HELLA Quality Management

Guidelines for SUPPLIERS

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FORVIA

HELLA

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1 | INTRODUCTION

A world of continuously changing customer expectations and worldwide competition requires continuous improvement of all products and services as well as business processes and corporate procedures.

Customer satisfaction through quality in all aspects is a crucial success factor for HELLA as a SUPPLIER of complex products for the international automotive industry and consequently for you as our contractor (termed “SUPPLIER” hereafter), whose products are used in or for HELLA assemblies/ products.

The achievement of zero defect(s) quality for all supplies is an absolute prerequisite which can only be achieved and secured through the common efforts of HELLA and its SUPPLIERS.

Avoiding defects instead of discovering defects and continuous improvements in the entire supply chain, customer inquiry, offer, order, product development, start of production, volume deliveries and field operation are indispensable requirements which we must and want to fulfil with the active help of our SUPPLIERS.

This guideline highlights HELLA’s basic requirements for SUPPLIERS and also refers to the valid international standards, methods and implementation instructions (e.g., by VDA) which are necessary to achieve common objectives. Customer requirements may exceed HELLA’s basic requirements and have to be followed as part of our customer’s satisfaction policy.

APPLICABILITY AND DEFINITION

The guideline is binding for all products and services supplied by a SUPPLIER to HELLA GmbH & Co. KGaA, or to a company associated with HELLA where HELLA has the majority share and is part of “Framework Supply Agreement for the procurement of manufacturing materials”, “HELLA General Terms of Purchasing”, “FORVIA General Purchasing Conditions” or comes into operation by individual agreements.

For clarification, in this guideline, the expressions "shall", “must” and “have to” mean "has a duty to".

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2 | HELLA'S POLICIES

The following extracts from HELLA's quality, environmental and health & safety policies should provide the SUPPLIER an orientation which focus has to be considered with regard to these subjects.

The benchmarks for HELLA's actions are customer satisfaction through first-class quality of all products and services, as well as cooperative work and a high level of expertise.

The **zero defect(s) quality** of our products, actions and services, combined with expertise, innovation and internationalism, will secure the satisfaction of all customers in the long-term, and thus our competitiveness.

HELLA QUALITY POLICY

The target is zero defects for delivered quality during the product life and for all HELLA services. To secure these claims and to guarantee customers consistently high quality in every respect, we plan quality down to the last detail during the development of product and manufacturing process, using carefully chosen methods. This planning procedure is carried out independently of whether production is later to take place on HELLA premises or at the SUPPLIERS, and includes all substances and materials used, of course. After SOP, the serial quality of the product is assured and continually improved by means of accompanying quality observation and control.

Meeting customer requirements and fulfilling internal quality targets have the highest company priority.

We also expect this procedure from our SUPPLIERS, who have to have an effective, successful quality management system available.

HELLA ENVIRONMENTAL POLICY

HELLA is committed to protect the environment. In order to implement this environmental policy, HELLA has had its plants certified according to ISO 14001 [1]. We require our suppliers to meet the relevant valid environmental legislation. We expect an effective environmental management system from our SUPPLIERS which improves the SUPPLIER's environment performance continuously. Upon request, the SUPPLIER must be able to demonstrate appropriate waste avoidance, recycling and disposal concepts for both products and packaging.

HELLA HEALTH & SAFETY POLICY

HELLA is committed to ensuring safe, ergonomic and healthy workplaces. Our health and safety standards focus on a culture of prevention. HELLA has had its plants certified according to ISO 45001 [2].

We require our suppliers to meet the relevant health and safety legislation. We also expect an effective health and safety management system from our SUPPLIERS which improves the SUPPLIER's health and safety level continuously. Upon request, the SUPPLIER must be able to demonstrate appropriate hazard identification, risk assessment and training of employees in safe working practices.

