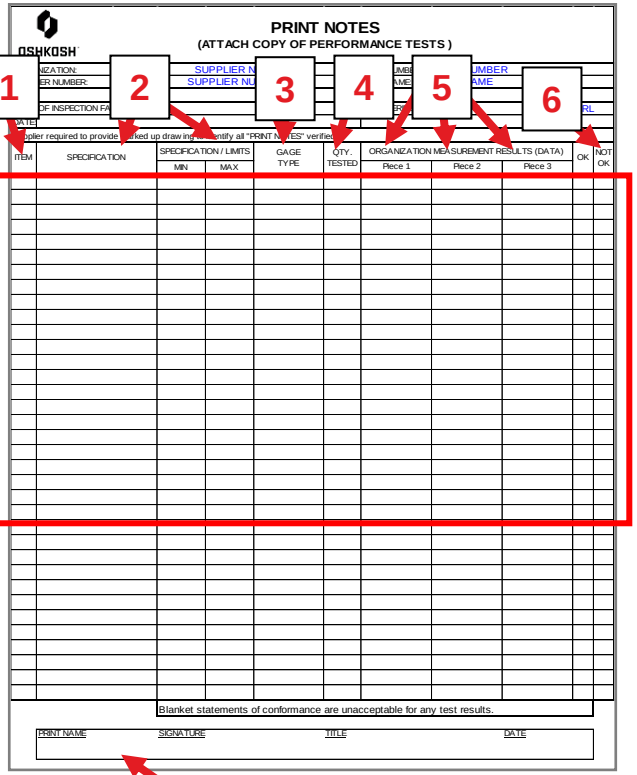
4

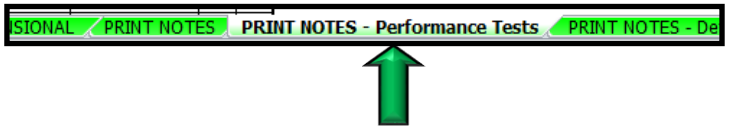
1. Design Record Requirement
2. ASTM Chemical Requirement
3. ASTM Mechanical Requirement
4. PPAP document to outline requirement and actual's per the print and Industry standard (ASTM)

If the raw material supplier has a Certificate or Test Report with specifications this can be provided in lieu of documenting in the print notes.

Print Notes – Performance Tests

(ATTACH COPY OF PERFORMANCE TESTS)





1. ITEM: Numbering needs to matches Design Record / "Bubble Print"
2. DIMENSION / SPECIFICATION: Mark the low & high values in the MIN / MAX respectively
3. GAGE TYPE: Mark the gage used to measure item
4. QTY TESTED: Mark how many parts measured
5. DATA: Mark actual results
6. OK / NOT OK: Check each measurement as good or bad by marking OK / NOT OK appropriately
7. SIGNATURE SECTION: Fill in Name, Signature, Title and Date for supplier sign off

All dimensions on the print must be verified as OK by the Supplier prior to submission!

Note: This sheet to be used to document all Print Note requirements via the "bubble print" and reference any applicable Test report numbers in the PPAP Package.

OSHKOSH

Required Always

Required where applicable

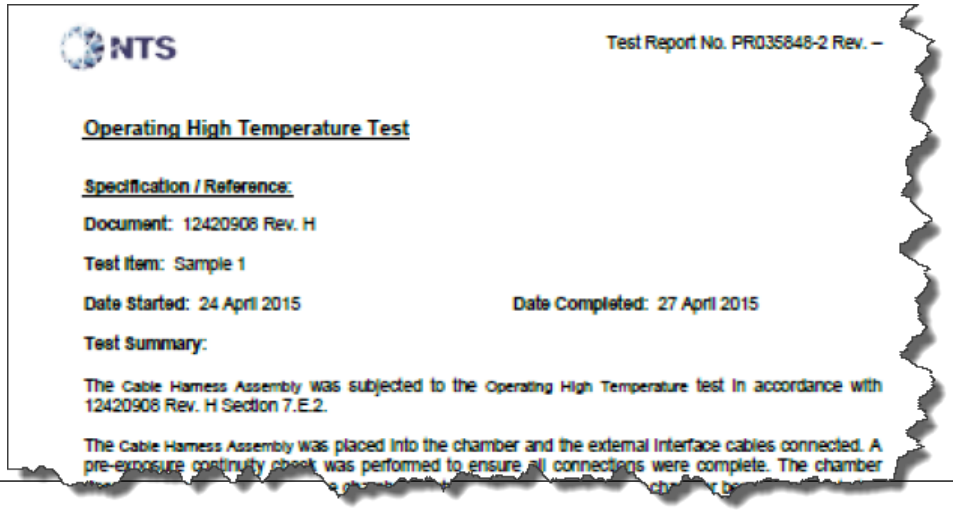
Print Notes – Performance Tests: Sample

PERFORM TESTS OF PARA. 7A & 7B. RETURN THE ASSEMBLY TO 24°C±8°C AND REPEAT TESTS OF PARA. 7A & 7B.

2. HIGH TEMPERATURE TESTS:
THE CABLE SHALL BE SUBJECTED TO HIGH TEMPERATURE TESTS IAW MIL-STD-810E, METHOD 501.3, PROCEDURE I. A TEMPERATURE OF 76°C SHALL BE MAINTAINED FOR A PERIOD OF 48 HOURS. AT THE END OF THIS TIME, WITH THE TEMPERATURE AT 60°C, TESTS OF PARA. 7A & 7B ARE PERFORMED. THE ASSEMBLY IS THEN RETURNED TO A TEMPERATURE OF 24°C±8°C, AND TESTS OF PARA. 7A & 7B ARE REPEATED.

3. SUBMERGENCE TEST:
PRIOR TO PERFORMING THE SUBMERGENCE TEST, PERFORM THE TESTS OF PARA. 7A & 7B. BEFORE SUBMERGING THE HARNESS, SEAL ALL CONNECTORS IN THE AREA FORWARD OF THE BACKSHELL/CONNECTOR INTERFACE. LEAKAGE FROM THIS SEALED AREA DURING THE TEST SHALL NOT CONSTITUTE A FAILURE. HOWEVER, A RETEST SHALL BE REQUIRED AFTER THE SEAL LEAKAGE IS CORRECTED. THE TEST SHALL BE CONDUCTED IN CLEAR, CLEAN WATER WITH THE UPPERMOST SURFACE

1. Design Record Requirement
2. ASTM Performance Requirement
3. PPAP document to outline requirement and actual's per the print and Industry standard (i.e.: ASTM)



NTS

Test Report No. PR035848-2 Rev. –

Operating High Temperature Test

Specification / Reference:

Document: 12420908 Rev. H

Test Item: Sample 1

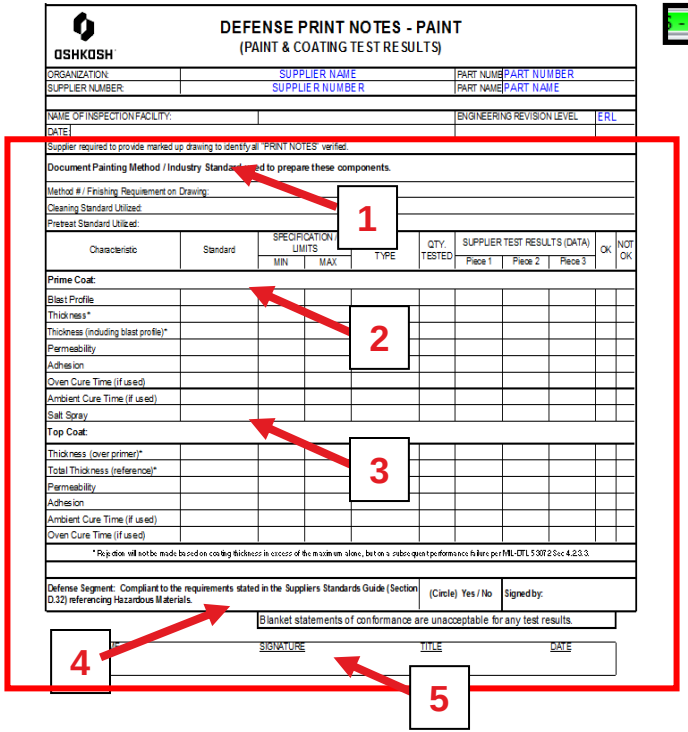
Date Started: 24 April 2015 **Date Completed:** 27 April 2015

Test Summary:

The Cable Harness Assembly was subjected to the Operating High Temperature test in accordance with 12420908 Rev. H Section 7.E.2.

The Cable Harness Assembly was placed into the chamber and the external interface cables connected. A pre-exposure continuity check was performed to ensure all connections were complete. The chamber

Print Notes – Defense Paint (Includes Paint & Coating Test Results)



DEFENSE PRINT NOTES - PAINT
(PAINT & COATING TEST RESULTS)

OSHKOSH

ORGANIZATION:	SUPPLIER NAME	PART NUMBER	PART NUMBER
SUPPLIER NUMBER:	SUPPLIER NUMBER	PART NAME	PART NAME
NAME OF INSPECTION FACILITY:		ENGINEERING REVISION LEVEL	ERL
DATE			

Supplier required to provide marked up drawing to identify all "PRINT NOTES" verified.

Document Painting Method / Industry Standard used to prepare these components.

