

Quality Assurance Purchased material

Quality Assurance process

1. APQP
2. Pre serie verify and present by (GP 11- 5405-3 V.2)
 - T1 – First shot Out of Tool, (FOT)
 - T2 – Second shot Out of Tool, (SOT)
 - T3 – Third shot Out of Tool, (TOT)
3. PPAP Phase's
 - Phase 0
 - Phase 0+
 - Phase 1-2
 - Phase 3
4. GP 12 station
5. IMDS
6. Running production

Quality Assurance Purchased material

APQP:

- Purpose with APQP plane is to be able to produced in right quality and that project handles given timeframe.
- APQP plan shall continuously be updated every month and sent to Purchaser at Plastal Industry AB for project information.

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Fixtures (3D fixture and Production fixture/ verifications)

Measuring- / Production fixture preparation

- Verification of the reference points (MLS) of the fixture (tolerance requirements 1/ 10 of the measuring range or max 0.05 mm)
- Verification of the fixture with MSA study in all MP points. ANOVA method of analysis to be used (5 parts , 2 persons and 3 times)
- 3D measuring fixture shall be ready before T1 – (First shot Out of Tools FOT series.)

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Pre serie= GP 11:

T1 – First shot Out of Tool, FOT - Measurements

2D Measurement, 5 pc parts per cavity

- Reporting of measured data files to Plastal at form(GP 11- 5405-3 V.2)

3D Measurement, 10 pc parts per cavity

- Reporting of measured data DMIS-out files to Plastal / VCC according .VCS 5036.9

Establish action plans based on the analysis Measure

Adjust the tool to nominal value

T2 – Second shot Out of Tool, SOT - Measurements

2D Measurement, 5 pc parts per cavity

- Reporting of measured data files to Plastal at form(GP 11- 5405-3 V.2)

3D Measurement, 10 pc parts per cavity. **Requirement Cm= 1,0**

- Reporting of measured data DMIS-out files to Plastal / VCC according .VCS 5036.9

Establish action plans based on the analysis Measure

Adjust the tool to nominal value

Quality Assurance Purchased material

Pre serie= GP 11:

T3 – Third shot Out of Tool, TOT - Measurements

2D Measurement, 5 pc parts per cavity

- Reporting of measured data files to Plastal at form(GP 11- 5405-3 V.2)

3D Measurement, 10 pc parts per cavity. **Requirement Cm= 2,0**

- Reporting of measured data DMIS-out files to Plastal / VCC according .VCS 5036.9

Establish action plans based on the analysis Measure

Adjust the tool to nominal value

Quality Assurance Purchased material

General for Pre series:

- The material/ parts shall be clearly marked to show which status the material/ parts have.
- Each part must be identified with the Plastal / Customer part number and serial number.
- The Label to be used can be either GP 11 form or Label from Plastal Plant.
- For each delivered batch/sample there shall be an "Supplier Warrant of material for pre-prototype and prototype builds"(acc. to GP11) filled in, in two (2)copies.

One copy shall follow the material/ parts. The other copy shall be sent to Plastal Purchasing dept.
Attn: Mr. J-Å Thelén.

Quality Assurance Purchased material

PPAP Phase:

Phase 0 =

- Production of 300 item, verification of the CAR against agreed NWC

Phase 0 + =

- 2D Measurement 5 pc parts per cavity
- 3D Measurement of 25 parts per cavity. (VTC=30)
- Must meet Cpk => 1.67
- The article must be correctly dimensioned against all 2D and 3D surfaces
- Reporting of measured data DMIS-out files to Plastal / VCC according .VCS 5036.9

Phase 1 =

- AAR verification +
- Proof that the tool is properly marked "Property of Volvo" and Tool numbers

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Phase 2 =

- Lab tests + Verify all 18 points Acc. to PPAP manual

Phase 3 =

- Production Run (TPR) for 8 hours verification of the NWC agreed CAR
- 3D Measurement of 25 parts per cavity.
- Must meet Cpk => 1.67

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GP 12 "Early Production Containment "

- *“GP- 12 is to document the supplier's efforts to gain control of its processes during start-up and acceleration so that any quality issues that may arise are quickly identified and corrected at the supplier's location”*
- GP-12 shall be used during the start-up process. Default value is a minimum of 1200 pcs. from SOP.
- Produced parts shall have 100 % control for verification. OK parts shall be marked with green dot.
- Pre-launch control plan shall be used.

