Quality Guidelines for suppliers of **Perfect Coat B.V.**

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Introduction

Perfect Coat B.V. is creating added value for customers through innovative coating & surface treatment solutions by providing our customers with tailor-made all-round solutions covering the entire field of industrial painting in all types of 1K and 2K coatings, both water- and solvent-based. Coatings are applied to synthetic surfaces for various reasons, from a design angle, the coating may be required for protecting the product and in terms of aesthetics, coatings may be used to make the product more attractive. Process control for our automatic coating lines ensures that coating conditions are optimum, spraying robots guarantee consistent quality.

The following quality guidelines apply to all activities within Perfect Coat B.V. (hereinafter referred to as PC).

With the implementation of a quality management system, PC intends to fulfil all expectations of their clients and consumers. The suppliers assume a critical role during the implementation of this goal. The quality guidelines concluded with our suppliers forms the foundation for our corporate work. It defines specific quality requirements for the development, production and inspection of delivered parts and services, as well as the management system.

PC expects all suppliers to conform with the listed items in these guidelines at all times. The suppliers shall make sure that their sub-suppliers conform to the guidelines to the same extent.

The quality guidelines for suppliers is a binding document and integral part of PC's general terms and conditions of purchase. It is an essential part of the agreement between PC and the supplier and shall already apply during the pre-contractual enquiry stage.

In the context of optimizing an environmental management system, we expressly encourage our suppliers to actively participate in the constant reduction of operational environmental impacts and pollution during product development, planning of manufacturing processes, packing and transport of products.

1. Procurement and Quality

We strive to establish long-term partnerships with our suppliers. Constant attention to improve the collaboration within the supplier's processes and systems contributes to profitability, high reliability of supply arrangements and quality improvement.

Rapidly changing and increasing client requirements to PC require highest flexibility and readiness - also from the suppliers - to solve problems creatively and quickly. Therefore, the supplier's deliveries and services shall have to fully comply with all agreed statutory requirements. In order to pursue the zero-defect objective, consequent advanced quality planning and effective serial production control shall be imperative. The emphasis shall be on fault prevention. The supplier shall undertake to only deliver faultless products.

The quality guidelines serve for the better understanding of the special requirements by PC, and a better implementation of these requirements in close cooperation.

1.1 Requirements to the Suppliers Management System

The suppliers shall undertake to establish and maintain a quality management system that - as a minimum - complies with the specifications according to EN ISO 9001 (in its current version), and prove this with a certificate. The suppliers' aim shall be to adjust the quality guidelines to the standards of the International Automotive Task Force IATF16949 (in its current version) and deliver respective proof.

Compliance with applicable laws and regulations, as well as fulfilment of the End-Of-Life Vehicles Directive 2000/53EC is thus a requirement placed upon the suppliers. Immediately after certificates are awarded, these shall be sent automatically in the valid version to the purchasing department of PC.

The increasingly tightening environmental legislation on national and EU level, as well as a growing environmental awareness require the implementation of environmental management systems. The supplier shall therefore implement an environmental management system according to the currently applicable versions of ISO 14001 or the Eco-Management and Audit Scheme (EMAS) respectively.

2 Supplier Qualification

2.1 Supplier Selection

The supplier for production materials and quality related services shall be selected from the "list of approved suppliers only, and by taking into account the past supplier evaluations and passing a positive potential analysis.

2.2 Supplier Approval

New suppliers who meet the criteria listed below may be added to the list of approved suppliers:

a.) at least certified according to EN ISO 9001, preferably according to the standards of the International Automotive Task Force IATF 16949 and/or Formel Q.
b.) financial security
c.) positive initial evaluation by the purchasing/supplier development department
d.) positive potential analysis according to the German Association of the Automotive Industry e.V. VDA 6.3 (mandatory, if not certified according to the standards of the International Automotive Task Force IATF 16949 or Formel Q)

The supplier shall ensure that his/her sub-suppliers implement an adequate quality management system and have appropriate procedural instructions as well as inspection and test plans in place.
Any changes at the sub-suppliers or of their procedures shall have to be presented to PC for approval.

2.3 Supplier Development

PC is developing their supplier base towards conformity with the standards of the International Automotive Task Force IATF 16949 (always the relevant most current version).

In order to meet PC's requirements, the supplier's quality management system shall have to be all about prevention rather than the identification of faults. Therefore, it is necessary to use the development and process know-how to rule out the manufacture of products outside specifications.

PC makes sure that their suppliers establish continuous promotion and improvement efforts and further develop the competence of staff by implementing incentive systems.

2.4 Supplier Evaluation

The suppliers quality performance shall be measured continuously (at least every three months) and calculated by using an integrated evaluation system. For this purpose, a distinction shall be made between three different categories: A (90%-100% performance), B (80%-90% performance), and C (≤ 80% performance) suppliers.

The following factors shall be taken into account:

- Quality performance (number of complaints)
- Logistics performance (delivery reliability)
- Service performance (such as handling of complaints, quotation details, etc.)
- Certification status (ISO 9001; IATF 16949 and/or ISO 14001)

A list of critical suppliers shall be subject to permanent review.