Method # / Finishing Requirement on Drawing:

Cleaning Standard Utilized:

Pretreat Standard Utilized:

Characteristic	Standard	SPECIFICATION LIMITS MIN	SPECIFICATION LIMITS MAX	TYPE	QTY. TESTED	SUPPLIER TEST RESULTS (DATA) Piece 1	Piece 2	Piece 3	OK	NOT OK
Prime Coat:										
Blast Profile										
Thickness*										
Thickness (including blast profile)*										
Permeability										
Adhesion										
Oven Cure Time (if used)										
Ambient Cure Time (if used)										
Salt Spray										
Top Coat:										
Thickness (over primer)*										
Total Thickness (reference)*										
Permeability										
Adhesion										
Ambient Cure Time (if used)										
Oven Cure Time (if used)										

*Rejection will not be made based on coating thickness in excess of the maximum alone, but on a subsequent performance failure per MIL-DTL-53072 Sec 4.2.3.3.

Defense Segment: Compliant to the requirements stated in the Suppliers Standards Guide (Section D.32) referencing Hazardous Materials. (Circle) Yes / No Signed by:

Blanket statements of conformance are unacceptable for any test results.

SIGNATURE TITLE DATE

1
2
3
4
5

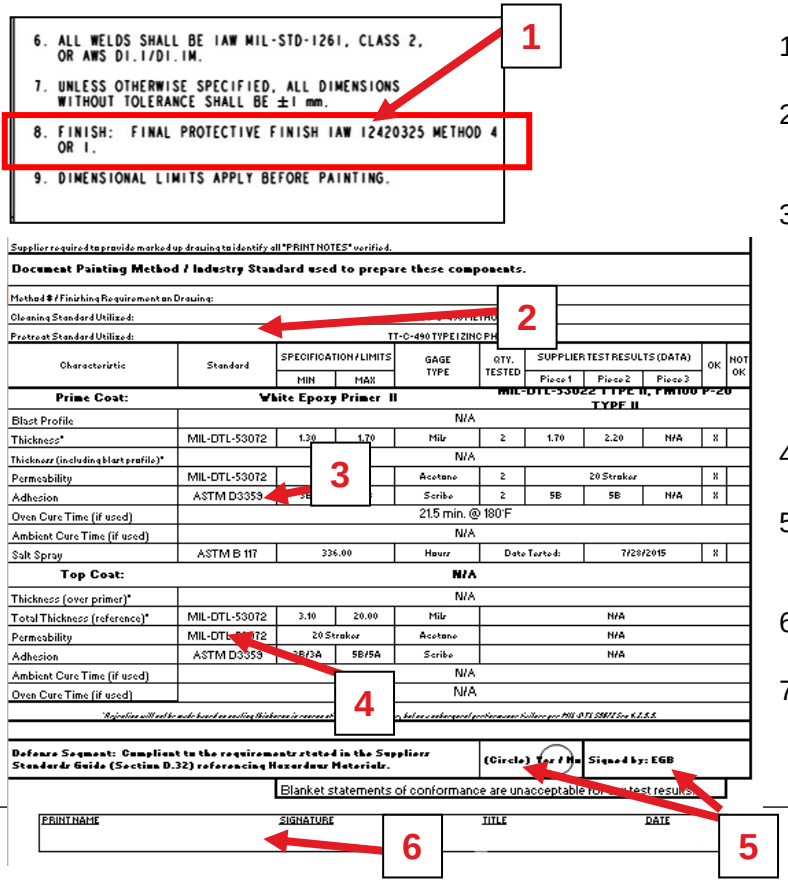
Defense Paint Tab

1. Document what print standard, Industry Standard, & Process Steps that were used to coat the part
2. Prime Coat Verification: Permeability, Adhesion, Thickness Salt Spray Results, Ambient Cure Time & Oven Cure Time
3. Top Coat Verification: Permeability, Adhesion, Thickness Salt Spray Results, Ambient Cure Time & Oven Cure Time
4. Acknowledge process isn't using Any hazardous material that is not Allowed per the Supplier's Standard Guide or Contract requirements. ****Make sure to circle Yes or No and sign****
5. Supplier Sign Off

Required Always

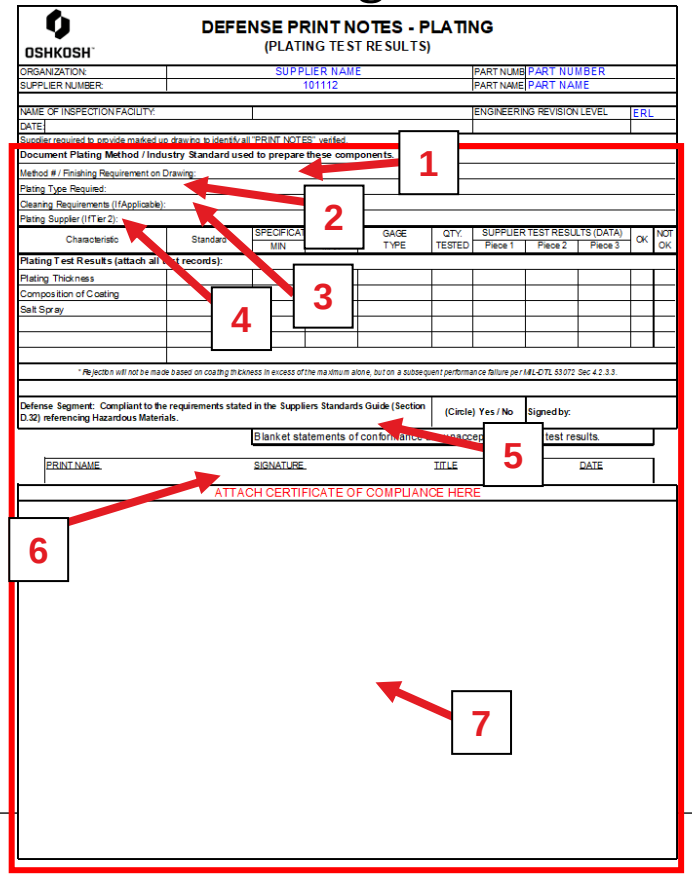
Required where applicable

Print Notes – Defense Paint: Sample



1. Print Note Paint Note Requirement
2. Document what print standard or Industry Standard the part has been painted to.
3. Prime Coat Verification
   1. Reference standard for each process step
   2. document blast profile
   3. document actual thickness including profile
   4. Ensure that the thickness spec includes blast (1.0mil blast profile + 1.3 mil primer = 2.3 min thickness including blast profile)
4. Top Coat Verification
5. Compliant to hazardous material restrictions (Sign off)
6. Supplier Sign off
7. Cyclical test results for JLTV and FMTV programs (attach most recent test report.)

Print Notes – Plating (Plating Test Results)

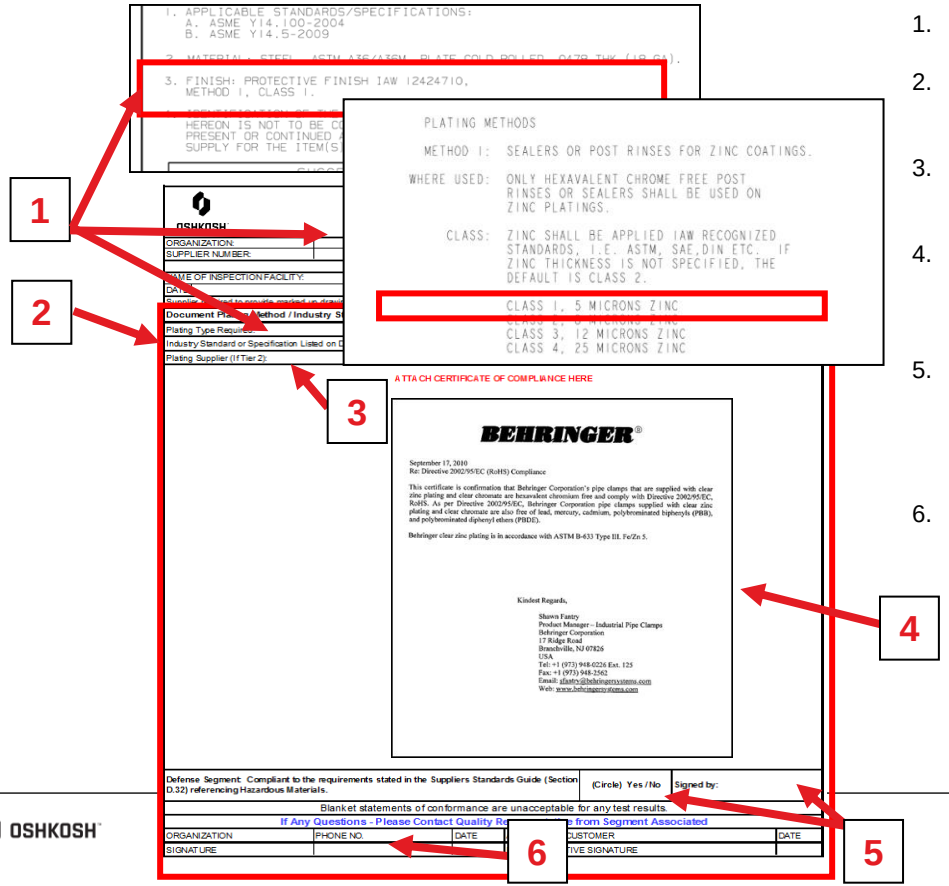


1. Document what print standard, Industry Standard, & Process Steps that were used to coat the part
2. Plating Type Required: From Design Record (Print/Drawing)
3. Document Cleaning Requirements
4. Plating Supplier (If Tier 2): If tier 2, plating supplier needs to be noted
5. Acknowledge process isn't using Any hazardous material that is not Allowed per the Supplier's Standard Guide or Contract requirements. ****Make sure to circle Yes or No and sign****
6. Tier 1 Supplier Sign Off
7. Document plating / coating process Utilized to manufacture this part (Attach certificate of compliance here)