3 | QUALITY MANAGEMENT

A correlation between the SUPPLIER's organizational and technical prerequisites and HELLA's quality requirements is the basis for a successful business relationship. In detail, HELLA requires the following from SUPPLIERS:

	TOPIC	ACTIONS/ PREREQUISITES	METHODS, DOCUMENTS
REQUIREMENT LEVELS	**MANAGEMENT SYSTEM**	• EN ISO 9001 [3]	• Certification by a 3rd party
		• IATF 16949 [4]	
		• ISO 14001 [1]	
		• ISO 45001 [2]	
		• Sustainability Assessment	• Assessment by EcoVadis
	QUALITY ASSURACE	• Systematic processing of faults • Avoiding repeat faults	• Problem-solving techniques • Cause-effect analysis • Feedback to development and engineering change process
	AUDITS	• Regular internal audits (e.g. Layered Process Audit)	• System, Process (VDA 6.3 [5]) and Product (VDA 6.5 [6]) and VDA 6.7 [7]
	CONTINOUS IMPROVEMENT	• Introduction and maintenance for all products, processes and services	• Reverse FMEA on demand
			• Hidden Risk Analysis on demand
QUALIY PLANNING LEVELS	**IMPLEMENTATION OF CONCEPT**	• Integration in HELLA project team	• Advanced product quality planning • Control Plan • Process Audit
		• Estimation of quality risks	• Product/Design FMEA
			• Fault tree analysis/risks
	PRODUCTION PREPARATION	• Estimation of possible production risks	• Process FMEA
	PRE-SERIES	• Checking and evaluating production reliability	• Analysis and proof of capability • for testing equipment, machines, and processes • Full-Run test/Process Audit
	SERIES PRODUCTION START-UP PHASE	• Series production approval at SUPPLIERS	• Measurement sequence and SPC
			• Process release • Initial sample inspection report acc. PPAP/PPA • Define boundary samples
AREAS OF QUALITY CONTROL	**PROCUREMENT**	• Securing of delivery quality	• Evaluation of quality performance
			• Acceptance material test certificates in compliance with DIN EN 10204 (Types of inspection documents) [8] Evaluation of supply reliability
	TESTS	• Continuous supervision of process capability	• SPC/technical control chart
		• Securing machine availability	• Preventative maintenance
		• Ensuring proper packaging	• Packaging plan
	COMPLAINTS PROCESSING	• Avoiding repeat faults	• 8D Report
	STORAGE AND TRANSPORT	• Consideration of manufacturing data and expiry dates where applicable	• FiFo principle

4 | IMPLEMENTATION OF BASIC REQUIREMENTS

The most important HELLA requirements from the quality management process described which have to be met and documented by the SUPPLIER before the beginning of the business relationship and/or during current business have been detailed out and will be described below.

4.1 MANAGEMENT SYSTEMS AND SUSTAINABILITY

MANAGEMENT SYSTEMS

The SUPPLIER confirms to have effectively introduced a Quality Management System (QM-system) in his company and thus proves his quality capability.

A QM-system that is aligned to the requirements of IATF 16949 [4] is a prerequisite for a SUPPLIER relationship with HELLA.

The minimum requirement for all SUPPLIERS whose products or services are used in HELLA assemblies/ products is a certificate based on the respectively valid version of EN ISO 9001[3] and compliance with Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers (MAQMSR) [9]. HELLA recommends 3rd party certification in compliance with IATF 16949 [4].

In addition, HELLA is requesting a certificate based on the valid version of ISO 14001 (Environmental Management Standard), or at least a schedule of implementation and a certificate based on the valid version of ISO 45001 (Occupational Health and Safety Management System), or at least a schedule of implementation.

The certification to all above mentioned standards must be delivered by accredited certification bodies.

Additional requirements can be defined according to VDA Volume 6 Part 1 [10] or the AIAG documents [11]. Specific customer documents may also have to be heeded. The efficiency of the QM-system is mirrored in:

- Continuous and provable improvement of all business and manufacturing processes and products
- Delivery quality
- Supply reliability
- Continuous field observation of its products and commitment to provide customer information when requested
- Efficiency and speed in implementing corrective actions
- Communication on all levels
- Processing of new products and changes to serial products professionally and in line with schedules

At least 3 months before the expiring date of a certificate, HELLA must be informed by the Supplier in case no re-certification is planned. The SUPPLIER shall send new certificates to the HELLA Material Group Manager or Purchasing contact without a separate request having to be made. In case of a revocation of the certificate, the SUPPLIER shall inform HELLA immediately.