These are suppliers who:

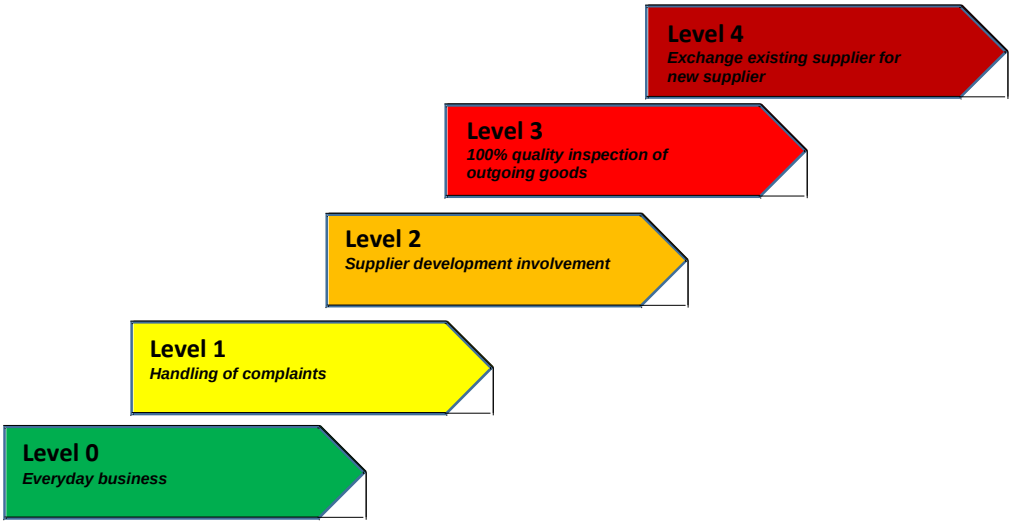
- according to the evaluation were categorized as a B supplier or worse
- are in the supplier escalation
- have been standing out for negative deviations regarding deadlines, quantity and quality
- are in a difficult economic crisis
- have had negative monthly evaluations

The presentation of an action plan for the improvement of the quality performance shall be obligatory for suppliers of the category C. Furthermore, quality meetings with and at the suppliers, as well as on site residents shall be scheduled at the expense of the supplier.

2.5 Escalation for Non-Compliance

If quality problems continue to occur with deliveries, PC shall make sure that respective escalation procedures come into force. The objective of the procedures is to implement adequate measures at the supplier to further and sustainably improve the quality of the delivered goods, and thus ensure that the products and materials delivered will fully meet the quality requirements in the future. Classification into one of the four categories based on the duration and severity of the quality problems. The general management of the supplier company shall, in principal, be responsible for the implementation of the necessary measures agreed upon.

2.5.1 Escalation Procedures by the Supplier



2.5.1.1 Escalation Level 0
Everyday business, no escalation procedures necessary.

2.5.1.2 Escalation Level 1
Due to quality issues, the supplier is notified in writing about the problem / defect. The supplier shall have to implement effective corrective measures as part of his/her complaints procedure. These measures shall have to be introduced to PC, and documented in a 8-D report and action plan.

2.5.1.3 Escalation Level 2
For non-compliance of the quality requirements in escalation level 1, the action plan shall be reviewed for adequacy and effectiveness during a quality meeting on site (event-related process audit). The supplier shall be responsible for the implementation of the resulting measures. The supplier shall have to report the updated status / progress regularly to the competent departments at PC.

2.5.1.4 Escalation Level 3
For non-compliance of the quality requirements in escalation level 2, the supplier shall be moved to escalation level 3. The supplier shall have to inspect 100 % of the outgoing goods, and label the package of the inspected goods accordingly. Compliance with the measures as described in escalation level 2 shall be mandatory.

2.5.1.5 Escalation Level 4
If, despite the implementation of extensive quality improvement measures from preceding escalation levels, no sustainable improvements in the quality of the deliveries have been achieved, PC shall be able to initiate a change in supplier after prior internal approval. Until the transition to a different supplier is complete, the supplier shall undertake to ensure deliveries in the quality required by taking appropriate measures.

Suppliers categorized in this level may be blocked from receiving new enquiries. The supplier shall be notified upon reaching this status.

2.5.2. De-escalation
A de-escalation by one or more levels may be granted after 3 consecutive OK deliveries.

2.6 Objective Agreement
As a matter of principle, PC pursues the strategic “zero-defect objective”. This is why a “zero-defect objective” shall be a mandatory and essential prerequisite for all deliveries by the suppliers.

In order to achieve this objective, PC shall enter into an agreement with their suppliers defining measurable objectives for the delivery quality (quality agreement) and determining the relevant action limits. Each justifiable claim shall be recorded and evaluated accordingly.

If the agreed objective has not been reached, and the set action limit exceeded, the supplier shall have to unsolicited initiate additional short-term measures for quality assurance. These additional measures must then be reported to PC (supplier development department) in writing. The effectiveness of the measures must also be verified in writing. Please note that failure to meet agreed PPM objectives is subject to penalties.

Penalties are applicable, if PPM values exceed the defined target value in three consecutive months and are valid till the supplier decreases the PPM level under the target value. First month in which the PPM objectives may be applied is SOP)* + 3 months, on account of target values with SOP. The penalty level is 1% of the part price. The volume of parts considered contains parts supplied in one month. The penalty is applied with one-month delay for settlement of possible disputes and is deducted of the payment for parts.

PPM targets:

	SOP)* + 3 months	***SOP)* + 6 months***	***Year: 2018***	***Year: 2019***	***Consequently to EOP)****
ppm value	200	100	50	50	20

)* SOP = Start Of Production)* EOP = End Of Production

3 Advance Product Quality Planning / APQP

3.1. General

Advance product quality planning forms the basis for potential avoidance of faults and the continual improvement process. The advance quality planning process is covering all stages of the product life cycle, from development to serial production stage. It requires an interdisciplinary team composed of all major divisions such as research and development, production planning / work preparation, production, purchasing and quality assurance.