Required Always

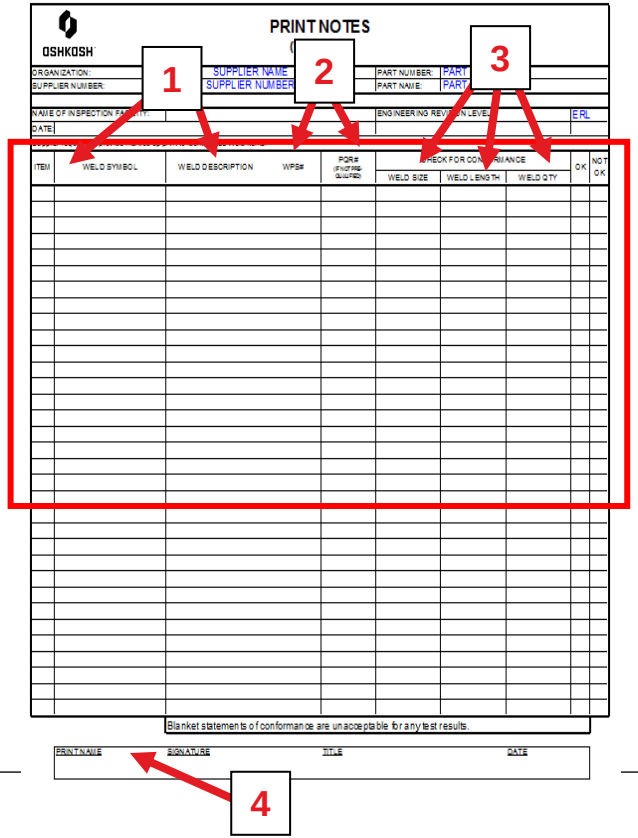
Required where applicable

Print Notes – Plating: Sample



1. Plating Type Required: From Design Record (Print)
2. Document what print standard, Industry Standard, & Process Steps that were used to coat the part
3. Plating Supplier (If Tier 2): If tier 2, plating supplier needs to be noted
4. Document plating / coating process Utilized to manufacture this part (Attach certificate of compliance here)
5. Acknowledge process does not use any hazardous materials not allowed per the Supplier's Standard Guide or Contract requirements. ****Make sure to circle Yes or No and sign****
6. Supplier Sign Off

Welding Specification



1. Document the Welding Symbol / Weld Description from “bubble print”.
2. Document WPS/PQR (if not prequalified)
3. Document visual verification of Weld size, Weld length, Weld Quantity.
4. Supplier Sign Off

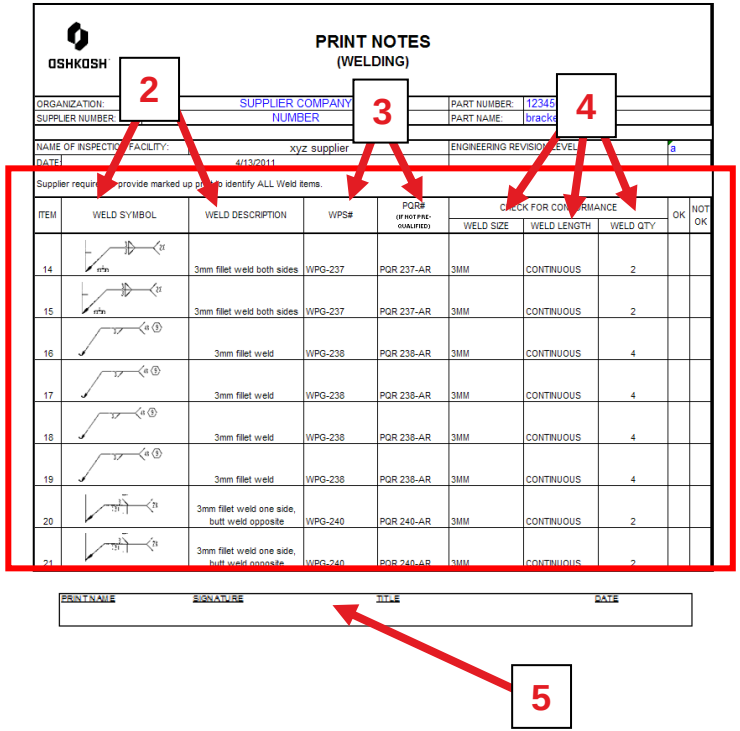
Note: WPS’s, PQR’s should be included as part of the PPAP package, and welder certifications should be available if requested.

OSHKOSH

Required Always

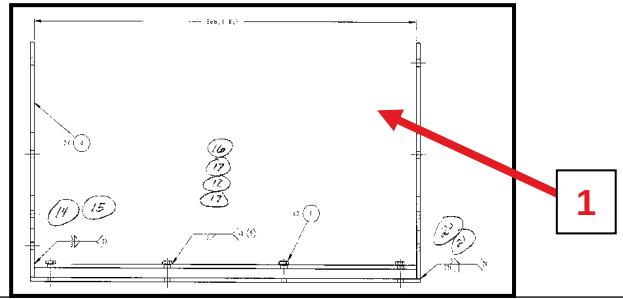
Required where applicable

Example: Welding Specification



1. Document the Welding Symbol / Weld Description from From “bubble print”.
2. Document the Welding Specification /Weld Symbol from “bubble print”.
3. Document WPS / PQR (if not prequalified)
4. Document visual verification of weld size, Weld length, Weld Quantity.
5. Supplier Sign Off

Note: WPS’s, PQR’s and welder certifications must be provided upon request.



Section J Labeling

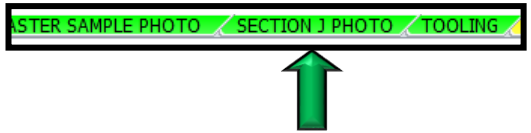


FIGURE 9: LABEL SPECIFICATIONS

1. Part Number
2. Revision
3. Quantity
4. PO
5. Supplier Name
6. Supplier Part Number (when applicable)
7. Serial Number (when applicable)
8. Mfg Date
9. Ship Date
10. Country of Origin

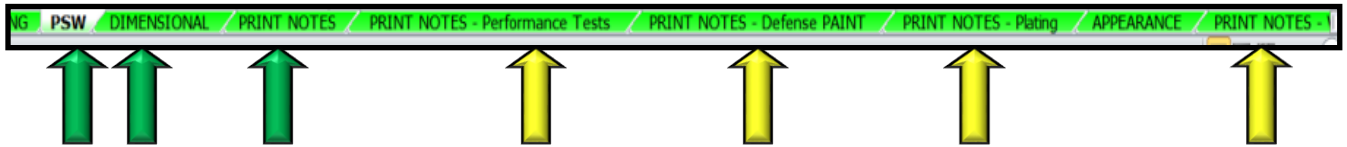
OSHKOSH

Required Always

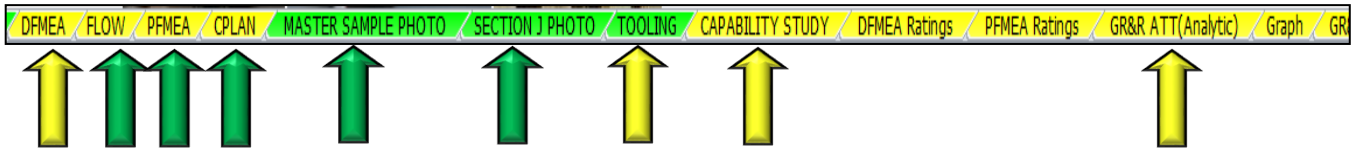
Required where applicable

PPAP Workbook – Level 3 Requirements

LEVEL 2 - PPAP



LEVEL 3 - PPAP

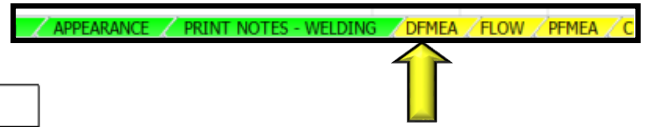


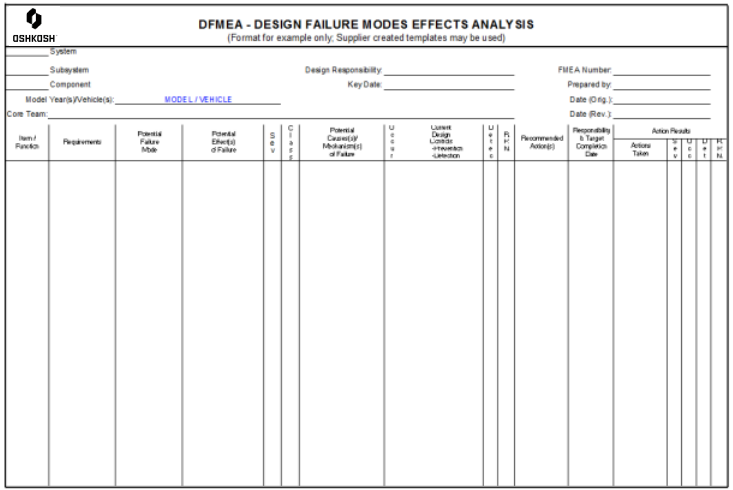
- **Same Requirements as Level 2 with the following additional requirements:**
- **DFMEA**
  - **Design Failure Mode Effects Analysis is required if the Supplier is design responsibly**
- **FLOW DIAGRAM**
  - **Process Flow diagram is required to outline and standardize the production process that is being approved. This should outline the entire process that is being used to manufacture the component & assembly.**
- **PFMEA**
  - **Process failure Mode Effects Analysis is required to be conducted to understand all the potential failure modes and mitigate know failure modes.**
- **CONTROL PLAN**
  - **The control plan is to be used to document and be used on the shop floor to monitor and control the standardized manufacturing process being approved.**
- **MASTER SAMPLE:**
  - **This is used to document visually how the parts are being marked and pictures of the PPAP parts.**
- **TOOLING**
  - **This sheet is used to visually document any Oshkosh owned tooling.**
- **CAPABILITY STUDY**
  - **This sheet is to be used to show evidence the production process is capable to meet the design intent. This is required when Critical Characteristics are identified on the print or other wise specified by Oshkosh Corporation.**
- **GAGE R&R**
  - **This sheet is to be used to show evidence that the measuring method used for the capability studies is repeatable and reproducible.**