SUPPLIER shall nominate a PSCR (Product Safety & Conformity Representative) to be in charge of all related tasks in accordance with VDA Band “Product Integrity” [12] and IATF 16949 [4].

SUSTAINABILITY

All SUPPLIERs are requested to work on reduction of the environmental impacts of their products and processes by developing new solutions supporting the “Circular Economy”. Furthermore, HELLA requests all its SUPPLIERS to be regularly assessed by the sustainability rating company EcoVadis.

The SUPPLER must deploy actions on their operational perimeter to

- improve the energy efficiency and usage of renewable energy of their sites to reduce greenhouse gas emissions
- prevent air, water, soil and noise pollution
- reduce hazardous material and waste as well as develop a sustainable use of resources – materials, energy and water
- protect the biodiversity in the context of land and legal deforestation

On request, the SUPPLIER shall inform HELLA about the Carbon Footprint of the supplied products. The Carbon footprint calculation should be carried out in line with the International Standards on LCA (Life Cycle Assessment) (ISO 14040 [13] and ISO 14044 [14]).

HELLA has set the target to have a carbon neutral supply chain by 2045 and SUPPLIERS are requested to set up its own targets and measures in line with this target.

SUB-SUPPLIERS

The SUPPLIER shall ensure that his sub-SUPPLIERS also meet the above-mentioned requirements. As proof, the SUPPLIER must be able to present the valid certificate issued by an accredited certifying company (3rd party audit). If the SUPPLIER places orders with sub-contractors, he shall ensure that his sub-contractors also meet the requirements of this guideline. HELLA must be informed in good time about the use of and change in sub-contractor and must approve this. A production process and product release must be conducted.

4.2 AUDITS

HELLA AUDITS

HELLA reserves the right to conduct audits and assessments on SUPPLIER´s management systems, processes, products as well as on sustainability at short notice, with the HELLA customer if appropriate, following prior announcement. The SUPPLIER shall grant the auditor access accordingly. If the quality management systems, processes or products are subject to type approvals, the SUPPLIER shall also grant access to legal authorities or authorized technical services. The SUPPLIER shall inform HELLA about such visits in advance.

If HELLA, together with its customers, wants or must carry out audits of SUPPLIERS' contractors (“sub-contractors”), the SUPPLIER shall ensure to enable such an audit to be carried out with sub-contractors.

SUPPLIER AUDITS

The SUPPLIER shall carry out internal planned audits according to VDA Volume 6 Part 3 [5] and/or VDA 6.5 [6] for all the products delivered to HELLA and all the processes linked with their development and production at regular intervals, planned annually in advance. On request the SUPPLIER shall provide the results of internal audits to HELLA. This is based on contractually defined product specifications and properties as well as further agreements affecting the deliveries, e.g., logistics and packaging. In the event of deviations, the SUPPLIER initiates all the corrective actions necessary and ensures their effective and long-term implementation.

If quality problems occur which are caused by performances and/or deliveries of the SUPPLIER’s sub-contractors, the SUPPLIER shall carry out an audit at the sub-contractor’s if requested to do so by HELLA, with HELLA participation if appropriate, and present the results to HELLA.

4.3 FURTHER BASIC PRINCIPLES

In addition to the standards listed in this guideline, HELLA ordering documents are binding, e.g., but not limited to:

- Order drawings including the requirements these specify such as DIN standards, HELLA standards,
- technical conditions of delivery, data sheets etc.
- Agreed test instructions and testing equipment
- Additional order details e.g., packaging regulations
- Special legal requirements
- FiFo principle
- Material test certificates in compliance with DIN EN 10204 [8]
- Special requirements related to sustainability (e.g., responsible sourcing, climate change / product carbon footprint), environmental protection, recycling, health & safety

4.4 DELIVERED QUALITY AND INCOMING GOODS

The products need to be free of any design, material or processing defects and must comply with the specifications and properties contractually agreed. The SUPPLIER shall bring proof of composition of the materials used and their individual components as well as environment-related aspects.