Therefore, PC shall expect the supplier to carry out advance quality planning according to the provisions of the German Association of the Automotive Industry e.V. VDA 4 and/or the provisions of the AIAG „APQP – Advanced Product Quality Planning.

3.2 Feasibility Evaluation

The feasibility evaluation assesses whether a product can be manufactured under series conditions in accordance with the drawings and the specifications.

The feasibility evaluation shall be required for each product requested by the Purchasing division. Especially the stated tolerances shall have to be observed from a statistical point of view, but also the product's function and stresses. Furthermore, a statement shall have to be made on whether the suppliers capacity is sufficient for the supply of the planned quantities and whether the deadlines can be met.

In particular, the inspection characteristics (SC [significant characteristics], CC [critical characteristics]) shown in the drawing shall be taken into account.

Proposals by the supplier regarding modifications or additions to be made to the drawings and specifications shall be anticipated, thoroughly reviewed and implemented by PC with a view to continuously improving the product quality, process reliability and most economic production.

This part of the advance product quality planning / APQP shall be an inherent part of the quotation. If the feasibility evaluation form - completed and signed - is **not** included in the quotation sent to the Purchasing department, the quotation shall not be taken into consideration.

3.3 Specifications and Requirements

PC shall offer all the necessary information and technical data for enquiries and orders. With the exception of merchandise and articles defined in the catalogues without any special requirements.

This technical data comprises these quality guidelines, current drawings as well as other regulations and standards describing quality characteristics to be followed (e.g. specifications, client instructions, standards, etc.), if applicable.

During the individual advance product quality planning stages, the supplier shall constantly monitor the technical data for completeness, relevance and accuracy. In the event of subsequent changes, the supplier shall be responsible to make sure that his/her relevant departments have all current data and that this data complies with all documentation, manufacturing and quality instructions.

The supplier shall undertake to:

- obtain and comply with legal regulations, all specifications and standards in the respective current version (according to details in the drawing)
- define and comply with all special characteristics (regarding safety, certification, function) according to the recommendations of the volume "Joint Quality Management Within The Supply Chain" by the German Association of the Automotive Industry e.V. (VDA).
- notify PC about missing information (e.g. specifications, standards, client requirements, etc.).
- point out inconsistencies in the documentation to the person responsible in the purchasing department of PC.

3.4 Requirements for Prototypes and Pre-Production Parts

3.4.1 Definition of Prototypes

Prototypes are parts that are generally not produced by using series tools. These parts are produced by the manufacturer by making use of all technical and production engineering means at his / her disposal, in accordance with preliminary drawings. They shall have to be capable of operating at full capacity. In general, prototypes shall be delivered with a measurement report. The measuring points shall have to be defined in coordination with the persons in charge at PC. The supplier of the prototypes shall maintain close contact to the development department of PC. If so required, the prototype supplier for PC shall submit all available prototype production data to plan the production processes and manufacture of the production tools. Prototypes shall have to be clearly labelled by using tags or labels. Deviations from the standards are only permitted with the written consent of the relevant project manager prior to the submission of the parts. The supplier shall undertake to keep a project schedule throughout all development phases and to always submit the latest version to the client.

For partial deliveries, relevant customs regulations shall have to be taken into account.

3.4.2 Definition of Pre-Production Parts

Pre-production parts are parts produced by using production tools, contrary to prototype parts. Rework shall be permitted in order to comply with the specifications in the drawings, as long as it is disclosed in the sample documents. The inspection of these parts shall be carried out 100% according to the agreed inspection extent and be reported in a measurement report.

A product life report shall have to be kept for each component comprising the development status as well as the current index versions and drawing status.

3.4.3 Definition of Other Samples (Materials and Other Purchased Parts)

This includes all samples, such as prototypes or custom-made Samples according to DIN 55 350 - Part 15. Materials and most purchased parts are commercial and/or catalogue goods. For this purpose, the supplier shall provide a sample with a sample inspection report as well as all relevant data and a safety data sheets.

3.5 Process Flow Chart

The process flow chart is the graphic description of the entire process sequences from incoming goods over production to shipment. It is supplemented by brief descriptions of individual production stages, lists means of production and various inspection points, as well as shows the material flow. Process flow charts are imperative for advance product quality planning. They form the basis for maintenance and production control plans. If requested so in the initial Sample order, these shall be attached to the initial Sample documents.

Important operations, automatic queries and inspection facilities shall have to be identified, assessed with regard to existing risks in the FMEA process, and secured with suitable inspection methods in the production control plan, if needed.

Material labelling and material flow shall have to be defined in such a way that processing faulty material or parts can be ruled out.

3.6 Failure Mode and Effects Analysis (FMEA)

In order to identify potential product defects and the consequential impact on the overall product and the user, and/or to assess associated consequential costs due to these defects, PC expects their suppliers to carry out a failure mode and effects analysis. It shall have to systematically include the risks that may result from the product design (system FMEA - product) as well as the risks that may result from the production, packaging or transport process (system FMEA - process).

A **Product System FMEA** must only be prepared, if the responsibility for the design of the supplied product was assigned to the supplier with his/her prior consent. The scope and schedule for the preparation of the expected product system FMEA shall have to be coordinated with the person responsible in the delivery development department at PC.

A **Process System FMEA** and/or revision shall usually be required with new, modified or verifiably faulty or flawed processes (e.g. as a consequence of client complaints).

In general, the content of the production control plan shall be the result from the system FMEA for product and process. This may include validation tests as well as tests during series production runs to minimize identified potential risks.