Required Always

Required where applicable

DFMEA





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DFMEA - DESIGN FAILURE MODES EFFECTS ANALYSIS

(Format for example only; Supplier created templates may be used)

System

Subsystem

Component

Model Year(s)/Vehicle(s): MODEL / VEHICLE

Core Team:

Design Responsibility:

Key Date:

FMEA Number:

Prepared by:

Date (Orig.):

Date (Rev.):

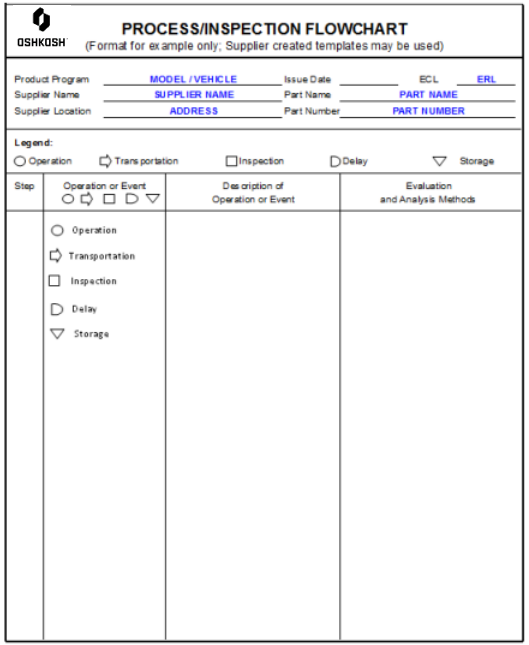
Item / Function	Requirements	Potential Failure Mode	Potential Effect(s) of Failure	S e v	C l a s s	Potential Cause(s)/ Mechanism(s) of Failure	O c c u r	Current Design Controls -Prevention -Detection	D e t e c	R P N	Recommended Action(s)	Responsibility & Target Completion Date	Action Results: Actions Taken	S e v	O c c	D e t	R P N

Design Failure Mode Effects Analysis is required ONLY if the Supplier is design responsible

Required Always

Required where applicable

Process Flow Diagram



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PROCESS/INSPECTION FLOWCHART

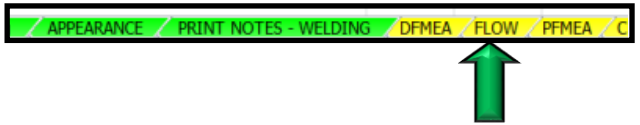
(Format for example only; Supplier created templates may be used)

Product Program	MODEL / VEHICLE	Issue Date		ECL	ERL
Supplier Name	SUPPLIER NAME	Part Name	PART NAME		
Supplier Location	ADDRESS	Part Number	PART NUMBER		

Legend:

○ Operation ⇨ Transportation □ Inspection D Delay ▽ Storage

Step	Operation or Event ○ ⇨ □ D ▽	Description of Operation or Event	Evaluation and Analysis Methods
	○ Operation ⇨ Transportation □ Inspection D Delay ▽ Storage		

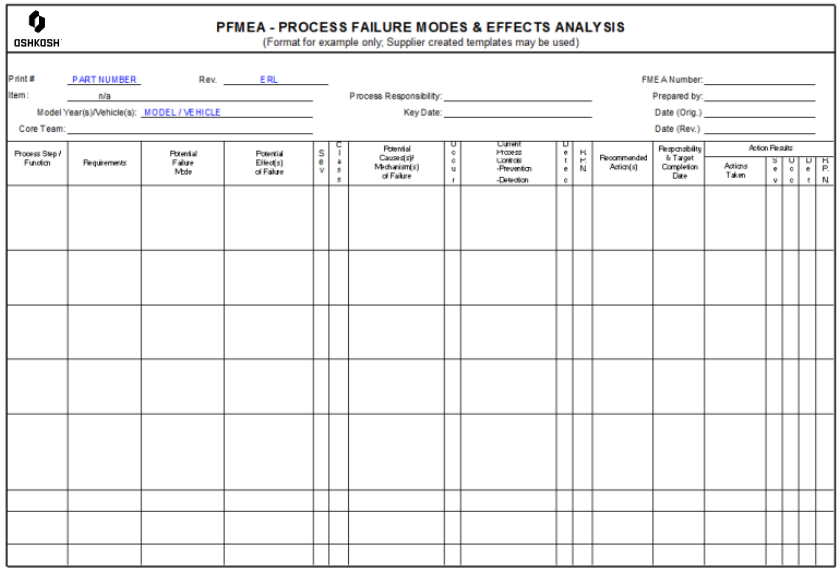


Process Flow diagram is required to outline and standardize the production process that is being approved. This should outline the entire process that is being used to manufacture the component / assembly.

Required Always

Required where applicable

PFMEA



PFMEA - PROCESS FAILURE MODES & EFFECTS ANALYSIS

(Format for example only; Supplier created templates may be used)

Print # PART NUMBER Rev. ERL

Item: n/a

Model Year(s)/Vehicle(s): MODEL / VEHICLE

Core Team:

Process Responsibility:

Key Date:

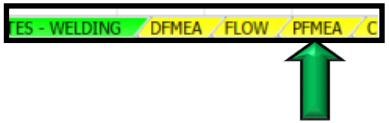
FMEA Number:

Prepared by:

Date (Orig.)

Date (Rev.)

Process Step / Function	Requirements	Potential Failure Mode	Potential Effect(s) of Failure	Sev	Class	Potential Cause(s) of Mechanism(s) of Failure	Occur	Current Process Controls -Prevention -Detection	Det	RPN	Recommended Action(s)	Responsibility & Target Completion Date	Action Results: Actions Taken	Sev	Occ	Det	RPN



Process failure Mode Effects Analysis is required to be conducted to understand all the potential failure modes and mitigate any know failure modes.

**** To be used by Oshkosh SQE during 8D Problem Solving / PIP / etc ****

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Required Always

Required where applicable

PFMEA

When is the FMEA used?

- When new systems, products and processes are being designed
- When existing designs or processes are being changed or improved

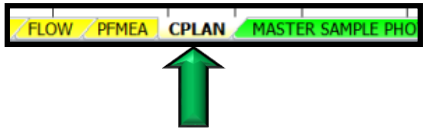
When is the FMEA updated?

- When a change is being considered to a product or process Related to:
  - Design
  - Application
  - Environment
  - Material
  - Manufacturing or Assembly processes
- After actions are taken to:
  - Reduce the occurrence of the causes/failure modes
  - Increase the ability to prevent a failure mode from occurring

PFMEA

- Used to improve the process before failures occur and focus on prevention of product and process problems
- *Used to prioritize action items for corrective action* and ensure alignment with the needs of the customer
- A tool to document actions taken
- Useful when *new systems, products and processes* are being *designed* or *existing designs or processes* are being *changed*
- Updated when a change is being considered or when action items have been completed
- A tool that leads to future tool usage:
  - Data collection plans and experimentation
  - Control plans

Control Plan



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CONTROL PLAN

(Format for example only; Supplier created templates may be used)

☐ Prototype ☐ Pre-Launch ☐ Production

Control Plan Number	Key Contact/Phone	Date (Orig.) 1/1/1996	Date (Rev.) 1/1/1996
Part Number/Latest Change Level PART NUMBER	Core Team		Customer Engineering Approval/Date (If Req'd.)
Part Name/Description PART NAME	Supplier/Plant Approval/Date		Customer Quality Approval/Date (If Req'd.)
Supplier/Plant	Supplier Code UPPLIER NUMBE	Other Approval/Date (If Req'd.)	Other Approval/Date (If Req'd.)

PART/ PROCESS NUMBER	PROCESS NAME/ OPERATION DESCRIPTION	MACHINE, DEVICE JIG, TOOLS FOR MFG.	CHARACTERISTICS			SPECIAL CHAR. CLASS	METHODS					REACTION PLAN
			NO.	PRODUCT	PROCESS		PRODUCT/PROCESS SPECIFICATION/ TOLERANCE	EVALUATION/ MEASUREMENT TECHNIQUE	SAMPLE SIZE	SAMPLE FREQ.	CONTROL METHOD	

The control plan is to be used to document and be used on the shop floor to monitor and control the standardized manufacturing process being approved.

**** To be used by Oshkosh SQE during 8D Problem Solving / PIP / etc ****

Required Always

Required where applicable

Control Plan

What is it?

- The control plan provides the method of monitoring, controlling, and inspection needs to create ongoing conforming product in the system
- It also provides the reaction plan to be followed for suspected non-conforming product

Why create it?

- Identifies process characteristics and control methods for sources of variation (input variables), which cause variation in the product characteristics (output variables)

When to create it?

- After the process flow diagram and PFMEA have been developed and recommended actions created. Before pilot/production builds are conducted

Control Plan

EFFECTIVENESS

- Plans are *reviewed / updated every time there are changes / improvements* to the process that effect the measurement system and control methods.
- Control plans DO NOT replace detailed operator/work instructions
  - Work Instructions should be developed using the control plan
- A single control plan may apply to a group or family of products that are produced by the same or similar parts

In theory, you only need 3 Master Control Documents within a facility: Process Flow, PFMEA and Control Plan

INTENT

- Minimize process variation consistently .
- Minimize process tampering.
- Verify / Validate that the process improvements have been implemented.
  - Need that link to the quality management systems (ISO, QMS, etc.)
- Provide for adequate training in all procedures.
- Include required maintenance/audit schedules.