Quality Assurance Purchased material

IMDS= International Material Data System

- 1st reporting takes place no later than 2 weeks after order
- 2nd and final reporting occurs at phase 0+
- Requirements Approved from customer

Quality Assurance Purchased material

Running Production

- 3D measurement X pcs / 1000th ,
where applicable and agreed according decided MP points from 3DPMI
- Requirements Cpk> 1.33
- The reporting of data DMIS-out files to Plastal / VCC according .VCS 5036.9
- Yearly Layout Inspection to verify PSW PPAP Phase 1-3 status

VCC Phased PPAP - PPAP Deliveries

 < VP > mrd	 < TT > mrd	 < PP > mrd	 < MP1 > mrd
Limited run which represents the production environment i.e. tools, processes, trained operators, location, etc. Minimum 300 parts or as per agreement with SQM.	- Uses parts from R &R - IMDS reported	- Ph2 required if additional production streams are installed otherwise Ph1=Ph2 - TPD requested if supplier can't meet Ph1/Ph2 at mrd <PP> - ISO TS 16949 req. - IMDS Accepted by VCC	- Parts in Ph1/Ph2 status approved - Normal Weekly Capacity, NWC requirements fulfilled during typically one day of production.
1. Design Records	1. Design Records	1. Design Records	1. Design Records
2. Engineering Change Documents	2. Engineering Change Documents	2. Engineering Change Documents	2. Engineering Change Documents
3. Engineering Approval (ESER)	3. Engineering Approval (ESER)	3. Engineering Approval (ESER)	3. Engineering Approval (ESER)
4. Design FMEA	4. Design FMEA	4. Design FMEA	4. Design FMEA
5. Process Flow Diagrams	5. Process Flow Diagrams	5. Process Flow Diagrams	5. Process Flow Diagrams
6. Process FMEA	6. Process FMEA	6. Process FMEA	6. Process FMEA
7. Control Plan	7. Control Plan	7. Control Plan	7. Control Plan
8. Measurement System Analysis Studies	8. Measurement System Analysis	8. Measurement System Analysis Studies	8. Measurement System Analysis Studies
9. Dimensional Results	9. Dimensional Results	9. Dimensional Results	9. Dimensional Results
10. Material and Performance Test Results (ESER)	10. Material and Performance Test Results(ESER)	10. Material and Performance Test Results (ESER)	10. Material and Performance Test Results (ESER)
11. Initial Process Studies	11. Initial Process Studies	11. Initial Process Studies	11. Initial Process Studies
12. Qualified Laboratory Documentation	12. Qualified Laboratory Documentation	12. Qualified Laboratory Documentation	12. Qualified Laboratory Documentation
13. Appearance Approval Report (AAR)	13. Appearance Approval Report (AAR)	13. Appearance Approval Report (AAR)	13. Appearance Approval Report (AAR)
14. Sample Production Parts	14. Sample Production Parts	14. Sample Production Parts	14. Sample Production Parts
15. Master Samples	15. Master Samples	15. Master Samples	15. Master Samples
16. Checking Aids	16. Checking Aids	16. Checking Aids	16. Checking Aids
17. Customer-Specific Requirements	17. Customer-Specific Requirements	17. Customer-Specific Requirements	17. Customer-Specific Requirements
18. Part Submission Warrant (PSW)	18. Part Submission Warrant (PSW)	18. Part Submission Warrant (PSW)	18. Part Submission Warrant (PSW)