Product characteristics and process parameters recognized by the FMEA's as "significant" or "critical" (SC or CC) shall become characteristic features of the production control plan.
For the preparation of the system FMEA for product and process, the guidelines according to volume 4 of the German Association of the Automotive Industry e.V. (VDA) shall have to be followed. The risk assessment and the measures taken by the supplier shall be submitted to PC for review upon request.

3.7 Production Control Plan

A key stage in quality planning is the creation of a production control plan. The production control plan shall describe the control system for parts and processes. A production control plan may refer to one product group or family which is manufactured using the Same processes at the Same facility. In addition, instructions regarding process monitoring and maintenance scheduling shall be defined and constantly implemented.

A production control plan shall describe the required actions during each phase of the production process including incoming goods inspections, process associated inspections and quality inspections of outgoing goods, as well as all periodic inspections to verify that all processes are under control.
Periodic inspections are e.g. functional tests, reliability tests, endurance tests in compliance with technical specifications and product requirements.

The production control plan shall be kept updated throughout the product's entire life-cycle. Complaints by clients, as well as modifications to the product or processes could give rise to necessary updates.
The production control plan shall at least comprise all characteristics shown in the drawings and specifications, and which derived from the FMEA's, as well as the necessary tests and inspections for re-qualification.
The production control plan shall have to be made available to PC for review as part of the sampling.

3.8 Projecting Tools and Equipment

Process flow charts, FMEA's and production control plans shall have to be reviewed regarding the fact whether all requirements for the development of the new machine, tools, measuring devices and equipment resulting from earlier problems were taken into account. There shall be an obligation to produce evidence for short-term capability prior to the supply from new tools/equipment.

The supplier shall have to prepare a detailed schedule for the procurement of new and modified tools, measuring devices and equipment. This schedule shall have to be regularly reviewed for compliance in order to ensure accordance with the schedule of PC. In the event that the suppliers schedule deviates due to technical modifications, problems with the tools or for any other reasons, the responsible person of the purchasing department at PC shall have to be informed immediately. Proposals for further required actions to meet the original deadline shall have to be submitted in writing.

In case of the production of new tools or any modifications of tools or spare tools, 5 new initial Samples (for multi-cavity tools five samples per cavity) free of charge with a respective initial sample inspection report shall have to always be presented to the relevant representative in charge of sampling at PC.

3.9 Measuring and Test Equipment

The supplier shall be responsible for the application of adequate measuring and test equipment (including software and programs) to achieve a satisfactory process monitoring solution.

The supplier shall assume sole liability for the provision of standard measuring instruments. The measuring methods and instruments shall have to be included in the production control plan. If required, these are coordinated by PC and the supplier.

The manufacturer shall have to install and maintain an appropriate monitoring system for measuring instruments or other equipment used as measuring or test instruments.

In order to guarantee production reliability and delivery of faultless parts, all measuring and test equipment (MSA 1, MSA 2) listed in the production control plan shall have to be approved, and evidence of their capability be provided.

3.10 Documentation of Characteristic Features

For characteristic features subject to mandatory documentation, the supplier shall make sure to always provide access to and total traceability of complete documentation in terms of the suppliers compliance with all specifications over the entire period of manufacture.
The requirements of volume 1 of The German Association of the Automotive Industry e.V. (VDA) in the latest version shall apply.

3.11 Characteristic Features (SC, CC Features)

PC shall mark characteristic features on their drawings according to the volume “Joint Quality Management within the Supply Chain” by the German Association of the Automotive Industry e.V. (VDA).

Characteristic Feature S Safety

Characteristic Feature C Certification

Characteristic Feature F Function and Requirement

Critical characteristics according to volume 1 “Documentation and Archiving” by the German Association of the Automotive Industry e.V. (VDA) shall refer to a portion of the features included in the definition of the term “Characteristic Features”. These shall include Characteristic Feature S and Characteristic Feature C (compare with volume “Joint Quality Management within the Supply Chain” by the German Association of the Automotive Industry e.V. (VDA).

Upon request by the clients of PC, their specific marks or symbols shall be added onto the drawings of PC as characteristic features. The proper handling of marks and symbols of PC’s clients shall have to be clearly defined during the APQP process.

The following requirements and procedures shall apply:

Characteristic Features S and C (CC features) are special characteristics **with influence on the compliance of statutory regulations and / or reliable product and vehicle functionality.**

Characteristic Features F (SC features) are special characteristic **with influence on product and vehicle functionality in terms of client satisfaction.**

The results of the risk assessment shall have to be documented for all characteristic features and be approved by PC.

Moreover, there shall be an obligation to produce evidence for the preliminary process capability and monitoring of process capability during serial production for the characteristic features. The results regarding the process capability shall be part of the initial Sample inspection documents.

3.12 Evidence for Process Capability

Process capability studies shall serve as evidence that the variance of identified and agreed product and process characteristics that are of importance is so minor, thus ensuring a necessary statistical distance to the tolerance limits, and allowing to forgo a 100 % inspection of respective “process capable” characteristics.

Throughout the period of serial production, the supplier shall be obligated to demonstrate capability of the essential characteristics in accordance with the production control plan and the specifications within the scope of initial Sampling, as well as upon request.

Process capability shall always be determined based on the specifications from volume 4 of the German Association of the Automotive Industry e.V. (VDA) and/or AIAG/PLC, provided no deviating requirements have been agreed with PC.

The following statistic parameters shall have to be determined and complied with to proof process capability:

Short-term capability	cm/cmk	≥ 1.67
Preliminary process capability	pp/ppk	≥ 1.67
Long-term capability	cp/cpk	≥ 1.33

If the process capability parameters are not reached, the respective characteristics shall have to undergo a documented 100% inspection. The respective proof of inspection (documentation of the results) shall have to be submitted to PC upon request.