CONTROL PLANS MUST BE REVIEWED REGULARLY FOR EFFECTIVENESS!!

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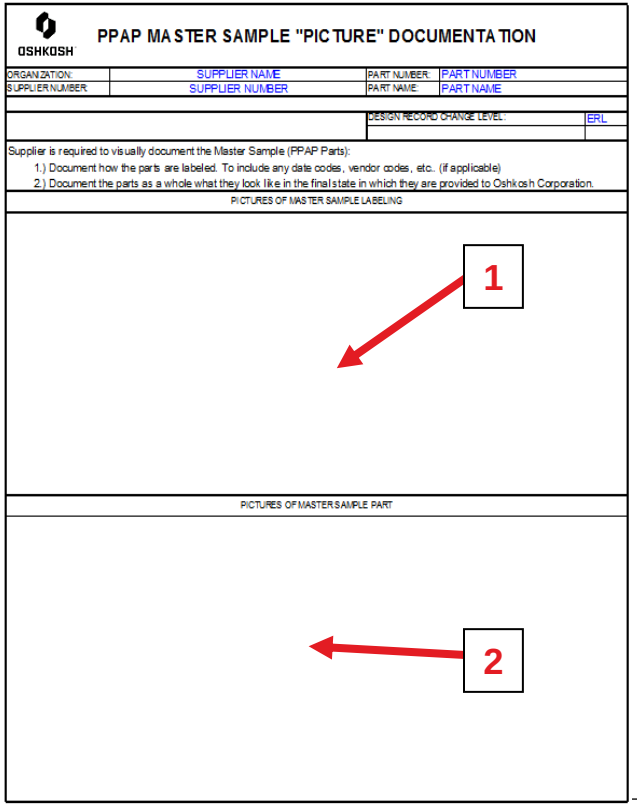
QUESTIONS

10 MINUTE BREAK

Master Sample



PPAP MASTER SAMPLE "PICTURE" DOCUMENTATION

ORGANIZATION:	SUPPLIER NAME	PART NUMBER:	PART NUMBER
SUPPLIER NUMBER:	SUPPLIER NUMBER	PART NAME:	PART NAME
		DESIGN RECORD CHANGE LEVEL:	ERL

Supplier is required to visually document the Master Sample (PPAP Parts):
1.) Document how the parts are labeled. To include any date codes, vendor codes, etc. (if applicable)
2.) Document the parts as a whole what they look like in the final state in which they are provided to Oshkosh Corporation.

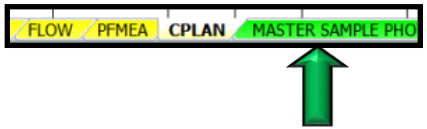
PICTURES OF MASTER SAMPLE LABELING

1

PICTURES OF MASTER SAMPLE PART

2

PRINT NAME	SIGNATURE	TITLE	DATE



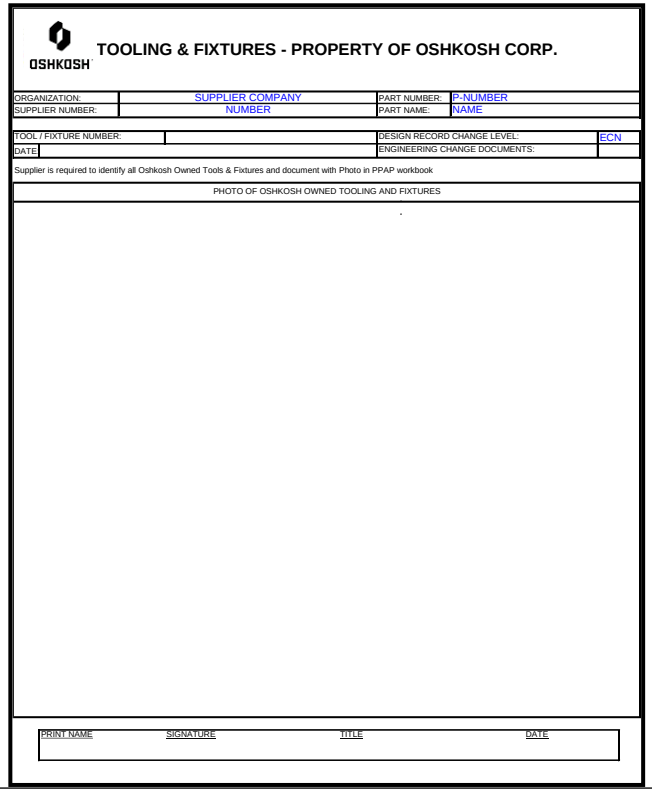
1. **This section for visually documenting how the parts are being labeled**

2. **This section for visually documenting how the PPAP parts look**

Required Always

Required where applicable

Tooling – Oshkosh Owned



OSHKOSH

TOOLING & FIXTURES - PROPERTY OF OSHKOSH CORP.

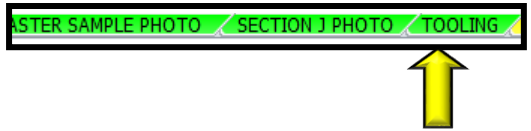
ORGANIZATION:	SUPPLIER COMPANY	PART NUMBER:	P-NUMBER
SUPPLIER NUMBER:	NUMBER	PART NAME:	NAME

TOOL / FIXTURE NUMBER:		DESIGN RECORD CHANGE LEVEL:	ECN
DATE		ENGINEERING CHANGE DOCUMENTS:	

Supplier is required to identify all Oshkosh Owned Tools & Fixtures and document with Photo in PPAP workbook

PHOTO OF OSHKOSH OWNED TOOLING AND FIXTURES

PRINT NAME	SIGNATURE	TITLE	DATE

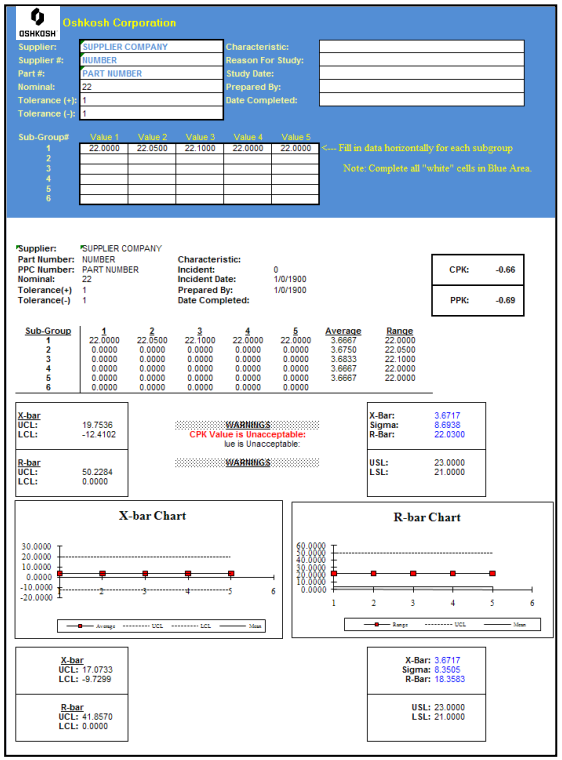


This sheet is used to visually document any Oshkosh owned tooling. It is required to attach a picture of tooling as well as the tooling identification method.

Required Always

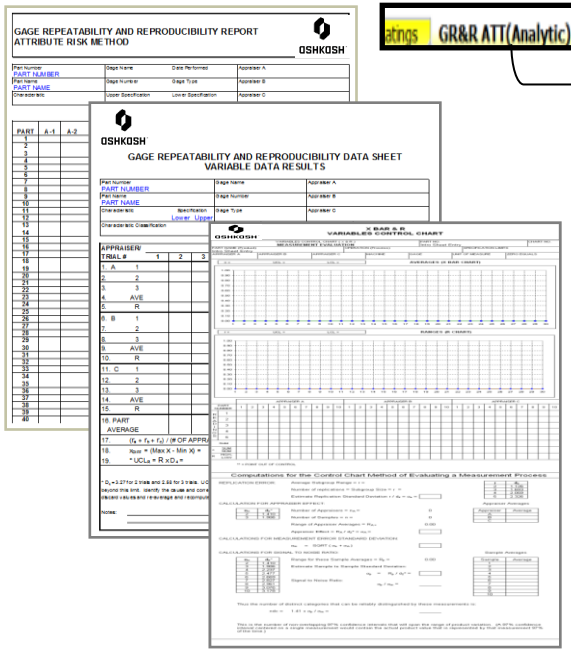
Required where applicable

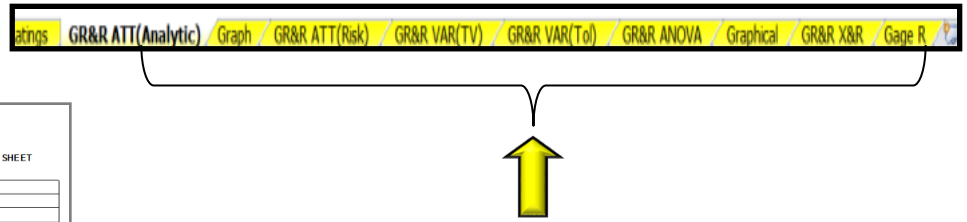
Capability Studies



This sheet is to be used to show evidence that the production process is capable to meet the design intent. This is required when Critical Characteristics (SC's and CC's) are identified on the print or other wise specified by Oshkosh Corporation.