In case of quality problems or blocking of products or processes the SUPPLIER is obliged to inform HELLA immediately and in writing, before the products are delivered, and to agree the necessary corrective actions with the Quality Assurance of the HELLA production plants.

Furthermore, the supplier has to create a deviation approval request form sheet on its own with meaningful explanation of the deviation itself and risk assessment regarding possible effects. Without signature by the responsible HELLA representative of the receiving plant any delivery of the affected products to the respective plant is not permitted.

REQUIREMENTS ON MATERIAL DATA REPORTING SYSTEMS

For all products requested, a material data sheet must be sent to HELLA in the IMDS (International Material Data System) or in other Material Data systems that are requested by the final end customer which must be used for specific markets, like CAMDS (Chinese Automotive Material Data System). After agreement the material data sheet can be published. The material data sheets (MDS) must be kept up to date according to the valid IMDS recommendations or equivalent requirements in the relevant system (e.g., IMDS or CAMDS), considering the latest version of the GADSL (Global Automotive Declarable Substance List, www.gadsl.org). Further customer standards, specifically, but not limited to, the FORD RSMS, have to be complied with as well.

With ending of the delivery obligation, the material data sheet shall be updated with the latest information on materials and substances.

Missing or incorrect material data sheets (MDS) lead to a rejection or only to a conditional sample release and must be reworked until final acceptance.

REQUIREMENTS ON CHEMICAL MANAGEMENT

HELLA assumes that all substances for use in products delivered to HELLA (e.g., raw materials, process materials, components, assemblies) that require registration in line with REACh (EC directive 1907/2006: Registration, Evaluation and Authorization of Chemicals) [15] have been registered by the SUPPLIER or sub-SUPPLIER for the application used by the SUPPLIER or HELLA within the time frame given by REACh. Same applies to other chemical substance inventories worldwide (e.g., TSCA (USA), DSL (Canada), IECSC (China)). If, contrary to expectations, this is not the case, HELLA must be informed immediately.

Caused by REACh every SUPPLIER of a product (including packaging) has to declare to HELLA all SVHCs (Substances of Very High Concern) within the product, which are contained in a concentration higher than 0.1 % by weight. SVHCs are listed in an EU publication and this list is permanently enlarged. The SUPPLIER must keep himself informed at all times about the current candidate list. The SUPPLIER is requested not to use SVHC (Substances of very high Concern) in articles and mixtures delivered to HELLA.

The restrictions of REACh ANNEX XIV and ANNEX XVII have to be observed in its current version at all times. Products delivered to HELLA must follow the restrictions of the EU ELV (Directive 2000/53/EC) [16] and EU RoHS (Directive 2011/65/EU) [17] as well as the respective legislation worldwide (e.g., China, Korea).

To sell products on a global market it is mandatory, that the SUPPLIER´s production processes and products will comply with all applicable legal environmental regulations and conventions on a worldwide scale in its current version.

The SUPPLIER must fulfill all resulting obligations such as the restriction and forbiddance of substances and their certain uses, e.g., by updating:

- the material data of its products (IMDS), and
- used raw, auxiliary and operating materials (Chemical Management).

Some key Regulations and Conventions are listed in the HELLA standard HN 20100-02 [18].

Regardless of legal prohibited substances and standards to substance restrictions in the automotive industry, additional substance restrictions and prohibitions are defined in the HELLA standard HN 20103 [19], e.g., for technical reasons.

REQUIREMENTS ON NON-CONFORMANCE REPORTS

A quality control report is used to inform SUPPLIERS about non-conforming deliveries. The costs incurred to HELLA for this report are to be borne by the SUPPLIER. Scrapping and reworking costs are recorded by HELLA and charged to the SUPPLIER.

Cost recovery will be communicated, if applicable, with each claim through a cost breakdown. The cost recovery process will include, but is not limited to, contaminated stock at HELLA affected plant, products in transit, OEM assembly plant, nonconforming received goods, assembly line downtime due to delivery or quality related issues, warranty returns, and costs required to analyze and rectify the effects of a quality, warranty, launch or delivery issue which result in a concern. Inspection costs, analysis costs, rectification costs, transit costs and costs to manage the implementation of a non-reversible corrective action may also be included. Level of cost recovery against concerns will be a significant factor in HELLA sourcing decisions.

