	WORK INSTRUCTION WI 20	Version : 2 Print : 27/05/16 Pag.: 1/8
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WI 20: PPAP (sample) requirements for suppliers

The Dutch version is the original version.

0) changes:

0 -> 1: complete revision of this instruction

1 -> 2: change the amount of samples with measuring report from 3 parts to 5 parts

1) goal:

The goal of PPAP (Production Part Approval Process) is for the supplier to prove that he understands the specifications and that his production process (with the planned tools and methods used for the serial production) is suitable to produce the products according to these specifications.

2) Field of application + responsibilities :

- Fomeco : the purchase + commercial – technical department is responsible for requesting WI20 and the necessary documents on the order document. The quality department (Quality Assurance) has to process the received information from the supplier.
- The supplier has to follow the requirements according to this instruction WI20.

3) definition:

PPAP : Production Part Approval Process

APQP : Advanced Product Quality Planning

OEM: Original Equipment Manufacturers. For Fomeco, these are Volvo Truck, Volvo Bus, Renault Truck, DAF Trucks, Mercedes Truck, MAN, Iveco, Caterpillar.

Basic material: tubes, plates, profiles without specific treatments (like drilling, lasercutting, ...) on which Fomeco will do further operations.

Supplying: produced or semi-produced products. The supplier is responsible for the purchasing of the basic material on which he does some operations.

Subcontracting: Fomeco delivers products to the supplier. The supplier performs some operations on these products. Fomeco is responsible for the purchasing of the basic material. On this basic material Fomeco already has executed some operations.

4) supplementary documents :

- WI36 : general information & requirements for supplier
- References : QS9000 manuals (PPAP, APQP, FMEA, SPC) – always use the last version (see <http://www.iaob.org/> or related websites)

5) Functioning:

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5.1 When do we need a PPAP-approval:

The supplier needs to receive a full approval from Fomeco in following cases:

- ☐ New product (or new supplier)
- ☐ Change of product
- ☐ Modifications by the supplier (see 5.3)

If there is any doubt/question about the necessity of a “production part approval”, please contact your contact person at Fomeco.

5.2 How is a PPAP ordered + order quantity

If PPAP is requested by Fomeco, the reference to WI20 is clearly mentioned on the order document. So, the supplier is informed that he needs to follow this instruction.

Other extra requirements can be added in the order text.

The quantity mentioned on the order (Bbon) of Fomeco = number of parts needed in Fomeco.

This quantity is determined in function of:

- ☐ Number of samples needed to be able to do a significant production run (trial production run or sample production) at Fomeco
- ☐ Number of products needed for the verification of the supplier
- ☐ Number of samples needed to be sent to the customer
- ☐ Agreed minimum to be ordered

The supplier decides himself (*) how many pieces he needs to produce to be able to prove (statistically) that he's ALWAYS capable of delivering the pieces 100% following the specifications.

We advise a minimum sample production batch of 30 pieces.

(*) = in case of subcontracting, this does not apply.

5.3 Modifications by the supplier

When the supplier decides to implement modifications in his organisation or production process, that could result in modifications of the specifications or dimensions of the partnumber, Fomeco has to be informed immediately. In that way Fomeco can then decide to request a new PPAP.

5.4 PPAP- requirements

To fulfil the goal of this PPAP – instruction, the PPAP production needs to be produced **like during the serial production**, meaning :

- ☐ On the right location (to be mentioned on the PSW)
- ☐ With the right tools (jigs, fixtures, machine tooling)
- ☐ With the right machines
- ☐ With the right processes, work and control - methods

In case of not being able to fulfil these requirements, Fomeco needs to be informed before the start of your production !!

Fomeco shall answer in writing (or by mail) if PPAP can continue. In case when Fomeco decides that PPAP can continue, the supplier shall note this deviation on the measurement report (see below).

For PPAP, we need to make a difference between

- a) Basic material
- b) supplying
- c) subcontracting

a) basic material

Fomeco demands a 3.1 certificate following EN10204 for a PPAP approval, unless explicitly otherwise mentioned on the PPAP order.

This 3.1 certificate must prove the correspondence with the specifications mentioned on our order text. This means for **material** (PPAP - item: Material Performance Test Results) AND for **dimensions** (PPAP - item: Dimensional Results)!! A separate measurement report for the dimensions is also acceptable.

If other PPAP requirements are applicable, these will be specifically mentioned on the PPAP order.

After PPAP approval (next deliveries)

Fomeco will communicate, via year contract, order or other contract if other material certificates are needed, and also specify which type of certificate (not always necessary to send 3.1).