Gage Repeatability & Reproducibility (Gage R&R)





There are multiple examples of Gage R&R forms to use. Use the appropriate form to provide evidence that the measuring method used for the Capability Study is repeatable and reproducible.

Required for SC/CC items.

Required Always

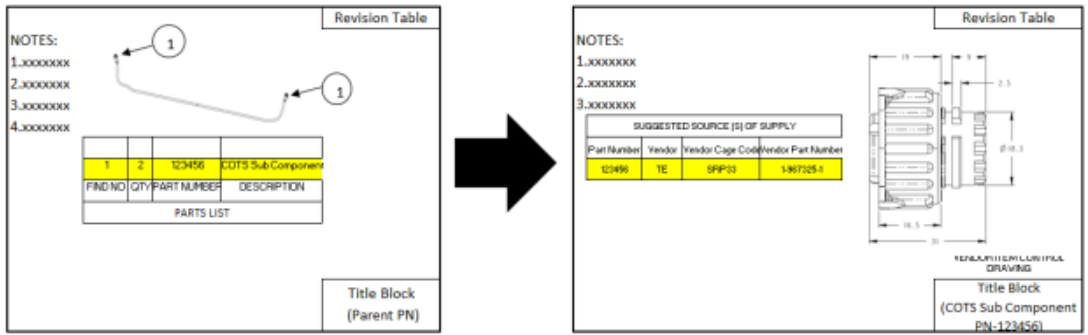
Required where applicable

COTS Subcomponent Requirements

- If a subcomponent is shown on the purchased level drawing, Certificates of Conformance (CoCs) must be provided for a listed components (or minimum Level 2 PPAP documentation.)

19.2.2. COTS subcomponents

For COTS subcomponents within the Purchased Part Level (Parent), only the certificate of conformance and design record are required if COTS Vendor Part Number specified by subcomponent drawing is used. If no Vendor Part Number is specified, a one-piece dimensional result, print note verification, design record, and Supplier Change Request (if applicable) are required.



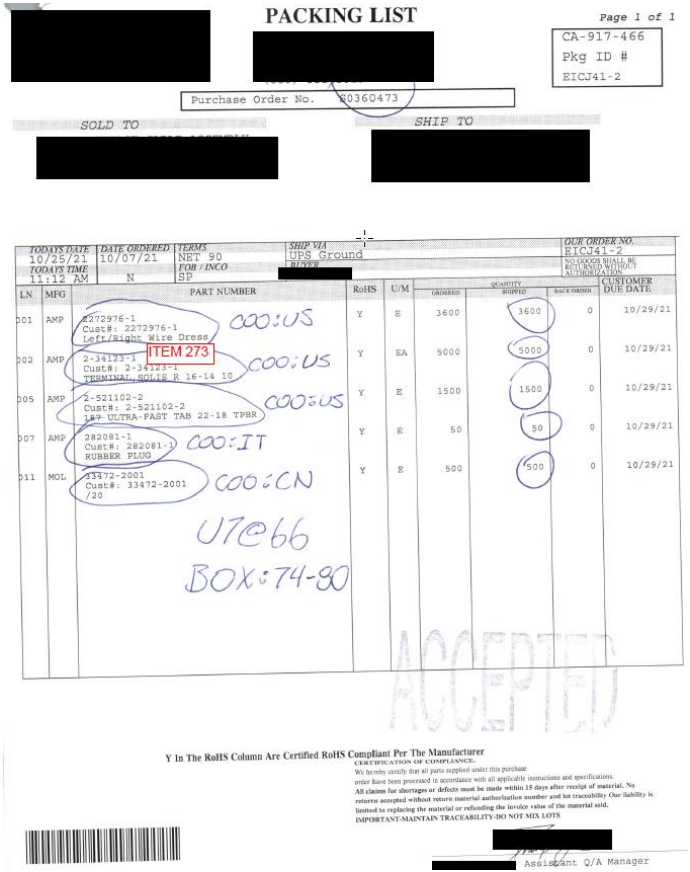
COTS Subcomponent Requirements

- CoCs must contain all of the following elements, including signature, and be from relevant purchase orders:

When the supplier cannot attain all PPAP elements, a Certificate of Conformance (C of C) will be required in addition to the above elements. The C of C letter shall:

- Confirm the article is commercially available
- Be on the supplier's company letterhead
- Include the Oshkosh part number
- Include the part revision level,
- Be signed by a representative within the contractor's organization that has decision making authority.
- Positively affirm that the part meets the requirements within the print.

Subcomponent CoC example:



[redacted]

PACKING LIST

Page 1 of 1

CA-917-466
Pkg ID #
EICJ41-2

Purchase Order No. 20360473

SOLD TO [redacted]

SHIP TO [redacted]

TODAYS DATE	DATE ORDERED	TERMS	SHIP VIA	OUR ORDER NO.
10/25/21	10/07/21	NET 90	UPS Ground	EICJ41-2
TODAYS TIME 11:12 AM	N	FOB / INCO SP	[redacted]	NO GOODS SHALL BE RETURNED WITHOUT AUTHORIZATION

LN	MFG	PART NUMBER	RoHS	U/M	QUANTITY ORDERED	QUANTITY SHIPPED	QUANTITY BACK ORDER	CUSTOMER DUE DATE
001	AMP	2272976-1 Cust#: 2272976-1 Left/Right Wire Dress	Y	E	3600	3600	0	10/29/21
002	AMP	2-34123-1 Cust#: 2-34123-1 TERMINAL, SOLID R 16-14 10	Y	EA	5000	5000	0	10/29/21
005	AMP	2-521102-2 Cust#: 2-521102-2 1# ULTRA-FAST TAB 22-18 TPBR	Y	E	1500	1500	0	10/29/21
007	AMP	282081-1 Cust#: 282081-1 RUBBER PLUG	Y	E	50	50	0	10/29/21
011	MOL	33472-2001 Cust#: 33472-2001 /20	Y	E	500	500	0	10/29/21

ITEM 273

COO:US

COO:US

COO:US

COO:IT

COO:CN

U7@66

BOX:74-80

ACCEPTED

Y In The RoHS Column Are Certified RoHS Compliant Per The Manufacturer

CERTIFICATION OF COMPLIANCE.

We hereby certify that all parts supplied under this purchase order have been processed in accordance with all applicable instructions and specifications.

All claims for shortages or defects must be made within 15 days after receipt of material. No returns accepted without return material authorization number and lot traceability. Our liability is limited to replacing the material or refunding the invoice value of the material sold.

IMPORTANT-MAINTAIN TRACEABILITY-DO NOT MIX LOTS

[redacted]

[redacted] Assistant Q/A Manager

PPAP Workbook – Level 4 Requirements

- **Intro:**
  - Type in Part / Supplier Information, this will be transferred throughout the workbook.
- **PPAP Requirements:**
  - This outlines the PPAP submission requirements. (Informational only)
- **Labeling:**
  - This is the label to be used to Identify the PPAP sample part when shipped to OSK
- **PSW:**
  - This documents the warrant that the Part Meets the design Intent
  - This will be used to communicate back to the supplier the acceptance or rejection of the PPAP
- **Dimensional:**
  - This is used in conjunction with a “bubble print” to document the actual dimensions of the PPAP part.

Required Always

Required where applicable

PPAP: Submission / Notification Process

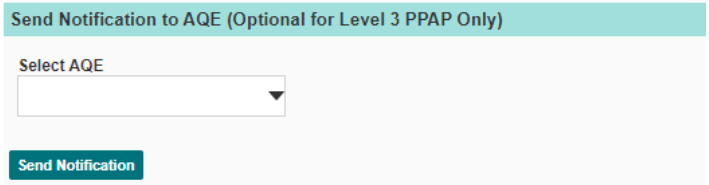
- Submit the PPAP to the appropriate Oshkosh Corporation Segment designee, (i.e.: Defense Production, Defense Integrated Product Support (IPS), Access (JLG), Fire & Emergency (Pierce), and Commercial (McNeilus).
- The PO generates and communicates PPAP requirements (i.e.: Level 1,2,3,or 4) and designated Oshkosh Segment.
- The Supplier submits the PPAP paperwork through the Reliance system; Reliance software is required for PPAP submissions regardless of segment.
  - The Supplier also submits a paper copy of the PPAP documents and part submission checklist with samples (if samples requested). Requires the Supplier identify and label as PPAP samples with label provided within the PPAP workbook.