3.13 Packaging Design

The choice of packaging has a direct impact on the product quality and must therefore be reviewed during the feasibility assessment and before submitting the quotation.

Packaging shall have to be coordinated with the management of the purchasing and packaging department of PC.

If no special packaging is required by project management, the supplier shall arrange appropriate packaging, taking into account the different methods of transport and transport routes, as well as the prevention of quality risks due to moisture, corrosion or soiling. The supplier shall have the obligation to ensure that all parts arrive at the plants of PC without any damages or reduction in value.

Packaging shall be defined in consultation between the supplier and AV/logistics of PC before initial sampling. Packaging shall be designed in a way that it can be moved with any standard means of transport.

3.14 Quality Assurance for Parts from Subcontractors

The supplier shall bear full responsibility for the assurance of quality of parts and services supplied by subcontractors. Negative impact on the quality of the products or services by PC that is proven to be attributed to the subcontractor shall be charged to the supplier.

The supplier shall have to ensure, control and continuously assess the quality capabilities of their subcontractors, and integrate these directly into the advance quality planning process.

3.15 Quality Assurance Agreement (QAA)

In consultation between the supplier and PC, further quality assurance agreements may be concluded which shall, e.g.

- specifically define guaranteed characteristics and their control
- determine provisions regarding the assessment of rejected goods
- declare the use of specific reference samples

or other similar binding rules.

Upon the request by one of the parties, a QAA may be prepared in writing at any time and be concluded, if agreement on the scope and period of application is reached.

4 Initial Sample

4.1 Submission of initial Samples

Unless agreed otherwise, in the following cases initial Samples according to volume 2 of the German Association of the Automotive Industry e.V. (VDA) - submission level 2 or PPAP - level 3 (PPAP/AIAG) shall have to be submitted for approval and/or approval testing prior to serial production:

- prior to first serial production delivery of a new part

- prior to serial application of new tools
- prior to serial application of modified materials
- prior to serial production delivery after a change in tools or process/procedure
- following a completed modification due to changes in the drawing
- following a correction in accordance with the inspection report by PC
- following a relocation of production

All initial samples shall have to be produced with processes, materials and tools, as well as the personnel deployed for future serial production.

In principle, PC shall require sampling by the supplier in accordance with volume 2 of the German Association of the Automotive Industry e.V. (VDA) - submission level 2. In exceptional cases, sampling may be required according to the PPAP procedure (AIAG/PPAP), depending on the client requirements.

4.2 Initial Sample Production with ISIR (PPAP)

The initial Sample inspection or test report, the relevant initial Sample parts and materials, as well as the required documents shall have to be marked accordingly as “Initial Sample” and submitted to the requesting department at PC.

It has to be taken into account that parts which come from multiple tools shall have to be inspected and recorded per cavity. Characteristics that cannot be tested by the supplier shall have to be verified with the relevant test reports from accredited test institutes. The test reports, safety data sheets, product data sheets and/or material data sheets shall have to be attached to the initial samples / initial sample test report.

4.3 Entry and Maintenance of Material Data in the IMDS

IMDS refers to “**I**nternational **M**aterial **D**ata **S**ystem“ and is a joint venture between Audi, BMW, Daimler, Ford, Opel, Porsche, Volvo, VW and HPE.

As a result of the national and international environmental legislation (EU end-of-life vehicles regulation 2000/53/EC, hazardous substances legislation, etc.), each automotive manufacturer shall be responsible for a vehicle’s entire life-cycle (manufacture, handling and processing, sale, use, service, recycling and disposal).

The supplier shall have the obligation to ensure that all materials of the product are entered into the IMDS.

4.4 Scope of the Initial Sampling

For the final approval for serial production, 5 initial Samples per tool, cavity and/or manufacturing process, or any other agreed scope shall have to be presented. This shall not affect potential other test samples that are required by other technical departments at PC.

4.5 Marking and Delivery of Initial Samples

Submission of initial samples shall have to comply with the following requirements:

- The initial sample parts and deliveries shall have to be marked with a label “Initial sample” or banderole “Initial sample”.
- The order number of initial samples shall have to be indicated on the delivery notes and documents.
- The initial Sample inspection report shall have to be completed. This includes a parts drawing on which the individual items of the measurement report are marked.
- The initial sample inspection report includes all required documents from the initial sample order.
- PC identification number, quantity and technical modification index shall have to be included in all of the documents.
- Initial samples shall have to be delivered separate from the serial material.
- All cavities (mould cavity) of the parts from multiple tools shall have to be labelled.

Deviations of the above-listed procedures shall not be accepted, unless they were agreed upon in writing during the APQP process. In the event of conflict, special approval can be requested by the supplier allowing for the delivery of the parts for a limited time period and / or quantity.

4.6 Assessment and Approval of the Initial Sample with ISIR (PPAP)

Upon receipt of the initial sample test report and the initial samples, PC shall carry out their own inspection (e.g. dimensions, material, function and/or installation capability), if necessary. The report shall be returned to the supplier with the inspection decision marked on the cover.

One of the following decisions shall be made:

1.) **Grade 1 (approval)**: Serial production deliveries can be carried out without restrictions.
2.) **Grade 3 (conditional approval):** Deviations from the specifications. The delivery of products shall be restricted to a certain time period and/or amount. Time-phased re-sampling shall be required.
3.) **Grade 6 (no approval):** A deadline for new samples shall have to be coordinated between the personnel in charge at PC and the supplier without delay.