But in any case, the supplier (see also WI36) needs always to be able to guarantee the traceability of the goods. This is: the suppliers always must be able to submit on simple demand of Fomeco the correct material certificate.

And this for **30 months** after delivery to Fomeco, unless otherwise agreed in writing.

The PPAP requirements mentioned under B) Supplying, are also applicable, except of the fact that PSW is not needed (only a material certificate).

b) Supplying

PPAP requirement	Ref PPAP manual	Strongly advised	required	To be sent when PPAP
<u>Design FMEA</u> Only applicable when the supplier is responsible for the design of the product. See FMEA manual QS9000	4	X		
<u>Process Flow Diagram</u> The supplier must have a process flow diagram that describes clearly all the production steps and their order.	5	X		
<u>Process FMEA</u> To prevent possible future production problems!! See FMEA manual QS9000	6	X		
<u>Control Plan</u> The supplier must have an up-to-date control plan of each product in which all the necessary controls are defined. A control plan can be integrated into work instructions or procedures.	7		X	
<u>Measurement System Analysis (MSA) Studies</u> See MSA manual QS9000 Measurement system analysis: study of the variation of the used measurement methods by different operators.	8	X		
<u>Dimensional Results</u> = measurement report See important requirements below.	9		X	X
<u>Material Performance Tests</u> Material certificate 3.1 required Idem as requirements mentioned under 5.4 a) basic material	10		X	X
<u>Initial Process Study</u> An "Initial Process Study" needs to be done on the important dimensions and certainly on the <u>special characteristics</u> (see annex1 or WI36), when: <ul style="list-style-type: none"> <input type="checkbox"/> the supplier does not work with a 100% control <input type="checkbox"/> there is no statistical proof that the process is stable AND produces following the specifications: SPC or capability studies (Cpk) of the process, machine,... An "Initial Process Study" is a statistical study (see PPAP or SPC manual) on a limited number of pieces (= sample production batch, minimum 30 pieces) to determine in which degree this dimension will meet the tolerances during batch-productions. If an Initial Process Study is really required, the criteria of acceptance (Cpk) will be specified on the PPAP order.	11	X		
<u>Sample Product</u> The required number of sample-products (see PPAP order) must be sent to Fomeco within the agreed delivery period. If there are 2 orders at the same time for a product, the sample products always have to be sent separately.	14		X	X
<u>Part Submission Warrant (PSW)</u> The supplier must complete the Fomeco PSW document en send it <u>via e-mail</u> to the person mentioned on the PPAP order. And this together with the required documents. If some documents are not available electronically, they can be sent by fax. The Fomeco PSW document can be found on www.fomeco.be / suppliers Username: leverancier Password: levform	18		X	X

Important requirements for the measurement report:

The measurement report is used to indicate that all the required specifications are clear and produced within tolerance. Therefore all the required specifications need to be mentioned on the measurement report (including material specification and surface treatment).

The appropriate measurement method need to be chosen to measure the different specifications. Keep in mind the measurement uncertainty and the required tolerances. To prevent any misunderstandings, we advise urgently to mention the measurement method (calliper, 3D measurement machine,...) on the measurement report.

All specifications need to be mentioned with a value on the drawing. A simple OK is not sufficient, unless the measurement method is noted on the measurement report (f. ex. GO – NO GO measurement method via control jig).

The number of the measured parts is at least 5, to be chosen at random out of the sample production batch.

If “special characteristics” (see annex 1 or WI36) are mentioned on the drawing, this needs to be indicated **clearly on the measurement report** (see 5.7 for meaning and control).

The form of the measurement report is free to chose, but keep the above information in mind and also the next minimum requirements :

- ❑ Supplier name
 - If subcontractors or sub - suppliers are used, this should be stated on the measurement report.
 - If the supplier is located on different sites, the site of production of the parts needs to be stated on the measurement report
- ❑ Identification of the part : see order document (part number, part name,...)
- ❑ Version of the part : see order document
- ❑ If applicable : drawing number + version
- ❑ Date of measurements
- ❑ Number of order document of Fomeco