The QM-system introduced at the SUPPLIERS and the quality assurance process derived from this are the basis for the ability of the SUPPLIER to achieve freedom from defects in all the products and services delivered by the SUPPLIER or on his behalf (“zero defect(s) quality”).

HELLA will report defects in the delivery to the SUPPLIER immediately as soon as they have been determined according to a proper course of business. At HELLA, incoming goods inspection is restricted to a visual inspection of the transport packaging for external signs of damage, e.g., transport damage, a quantity check and an identity check based on the comparison of the delivery papers with the order documents. Further tests, in particular measuring tests, do not have to be performed. To ensure the quality of its own products, HELLA also has an efficient QM-system in place. Within this context, HELLA carries out device-specific tests accompanying production in compliance with the requirements of the QM-system in order to guarantee the earliest possible detection of defects in its production including the integrated delivery and performance scopes of the SUPPLIERS. Insofar, the SUPPLIER waives its objection of belated notice of defect.

The HELLA part number incl. revision status according to the HELLA drawing, must be quoted on the delivery note and the smallest packaging unit. If there is no revision status noted on the drawings, the issue level according to the delivery schedule or order must be quoted.

4.5 HANDLING OF NONCONFORMING OUTPUT

Unless otherwise agreed with HELLA, the SUPPLER shall guarantee conformance to the following requirements:

- The SUPPLIER must have a documented process for handling of nonconforming output
- The SUPPLIER must ensure, that nonconforming output is identified and controlled right after detection
- In case any output produced for HELLA is to be recycled or to be scrapped, the SUPPLIER must ensure that this output is rendered unusual and unrepairable prior to disposal
- The SUPPLIER must not divert nonconforming output to service or other use
- The SUPPLIER must ensure and verify that all sub-SUPPLIERS will conform to this practice

4.6 COMPLAINTS PROCEDURE, 8D REPORT, NTF (NO TROUBLE FOUND)

8D REPORT

The SUPPLIER shall respond to every complaint within 10 working days using an **8D report** (according to the 8D report form on the HELLA website):

- 24 hours: quick response e.g., containment actions at HELLA
- 48 hours: containment actions fully implemented (D3 completed and sent to HELLA)
- 10 working days: root cause analysis done for occurrence and non-detection, permanent corrective actions defined and implemented (D4&5 sent to HELLA)
- 20 working days: effectiveness of permanent corrective actions checked and recurrence prevented (D6&7 sent to HELLA)
- The 10 working days period can be shortened by HELLA, if necessary. Interim containment measures must be initiated immediately and reported
- to guarantee delivery of faultless goods
- to keep costs for the SUPPLIER and HELLA as low as possible

The SUPPLIER shall present interim reports on time on request.

HELLA must be informed by SUPPLIER in writing in advance of any possible delays. The SUPPLIER shall analyze the products complained about carefully (defect-cause analysis). He shall summarize the results and planned corrective actions including deadlines for their implementation in an 8D report without delay and forward this to HELLA. Proof shall be provided by SUPPLIER to HELLA of “effectiveness” of the corrective actions. A root cause analysis always needs to be carried out using suitable problem-solving methods. Detailed analyses (such as Ishikawa, 5 why, error simulations) shall be provided by SUPPLIER.

Subsequent deliveries after a previous fault must be marked accordingly until it has been proven that the fault has been remedied. The type of marking on the individual part needs to be agreed with the receiving plant of HELLA.

HELLA reserves the right to carry out an audit at the SUPPLIER’s premises following prior notification, in case of problems caused by the SUPPLIER and unacceptable reaction times, and to charge the costs incurred to the SUPPLIER.

SORTING

Within 24 hours of notification of the complaint, the SUPPLIER must inform HELLA about his decision whether to sort, scrap, rework or collect the non-conforming materials (“chosen measures”). He shall then immediately initiate the chosen measures at his own expense. If the SUPPLIER requests the return of the parts by HELLA, these costs are passed on to the SUPPLIER.