Deviations to the specifications and/or requirements that were not identified during validation of the initial Samples may still be rejected at the time of detection.

If **no approval** may be granted, the project manager shall be able to request a **written special approval** before serial production delivery. The production test run shall be approved, if the approval has been granted for the initial Samples and the objectives for provisional process capability have been achieved.

4.7 Production Test Run

Validation of the effectiveness of the manufacturing process shall start with the production test run. It shall be performed under series conditions. It may be used for the production of the initial Samples. The minimum quantity for a process approval shall be determined between the supplier and PC.

The parts from the production test run shall be used for:

- determining the process capability
- validating the production and assessing the capacity
- evaluating packaging

PC shall reserve the right to attend the production test run with their own personnel (production readiness / Run @ Rate).

4.8 Additional Inspection Expenditure for Required Resampling

If additional resampling is required due to identified defects attributable to the supplier, the additional costs (PC, client) shall be charged to the supplier.

4.9 Modifications

Modifications of any kind made to the components, production processes and production sites shall have to be reported to the purchasing department at PC in writing for approval. Also affected by such regulations shall be all modifications of quality assurance measures implemented with respect to manufacture of the products.

After approval / authorization by PC, initial sampling shall be carried out by the supplier.

If no approval is granted by PC, the current status shall continue to be valid and to be delivered, and the current process shall have to be maintained by the supplier.

For new launches and changes in the application the first three shipments shall have to be marked with a label or a sticker (”modified parts”).

5 Requirements for Product and Process Quality

5.1 Supplier's Liability

After the initial sample has been approved, compliance with the specification and/or approved initial samples of all parts delivered to PC shall have to be ensured by the supplier with the implementation of the proper systems.

The supplier shall assume responsibility for all measures contributing to the compliance of the above mentioned requirements and shall ensure this over the entire period of delivery.

5.2 Process Control and Serial Inspection

The statistical process control (PLC) shall have to be applied by the supplier for serial inspection. By means of the respective process behavior charts (PBC), the supplier shall have the obligation to demonstrate that statistical process control is applied for all specific (SC and CC) and controllable characteristics. PC shall reserve the right to view these documents at any time, if required.

For characteristics that are not subject to statistical process control the supplier shall have to take random samples at regular intervals. Acceptance of a batch shall have to take place without the identification of a faulty part during random sampling.

The documentation shall have to clearly and unambiguously specify the quality regulating measures.

Parts produced in a non-capable process (cpk < 1.33) shall have to undergo a 100% inspection following the production and prior to delivery. The supplier shall continue to apply the 100% inspection until the production process has been optimized and the process capability has been demonstrably established (cpk ≥ 1.33).

From an economic point of view, PC shall expect a continuous optimization of the process with the objective of a permanent variance minimization. The corresponding documentation shall have to be within easy reach for the personnel at PC to be viewed at any time. PC shall reserve the right to view the cpk values and data upon consultation.

5.3 Random Sample Scope and Inspection Frequency

The determination of inspection characteristics in serial production in an appropriate inspection frequency depends upon the controllability of the production process. The determination of the inspection frequency and the random sample scope may take place only after the process capability with regard to the characteristic has been demonstrated. The proper and appropriate implementation of the inspection frequency and random sample scope requires knowledge of respective quality methods.

5.4 Measures by the Supplier for the Occurrence of Faults or Errors

The supplier shall undertake to inspect the quality of the products to be delivered to PC prior to the delivery to PC in a way to ensure that no defective products that do not fully comply with the agreed specifications are among the delivered products. Both parties shall agree that due to the implementation of an inspection system for outgoing goods at the supplier, the incoming goods inspection at PC shall be limited to random sampling only.

PC shall report any evident defect of the delivery to the supplier in writing and without delay. Non-obvious defects that become apparent during processing of the components shall also be reported to the supplier at the respective time of detection.

PC shall raise complaints regarding defects according to a proper course of business. In this respect, the supplier shall waive the claim of late notification of defects for hidden defects. In Germany, section 377 of the German Commercial Code (HGB) shall apply.

5.5 Audits

A targeted monitoring, assessment and improvement of the effectiveness of QA shall require the supplier to carry out scheduled incident-driven audits. The number and frequency of such audits shall be determined by the supplier and shall be based on the existing processes and systems.

The supplier is also obliged to carry out internal audits by themselves without prior notice. The number and frequency of such audits shall be determined by the supplier (at least ones per year) and shall be based on the existing processes and systems, the results should be available in writing for PC at any time, without delay.

PC or a representative shall be entitled to carry out audits at the supplier and subcontractor (sub-supplier), if needed in order to review the QM systems in place. The audit may be carried out in form of a system, process or product audit. The nature and scope of the audits shall have to be agreed upon in advance.

An audit carried out by PC shall not release the supplier from his/her responsibility to deliver acceptable products and materials, nor shall it exclude a rejection by PC.

5.6 Re-qualification

All products shall be subject to a complete dimensional and functional inspection, taking into account the client's specifications for material and function.

Unless agreed otherwise, this shall have to take place once a year at the time of serial production start-up (approval of PPF/ISIR). Proof shall have to be provided unsolicited in the form of PSW cover sheet (submission level “0” / ISIR level - 1).

In special cases and according to the project and/or product-specific requirements, the proof of the re-qualification inspection can be extended.

The supplier shall also be responsible for the accomplishment of re-qualification at his/her suppliers.