****NOTE**** Do not email DEFENSE PPAPs. Specific Defense requirements follow.

PPAP – Defense: Submission / Notification Process

- Oshkosh Reliance Homepage
  - Upload **ALL** PPAP's to the Reliance Site
  - https://supplierquality.oshkoshcorp.com/reliance

- Email Notification of Documents on Reliance site



  - Email for Level 3 PPAPs: assigned SQE's email
  - (Defense IPS) Email for all Level PPAPs: PPAP@defense.oshkoshcorp.com

****NOTE**** Do not email DEFENSE PPAPs.
Due to ITAR regulations Load Defense PPAPs to Reliance Only.

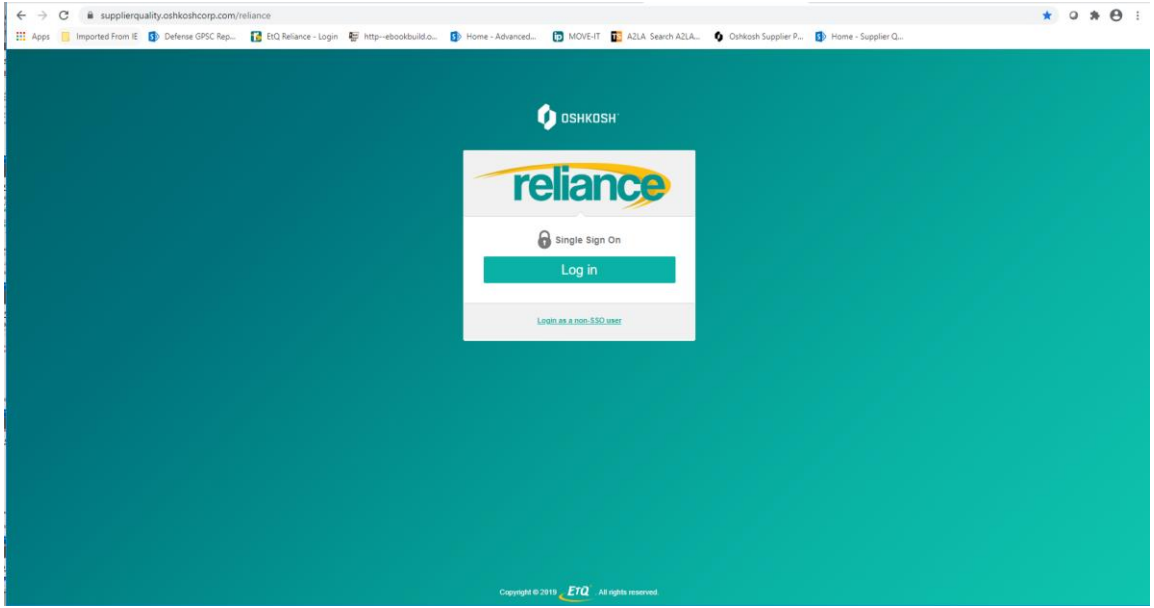
PPAP – Defense NPD: Submission / Notification Process

Send PPAP documentation with the first order.

- Upload to Reliance Site
    - No need to await approval prior to ship
- Not required to notify via email

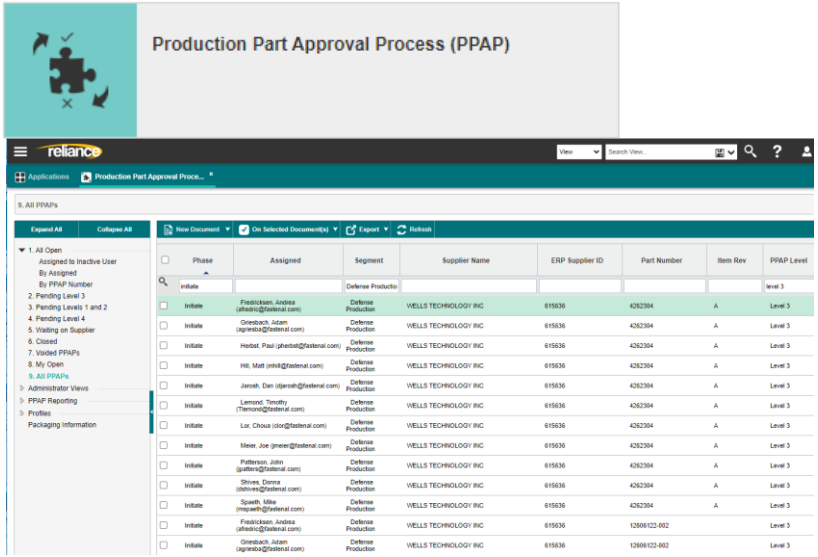
****NOTE**** Do not email DEFENSE PPAPs. Load Defense PPAPs to Reliance Site due to ITAR regulations if not sent with first order.

Defense : Reliance Site



Oshkosh Purchasing FTP Site Homepage: https://supplierquality.oshkoshcorp.com/reliance

Defense : Reliance Site – PPAP Tasks



Supplier should have a task open (initiate) for each PPAP required.

If no task exists- contact GPSC or AQE contact for assistance

Defense : Reliance Site – File Naming Convention

Suppliers are required to load PPAP packages to the Reliance site using the following naming convention:

PN_SUPPLIER NAME_MMDDYY_REV

Submission Requirements

Supporting Attachments

Comments

Part Submission Warrant Template and PPAP Submission*

Please visit https://osn.oshkoshcorp.com/gsq-en.htm for the most recent PPAP Workbook.

When uploading PPAP submission please use the standard naming convention
ITEM NUMBER_COMPANY NAME_MMDDYY_REV

Summary-Dimensional results

- *ALL* fields filled in
- Appropriate gauges used
  - Measuring device appropriate for correct number of decimal places specified
- Reference dimensions measured

ITEM	DIMENSION / SPECIFICATION	TOLERANCE		SPECIFICATION / LIMITS		GAGE TYPE*	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)			OK	NOT OK
		-	+	MIN	MAX			Piece 1	Piece 2	Piece 3		
ex	*4*	*1*	*1*	*3*	*5*			8.00	3.00	2.00		
1	450	0	50	450	500	TAPE MEASURE	3	476	475	475	X	
2	4/0, 1/2" TERMINAL (EMC 40501-1)			#VALUE!	#VALUE!	STUD GAUGE	3	CORRECT	CORRECT	CORRECT	X	
3	4/0, 3/8" TERMINAL (EMC 40381-1)			#VALUE!	#VALUE!	STUD GAUGE	3	CORRECT	CORRECT	CORRECT	X	
4	PART LABEL			#VALUE!	#VALUE!	VISUAL	3	CORRECT	CORRECT	CORRECT	X	
5	4/0 BLACK WELDING CABLE			#VALUE!	#VALUE!	VISUAL	3	CORRECT	CORRECT	CORRECT	X	
6	BLACK HEATSHRINK (EPS 300)			#VALUE!	#VALUE!	VISUAL	3	CORRECT	CORRECT	CORRECT	X	
7	BLACK HEATSHRINK (EPS 300)			#VALUE!	#VALUE!	VISUAL	3	CORRECT	CORRECT	CORRECT	X	
8	13.34	REF	REF	#VALUE!	#VALUE!	CALIPER	3	13.40	13.38	13.38	X	
9	10.29	REF	REF	#VALUE!	#VALUE!	CALIPER	3	10.37	10.37	10.34	X	

OSHKOSH DEFENSE

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QUESTIONS

OSHKOSH DEFENSE

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Summary and Reminders

Summary-Print Notes

- Measurement results should not say “CONFORMS” as a response
  - “CONFORMS TO SPECS PER XXX” is acceptable
- *ALL* print notes addressed
- Cites specific documentation
- Sub-components listed

Supplier required to provide marked up drawing to identify all "PRINT NOTES" verified.

ITEM	SPECIFICATION	SPECIFICATION / LIMITS		GAGE TYPE	QTY. TESTED	ORGANIZATION MEASUREMENT RESULTS (DATA)			OK	NOT OK
		MIN	MAX			Piece 1	Piece 2	Piece 3		
1	APPLICABLE STANDARDS/SPECIFICATIONS: A. ASME Y14.100-2013 B. ASME Y14.5-2009			N/A	3	CONFORMS TO SPECS PER DIMENSIONAL REPORT.	CONFORMS TO SPECS PER DIMENSIONAL REPORT.	CONFORMS TO SPECS PER DIMENSIONAL REPORT.	X	
2	IEEE / ASTM SI 10 SHALL BE USED IN CONVERTING AND ROUNDING OFF. 1 INCH= 25.4 mm APPLIES			N/A	3	CONFORMS TO NOTE PER DIMENSIONAL REPORT.	CONFORMS TO NOTE PER DIMENSIONAL REPORT.	CONFORMS TO NOTE PER DIMENSIONAL REPORT.	X	
3	SCOPE AND GENERAL REQUIREMENTS FOR MANUFACTURING AND ACCEPTANCE OF ELECTRICAL CABLE ASSEMBLIES SHALL BE IAW DRAWING 12607286.			N/A	3	CONFORMS TO SPEC. QUALITY PLAN PENDING APPROVAL.	CONFORMS TO SPEC. QUALITY PLAN PENDING APPROVAL.	CONFORMS TO SPEC. QUALITY PLAN PENDING APPROVAL.	X	
4	PERFORM COMPONENT FIRST ARTICLE TESTS (CFAT) PER DRAWING 12607286 FOR DESIGNATED CONNECTORS ONLY. <4A> PERFORM SECTION 2.4.2.2 METHOD 2 IN LIEU OF METHOD 1 <4B> DO NOT PERFORM SECTION 2.4.2 WATER RESISTANCE TESTING.			N/A	3	CFAT PENDING.	CFAT PENDING.	CFAT PENDING.	X	
5	ITEM IDENTIFICATION: APPLY THE FOLLOWING MARKING IAW MIL-STD-130: IDENTIFY NON-METAL MARKER AS FOLLOWS: 19207-12604451-REV MFR-(MANUFACTURER'S CAGE CODE) DATE MFR YYYY/MM/DD			VISUAL	3	CONFORMS TO NOTE. PLEASE SEE MASTER SAMPLE PHOTO.	CONFORMS TO NOTE. PLEASE SEE MASTER SAMPLE PHOTO.	CONFORMS TO NOTE. PLEASE SEE MASTER SAMPLE PHOTO.	X	

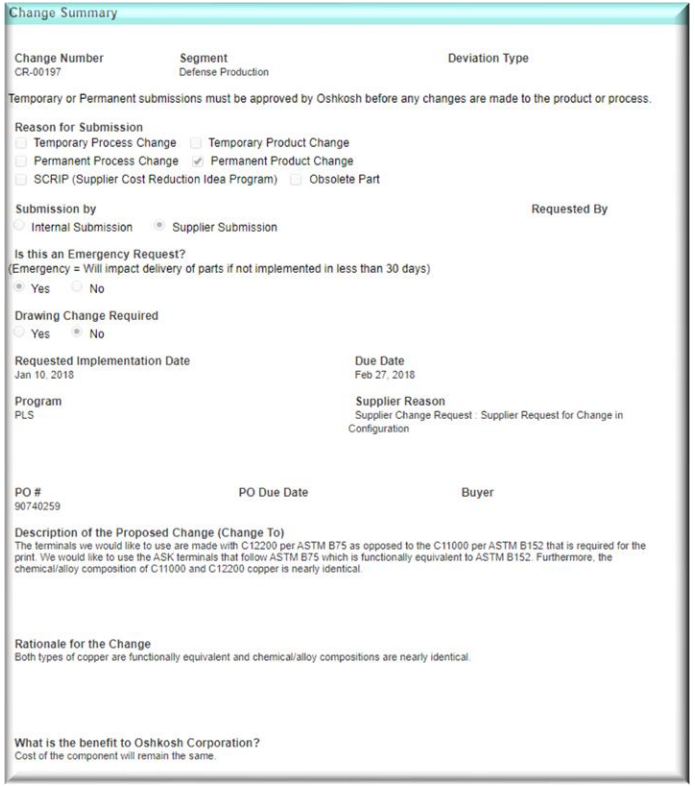
Blanket statements of conformance are unacceptable for any test results.