If the SUPPLIER does not respond to the request within 24 hours, HELLA is entitled to make the disposition and is authorized by the SUPPLIER to assign a 3rd party to fulfill the chosen measures on behalf of the SUPPLIER and at his expense. All resulting invoices shall be handled between the SUPPLIER and the 3rd party directly.

Any costs incurred by HELLA in connection with the packaging, shipping preparation, and material handling of non-conforming materials will be charged to the SUPPLIER. For clarification, the SUPPLIER shall bear all costs related to the “chosen measures” in case the defective parts relate to a defect caused by the SUPPLIER.

The SUPPLIER is responsible for outside sources (e.g., 3rd parties, which have been assigned by the SUPPLIER or by HELLA to fulfill the chosen measures above) and must make all arrangements to ship parts between the affected plant of HELLA and the outside source in time. The SUPPLIER shall also be responsible for inspecting and monitoring the quality of sorted parts. Reworked (e.g., deburring) or repaired (e.g., exchange of single component of assembly) parts must meet specifications. The reworking or repairing of parts is not permitted without prior written authorization of HELLA.

In case a potentially defect part is delivered at any HELLA location and sorting and/or rework is required, only HELLA listed and approved contractors (3rd Party) are allowed.
In any case the SUPPLIER is responsible for inspecting and monitoring the quality of sorted parts. He must ensure the 3rd party’s compliance with all obligations which apply to the SUPPLIER as well as the preparation of a daily report by the 3rd party which shall be provided directly to HELLA.

FIELD FAILURE ANALYSIS / NO TROUBLE FOUND

The investigation procedure for claims from the field as well as for NTF (No Trouble Found) is basically described in VDA Field Failure Analysis & Audit Standard [20] and must be performed according to this.

4.7 QUALITY DOCUMENTATION

Documents and records from the product and process development phase, as well as from the production phase of the delivered product, must be presented by SUPPLIER on request. In particular, the results of the quality tests carried out at the SUPPLIERS' and their sub-SUPPLIERS' and the audit results shall be documented, including planned and effectively implemented corrective actions, and provided to HELLA or HELLA's customer on request at any time. Any deviations from this procedure must be agreed between the partners at the time at which the contract is concluded. For parts with special characteristics and increased documentation requirements (refer here also to VDA Volume 1 [21] or IATF 16949 [4]), quality records must be stored at the SUPPLIERS' and his sub-contractors'. in accordance with HN20037 the supplier is obligated to include all special characteristics in his related documentation and has the duty to forward it to sub-suppliers

For all characteristics, a documentation system must be set up as described in VDA Volume 1 (proof methods) [21] or IATF 16949 [4]. These specifications do not replace legal requirements. Longer storage times are recommended, bearing in mind the limitation periods for product liability claims.

4.8 QUALITY TARGETS AND PPM MANAGEMENT

With regard to the operational implementation of the strategic "zero defect(s) quality" target, HELLA sets up quantifiable objectives for the quality of deliveries (target settings) in relation to a period to be defined.

The target value is specified in ppm

The ppm results are recorded at HELLA and are part of the SUPPLIER evaluation. They are the basis for

$$\text{Fault share [ppm}\} = \frac{\text{Number of defect parts}}{\text{Number of delivered parts}} \times 1.000.000$$

specific actions for continuous improvement of quality at the SUPPLIER.

The target setting on ppm values is not an accepted quality level by HELLA. All purchased parts which are recognized as defective will not be accepted and will be claimed to the SUPPLIER.

4.9 ENGINEERING CHANGE MANAGEMENT

FOR SUPPLIER INITIATED CHANGES

The SUPPLIER shall inform HELLA (e-mail to pcn.hella@forvia.com, Form Standardized Information for Process/Product Change Notification HF-01340) and the assigned Purchaser as soon as possible, but at least 9 months before carrying out all changes in products and processes, both before and after SOP (Start of Production), e.g., in case of:

- Changes in design, specification and material
- Use of new, modified or replacement tools
- Changes in manufacturing methods or production processes
- Relocation of production within a manufacturing location or to other locations
- Changes in SUPPLIERS of products, components, materials, services or software
- Restart of production equipment after closure of more than 12 months.