5.7 Marking of Deliveries

5.7.1 Implementation of a new drawing and specification index

If parts are manufactured in compliance with a new index, these parts may not be mixed with the parts manufactured in compliance with the old index. In addition, the supplier shall have the obligation to make sure that the parts in compliance with the old index are delivered first. If delivery of parts already manufactured in compliance with the old index is no longer possible, these parts shall have to be disposed of as scraps. The use of parts in compliance with the new index shall be listed separately on the delivery documentation. Moreover, containers and packages shall have to be labelled according to part designation, drawing number and the respective index.

5.7.2 Indication of the batch number on the delivery note

Batches delivered shall have to receive the respective batch number on the delivery note and accompanying documents. This shall guarantee that the production volume concerned can be determined in case defects are identified. The batch number shall be subject to the documentation obligation.

5.7.3 Delivery with special approval

Deliveries provided with a special approval by PC shall have to be marked accordingly and separately on all delivered units.

5.8 Subcontractors

The supplier shall be fully responsible for our products manufactured by subcontractors. This means that the supplier shall have to enforce consequent and quality assuring measures such as the implementation of FMEA (see section 3.2), process capability inspections and the application of statistical process regulation and to monitor these accordingly.

In case of complaints, the supplier shall also undertake to implement appropriate measures at his/her subcontractors, and monitor the implementation accordingly.

5.9 Inspection of the Delivered Parts

As the supplier is responsible for the realization of the delivered parts, incoming deliveries shall only be inspected by common random sampling. The inspection of incoming parts shall be reduced (skip lot procedure),

if proof of process capability has been demonstrated by the supplier and the history of the quality of the parts has been positive. This proof shall have to be submitted to PC.

Furthermore, a 3.1 inspection certificate according to DIN EN 10 204 shall have to be attached with every delivery. The content of the inspection certificate shall have to be agreed between the supplier and the department in charge at PC. In individual cases, a copy of the inspection report or the process behavior chart may be attached as well.

5.10 Packaging

The type of packaging for the serial parts shall have to be coordinated and approved by PC in writing.
The packaging labels of the parts shall have to indicate the date of manufacture. If the material has only a limited life time, the expiration date shall have to be indicated as well.

5.11 Provided Products

In the event that the supplier renders his / her service on the products acquired or provided by the client, the required quality shall have to be ensured with an appropriate incoming goods inspection before processing or modification.

On this occasion, characteristics shall be inspected that might still be considered a risk to cause a reduction in quality, even after the supplier performed his / her services, and that might lead to a complaint by the clients clients.

Findings shall have to be reported to the client in writing in the form of an inspection report within 3 workdays (depending on the urgency) upon receipt of the goods. The goods shall be placed on hold and not be modified, until a decision is submitted by the client concerning this. This shall apply in particular, if there are remaining uncertainties or doubt with respect to the expression of characteristics, or a characteristic and its expression are not clearly known. Returns or complaints of the supplier to the client shall be carried out exclusively in the state of delivery acceptance.

5.12 Traceability

An adequate system to ensure the traceability of all parts delivered to PC shall be established by the supplier, which provides the data such as production lots, dates etc.. Such a system shall be urgently required to quickly contain the possible consequences of receiving defective parts. In recall cases, this effective traceability system shall help to keep the costs to a minimum.

The system shall have to include the following:

- Traceability of lots on the product line, shift, date of manufacture and test and inspection documents.
- The lot numbers / date codes shall have to be indicated on each off-tool part.
- Each initiated delivery shall have to be identifiable and traceable.
- The lot numbers / date codes shall have to be delivered in the correct order of production. First In – First Out (FIFO) of parts shall have to be observed for stocking and storage.
- A product life report with respect to modification history.

Parts concerned by this regulation that are received by PC without appropriate traceability and labelling may be rejected at the expense of the supplier.

6 Deviations and Corrective Measures

6.1 General

PC shall expect the supplier to deliver parts that fully comply with all approval requirements. If the supplier is uncertain about the necessary standard, the respective quality assurance department of PC of the receiving location shall have to be contacted. In addition, PC shall expect to be informed promptly, if the supplier suspects the delivery of materials that deviate from those standards. The supplier shall have the right to apply for a special approval, if the quality standards of PC are not met.

The special approval shall be subject to a limited time period and / or a partial quantity. The necessary corrective and countermeasures shall have to be defined and implemented within this limited time period. PC shall have to be kept informed regularly about the progress and outcome.

In case of potential supply shortages, the purchasing or logistics division of PC shall have to be informed immediately. PC shall reserve the right to charge the occurred additional costs to the supplier.

6.2 Handling of Faulty Units

If PC detects deviations from the drawings and specifications in the course of the inspection of the delivery item, PC shall be able to determine one of the following consequences:

Rejection: PC shall reject the entire delivery lot.

- PC shall submit the technical inspection data in form of an inspection report to the supplier for review.
- The supplier shall have to replace the rejected delivery lot without delay or promptly provide PC the reworked parts.

Conditional Acceptance:

- PC shall conditionally accept the delivery in view of possible rework.

Rework at PC's premises:

- If the delivery is not returned for scheduling or financial reasons, rework could be arranged at PC's premises. In this case, PC shall advise the supplier how to implement appropriate corrective measures, and inform him / her which transfer price shall be charged to the supplier for these.
- The option for rework, e.g. by means of a replacement delivery (as regulated by law), shall not be available at this moment for the supplier, as in turn a supply gap to the client's client could be expected.
- The suppliers departments in charge shall be notified immediately. In order to prevent production interruptions in the production plants of PC, the timely delivery of fault-free parts to the lines shall have to be the highest priority for the supplier.
- The supplier shall respond to complaints by means of an 8D report.