Summary-Material Certifications / Qualified Laboratory Documents

- Material certs and performance testing either need to be from ISO 17025 accredited lab or have Qualified Lab documents to accompany result
- Material certs and or performance testing are required for any print note that calls out specific requirement including:
  - Raw material, Painting, Plating, Heat treating, welding
- Qualified Lab documents consist of:
  - Test result
  - Test Procedure
  - Calibration records for equipment used
  - Training records for employee(s) who perform the test

Summary-Reliance Change Requests (RCM)

- Submitted when PO is *ISSUED*
- Stated on declarations field in PSW
- *APPROVED* RCM to be included in PPAP
- Multiple Part Number's (same change) can be submitted as single RCM



Change Summary

Change Number
CR-00197

Segment
Defense Production

Deviation Type

Temporary or Permanent submissions must be approved by Oshkosh before any changes are made to the product or process.

Reason for Submission
- ☐ Temporary Process Change
- ☐ Temporary Product Change
- ☐ Permanent Process Change
- ☑ Permanent Product Change
- ☐ SCRIP (Supplier Cost Reduction Idea Program)
- ☐ Obsolete Part

Submission by
- ○ Internal Submission
- ◉ Supplier Submission

Requested By

Is this an Emergency Request?
(Emergency = Will impact delivery of parts if not implemented in less than 30 days)
- ◉ Yes
- ○ No

Drawing Change Required
- ○ Yes
- ◉ No

Requested Implementation Date
Jan 10, 2018

Due Date
Feb 27, 2018

Program
PLS

Supplier Reason
Supplier Change Request : Supplier Request for Change in Configuration

PO #
90740259

PO Due Date

Buyer

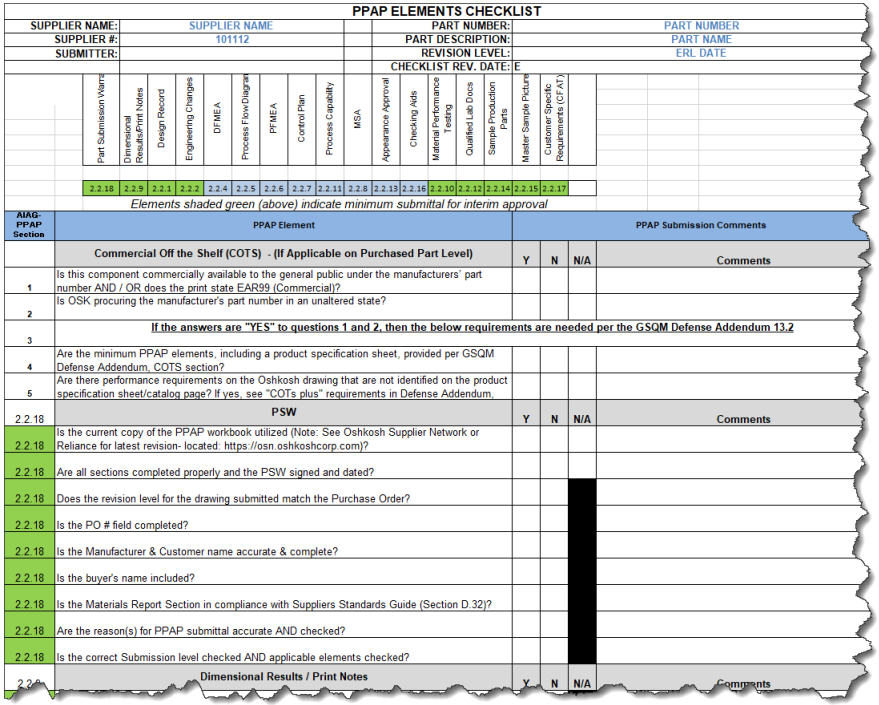
Description of the Proposed Change (Change To)
The terminals we would like to use are made with C12200 per ASTM B75 as opposed to the C11000 per ASTM B152 that is required for the print. We would like to use the ASK terminals that follow ASTM B75 which is functionally equivalent to ASTM B152. Furthermore, the chemical/alloy composition of C11000 and C12200 copper is nearly identical.

Rationale for the Change
Both types of copper are functionally equivalent and chemical/alloy compositions are nearly identical.

What is the benefit to Oshkosh Corporation?
Cost of the component will remain the same.

Summary-PPAP Checklist (QCP-112)

- *ALL* applicable sections completed
  - Commodity specific checklist
- Included in PPAP submission



PPAP ELEMENTS CHECKLIST

SUPPLIER NAME:	SUPPLIER NAME	PART NUMBER:	PART NUMBER
SUPPLIER #:	101112	PART DESCRIPTION:	PART NAME
SUBMITTER:		REVISION LEVEL:	ERL DATE
		CHECKLIST REV. DATE:	E

Part Submission Warrant	Dimensional Results/Print Notes	Design Record	Engineering Changes	DFMEA	Process Flow Diagram	PFMEA	Control Plan	Process Capability	MSA	Appearance Approval	Checking Aids	Material Performance Testing	Qualified Lab Docs	Sample Production Parts	Master Sample Picture	Customer Specific Requirements (CF.AT)
2.2.18	2.2.9	2.2.1	2.2.2	2.2.4	2.2.5	2.2.6	2.2.7	2.2.11	2.2.8	2.2.13	2.2.16	2.2.10	2.2.12	2.2.14	2.2.15	2.2.17

Elements shaded green (above) indicate minimum submittal for interim approval

AIAG-PPAP Section	PPAP Element	PPAP Submission Comments			
	Commercial Off the Shelf (COTS) - (If Applicable on Purchased Part Level)	Y	N	N/A	Comments
1	Is this component commercially available to the general public under the manufacturers' part number AND / OR does the print state EAR99 (Commercial)?				
2	Is OSK procuring the manufacturer's part number in an unaltered state?				
3	**If the answers are "YES" to questions 1 and 2, then the below requirements are needed per the GSQM Defense Addendum 13.2**				
4	Are the minimum PPAP elements, including a product specification sheet, provided per GSQM Defense Addendum, COTS section?				
5	Are there performance requirements on the Oshkosh drawing that are not identified on the product specification sheet/catalog page? If yes, see "COTs plus" requirements in Defense Addendum,				
2.2.18	**PSW**	Y	N	N/A	Comments
2.2.18	Is the current copy of the PPAP workbook utilized (Note: See Oshkosh Supplier Network or Reliance for latest revision- located: https://osn.oshkoshcorp.com)?				
2.2.18	Are all sections completed properly and the PSW signed and dated?				
2.2.18	Does the revision level for the drawing submitted match the Purchase Order?				
2.2.18	Is the PO # field completed?				
2.2.18	Is the Manufacturer & Customer name accurate & complete?				
2.2.18	Is the buyer's name included?				
2.2.18	Is the Materials Report Section in compliance with Suppliers Standards Guide (Section D.32)?				
2.2.18	Are the reason(s) for PPAP submittal accurate AND checked?				
2.2.18	Is the correct Submission level checked AND applicable elements checked?				
2.2.9	**Dimensional Results / Print Notes**	Y	N	N/A	Comments

Summary-PPAP Workbook Formatting

- All elements provided in the Oshkosh PPAP workbook tabs
- Bubble drawing must be legible, electronically numbered, and may be provided as an attachment
- Subcomponent CoC/PPAP documentation can be provided as attachments or subcomponent folder/zip files
- Documentation can be converted to PDF, but should be legible and oriented uniformly
- Cplan, PFMEA and Process Flow should have matching process steps/descriptors and correct part revision levels.

Summary-Additional Resources

Supplier Quality Manual

- https://osn.oshkoshcorp.com/docs/quality/Global_Supplier_Quality_Manual_Edition_7.pdf

GSQM Defense Addendum

- https://osn.oshkoshcorp.com/docs/quality/GSQM%20Defense%20Addendum.pdf

PPAP training (PDF)

- https://osn.oshkoshcorp.com/docs/quality/T2000v1.7.pdf

PPAP Workbook Template

- https://osn.oshkoshcorp.com/docs/quality/F2000v2.0.xlsx

Reliance PPAP submissions

- https://osn.oshkoshcorp.com/docs/Oshkosh%20Reliance%20Supplier%20PPAP%20Training.pdf

APQP E-learning Module Requests

- https://www.surveymonkey.com/r/eqlms

AIAG PPAP Manual