c) subcontracting

PPAP requirements	Ref PPAP manual	Strongly advised	required	To be sent when PPAP
<u>Process Flow Diagram</u> The supplier must have a process flow diagram that describes clearly all the production steps and their order.	5	X		
<u>Process FMEA</u> To prevent possible future production problems!! See FMEA manual QS9000	6	X		
<u>Control Plan</u> The supplier must have an up-to-date control plan of each product in which all the necessary controls are defined. A control plan can be integrated into work instructions or procedures.	7		X	
<u>Measurement System Analysis (MSA) Studies</u> See MSA manual QS9000 Measurement system analysis: study of the variation of the used measurement methods by different operators.	8	X		
<u>Dimensional Results</u> = measurement report See important requirements under b) supplying. For surface treatment : see important requirement below.	9		X	X
<u>Initial Process Study</u> An "Initial Process Study" needs to be done on the important dimensions and certainly on the <u>special characteristics</u> (see annex1 or WI36), when: <ul style="list-style-type: none"> <input type="checkbox"/> the supplier does not work with a 100% control <input type="checkbox"/> there is no statistical proof that the process is stable AND produces following the specifications: SPC or capability studies (Cpk) of the process, machine,... An "Initial Process Study" is a statistical study (see PPAP or SPC manual) on a limited number of pieces (= sample production batch, minimum 30 pieces) to determine in which degree this dimension will meet the tolerances during batch-productions. If an Initial Process Study is really required, the criteria of acceptance (Cpk) will be specified on the PPAP order.	11	X		
<u>Sample Product</u> The required number of sample-products (see PPAP order) must be sent to Fomeco within the agreed delivery period. Nonconform products need to be packed separately. If there are 2 orders at the same time for a product, the sample products always have to be sent separately.	14		X	X
<u>Part Submission Warrant (PSW)</u> The supplier must complete the Fomeco PSW document en send it <u>via e-mail</u> to the person mentioned on the PPAP order. And this together with the required documents. If some documents are not available electronically, they can be sent by fax. The Fomeco PSW document can be found on www.fomeco.be / suppliers Username: leverancier Password: levfom	18		X	X

IDENTIFICATION:

The goods will be sent to the subcontractor with an identification "SAMPLE" on the packaging.

For surface treatment:

For a sample production a separate PPAP order will be made. For a batch production, we do not work with a separate order, but with an open order (OBC = Oppervlakte behandelings contract = Surface treatment contract), see WI36.

All specifications mentioned in the standards of our OEM-customer must be demonstrable by one or another document. The specifications should be bundled on the measurement report. This does not mean that all required tests have to be done on our products.

Following tests need to be performed on our products :

- ☐ layer thickness
- ☐ gloss
- ☐ colour
- ☐ adhesion

5.5 identification of the sample-goods

When Fomeco asked for PPAP, the goods shall be extra identified with a same kind of label:

SAMPLE

The shape and colour of the label can be chosen by the supplier itself.

5.6 PSW approval

When Fomeco receives the requested PPAP-documents, Fomeco will take one of the following decisions:

- ☐ **FULL APPROVAL:** Fomeco gives the approval to the supplier to produce the product “in full production”. This of course according the delivery schedules or future orders. The supplier needs to assure that all future productions will fulfil the specifications.
- ☐ **INTERIM APPROVAL:** Fomeco does not give the approval yet to the supplier to produce the product “in full production”. But deliveries can be done, limited in quantity or until a certain date. Interim Approval is only allowed when:
 - ☐ The cause of the nonconformity was clearly determined and
 - ☐ An action plan was set up to achieve a “full approval”.
- ☐ **REJECTED:** Fomeco gives NO approval to deliver the products. New sample products and documentation have to be delivered before obtaining a “full approval”.

An Interim or Full Approval given by Fomeco does not mean that the responsibility of the suppliers ceases.

5.7 Archives

Production Part Approval Records must be kept as long as the product is active + 1 calendar year. A product can only be put on non active position after written approval by Fomeco.

ANNEX 1 : special characteristics

Meaning: our automotive customers have each their own symbols to classify certain specification on the drawings.

The classification is based on the gravity of the consequence when a non conformity occurs on a certain specification.

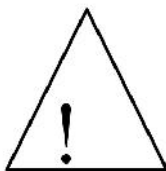
If our customer indicates a specification on the drawing with a special characteristic, he informs us that we should follow up very closely that specification. This because, in case of non conformity, it can cause seriously consequences on

- ☐ safety
- ☐ product life
- ☐ function (problems during assembly with possible line - stop)
- ☐ process

Therefore it is very important that this information is also translated into your organisation e.g: production preparation, production, quality department. This, by among other things, by mentioning these information on the necessary documents (work and control instructions..) Anyway it is necessary that the mentioned specification is fully controlled by one of following methods:

- ☐ 100% checking
- ☐ mistake proofing
- ☐ statistical control (SPC)

Because the different customers are using different symbols, we will note following symbol clearly on the drawing next to the specification.



Attention : The basis rule that all dimensions should be within tolerance, is always valid. This has nothing to do with the fact if a special characteristic is mentioned or not.