The following deadlines shall be adhered to:

- Definition of immediate measures (8D report up to and including section 3) within 24 hours.
- Description of planned countermeasures (8D report up to and including section 5) within 10 work days.
- Completion after 3 consecutive OK deliveries.

The supplier shall be liable for all expenses incurred in connection with a complaint.

6.3 Recalls

If recalls are made by PC or their clients that were caused by faulty parts from the supplier or his / her sub-suppliers, the supplier shall have to bear the costs.

<u>These shall be in particular:</u>

- Costs / Expenses for de-installation / removal
- Costs / Expenses for rectification / rework
- Costs / Expenses for new parts
- Costs / Expenses resulting from sorting or replacing the stocks
- Costs / Expenses for notification to the consumers as well as

- Costs / Expenses for inspection actions that have incurred or incur directly or indirectly by the client
- Costs / Expenses for processing the complaint according to the currently applicable rates of the client

Further reimbursement of costs and compensation claims to the client that might emerge shall not be affected.

7 Continuous Improvement Process (CIP)

7.1 General

Continuously improving our products and services is one of the fundamental principles with respect to our quality policy. It is vital to us to maintain and improve our position in the market. The many effects that our suppliers have on the performance of PC in terms of products and services require the implementation of the philosophy to constantly improve ourselves among the entire supplier organization.

Continuous improvement of our suppliers shall include the following:

- The high quality of the parts, the service (i.e. length of time needed, deliveries, technical capabilities and collaboration) and the price. This requirement does not eliminate the need for innovative improvement.

- In order to effectively implement the procedure toward a permanent improvement, the supplier shall have to constantly expand his / her knowledge of well-known measures and methods regarding the analysis, monitoring and assessment of his/her process.

7.2 Continuous Improvement of Procedures

Regardless of the capability requirements for the process capability, particular attention is given to constant improvement with high priority on the characteristic features.

The supplier shall be able to recognize opportunities for improvement of the quality and productivity and thus address suitable projects or initiatives in terms of optimization.

Examples are as follows:

- Machine downtimes, machine set-up times
- Cycle time / transport
- Scrap, rework or repair / rectification
- Utilization of floor space without value generation
- Part diversity too high
- Revolving stock and storage
- Costs too high due to low quality
- Difficult assembly and installation of the product
- Wait time and idle times

7.3 Documentation and Filing of Inspection Results and Inspection Documents

The supplier shall keep appropriate documentation of the quality data according to the particular requirements, and shall determine how inspection and test results are documented. He / she shall have to ensure that the results are clearly allocated and implemented to the products / batches.

7.4 Liability

The supplier shall take out and maintain an appropriate business liability insurance and product liability insurance with additional product liability coverage, as well as general product and motor vehicle recall insurance with a coverage that meets the project requirements of at least 2 million EUR for product-asset damages per damage event. The insured sum shall have to be provided with a double maximum annual coverage. Expenses and costs incurred by PC and which can be attributed to an infringement of these quality guidelines shall be borne by the supplier. This also refers to the fact that the supplier shall be accountable and reliable for his sub-suppliers towards the client.

8 Emergency Plan

8.1 Emergency Plan

The supplier shall have to prepare an emergency plan that shows how supply to PC is guaranteed under the following circumstances:

- interruption of the power supply
- labor shortage (sickness rate)
- failure of important equipment and machines
- capacity shortage with increasing client demands
- capacity shortage with complaints by the client
- quality and delivery issues with subcontractors
- other serious events that could pose a risk to the supply

If the supply is not ensured despite all emergency plans, PC (purchasing and logistics department) shall have to be notified in writing without delay.

9 . Requirements regarding the suppliers environmental & energy management

9.1 Environmental Management

Within the framework of our responsibility toward the environment, the supplier shall be required to establish and maintain an environmental management system according to DIN EN ISO 14001. An ISO 14001 certificate shall be included in the supplier evaluation. The request for environmentally relevant elements may be part of an audit by PC.

Suppliers without a certificate according to DIN EN ISO 14 001 or EMAS regulations shall be required to:

- implement a documented environmental management system.
- possess an environmental protection program.
- be aware of and observe environmental laws and applicable regulations and provisions, be informed about upcoming changes and adjust to these accordingly.
- know and document their environmental aspects and impacts, assess the significant aspects and from these construe adequate improvement programs.
- carry out adequate training of the personnel regarding topics relevant to the environment.
- consider environmental aspects during research and development, process planning and production.

9.2 Energy Requirements

In order to contribute towards the sustainably careful use of resources, energy efficiency constitutes an essential element of conserving resources. A systematic energy management system according to DIN EN ISO 50 001 is a powerful tool in continuously promoting energy efficiency within the company. Besides the achievable cost reductions, competitiveness shall be enhanced.

A certified energy management system also evaluates the concept of sustainability within the supply chain. Therefore, the supplier shall be required to pursue certification according to DIN EN ISO 50 001 and/or plan to implement measures to improve energy efficiency and consumption reduction.

10 REACH Requirements

10.1 Registration, Evaluation and Authorization of Chemicals

REACH stands for Registration, Evaluation, Authorization of Chemicals. It is an EU chemicals regulation aiming to centralize and simplify chemicals legislation throughout Europe. REACH came into force on 1 June 2007.

REACH stipulates that only those chemical substances may enter the market which have been registered successfully.
All suppliers of chemical substances to PC shall undertake to exclusively deliver registered substances and/or to disclose potential hazards as SVHC substances (substances of very high concern).

11. Annex Bibliography

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12.0 Versions / Revisions

Version	Revision	Date	Prepared by
1	First Edition	02.01.2018	Hans Nijssen