The SUPPLIER is also obliged to inform HELLA if one of the above points is applicable to a sub-SUPPLIER.

FOR HELLA AND SUPPLIER INITIATED CHANGES

HELLA reserves the right to carry out tests and a release process before any change is implemented.

In case of changes, which according to the latest IMDS Recommendation 001 require an update of the IMDS data sheet (respectively CAMDS or other national registration systems), those updates need to be provided immediately.

The SUPPLIER defines the scope of new approval tests (initial samples) with HELLA. He makes sure that serial production deliveries to HELLA are carried out only after the initial samples have been approved by HELLA (see section 5.9). The changes are to be documented in the part life cycle.

If old versions still exist at the time the change is made, the SUPPLIER shall inform HELLA of the quantities bound by purchasing obligation so that a decision can be taken about their use.

After changes, the first deliveries must be specially marked by the SUPPLIER on the delivery note, containers and parts themselves, if appropriate. Details of this must be agreed in writing between HELLA and the SUPPLIER before the parts are delivered.

4.10 CONTINUOUS IMPROVEMENT PROCESS

The SUPPLIER has introduced a structured process of continuous improvement for all products, processes, workflows and services in his company. He can prove that it is used for the products delivered to HELLA and the activities connected with this business relationship. Its effectiveness is proved by continuous improvement of the quality performance, prices, delivery performance, flexibility and cooperation. HELLA is shown the respective programs and actions for continuous improvement on request.

4.11 PREVENTIVE MAINTENANCE

The SUPPLIER shall employ a defined system for carrying out planned total preventive maintenance. This shall include having replacement parts available for key manufacturing equipment. A maintenance plan must be established and documented which includes the maintenance intervals and the extent of the maintenance.

4.12 COMMUNICATION

HELLA's official language is English. Unless otherwise approved by HELLA's SUPPLIER Quality and purchasing departments, all official communications with HELLA will be done in English.

Documents may display the native language when integrated with parallel translation. If this is done, only the English translation is valid.

HELLA's SUPPLIERS shall be available for technical support within the context of discussions at customers, on their own premises, or at HELLA.

4.13 SUPPLIER EVALUATION

For selected SUPPLIERS HELLA will perform a yearly evaluation based on the performance of the SUPPLIER. As a result of that evaluation the SUPPLIER will be graded into the categories A, B or C. The grading is considered during the decision process whether a SUPPLIER will get new business or not.

4.14 TARGET SETTING

For selected SUPPLIERS HELLA will set targets on a yearly base. The target setting will be submitted to the SUPPLIER after the evaluation is done. The SUPPLIER can negotiate the targets in case not achievable with Purchasing. The SUPPLIER has to set up an action plan/improvement plan in order to meet the given targets.

4.15 TRACEABILITY

The SUPPLIER is obliged to guarantee the traceability of the products he supplies.

The products shall be marked or otherwise labeled by SUPPLIER so as to ensure that in the event of a defect being discovered, all other products which could be defective can be identified and blocked until subsequent measures have been agreed between the SUPPLIER and HELLA. These requirements must be cascaded down to the complete supply chain.
Product specific traceability requirements will be detailed out in additional documents.

4.16 INFORMATION SECURITY

Supplier must sign the Non-Disclosure Agreement (NDA) before to start any business with HELLA.

In case sensitive information needs to be managed HELLA is requesting their relevant SUPPLIERS to be certified/labeled in accordance to the valid version of Trusted Information Security Assessment Exchange (TISAX) or Information Security Management ISO 27001 (financial information, intellectual property, employee details or information entrusted by third parties).

5 | REQUIREMENTS FOR PRODUCT AND PROCESS RELEASE

We have made it our task to involve our SUPPLIERS in the quality planning of a new project as early as possible. We always require our suppliers to carry out systematic quality planning within the context of project management. This planning includes both the parts manufactured by the SUPPLIER and his purchased parts and applies also for new parts/ processes and for changes in existing parts/processes.

The person responsible for the project at HELLA must be named. At least all the planning steps listed below must be carried out by the SUPPLIER for the respective part or project.

5.1 FEASIBILITY STUDY

Technical documents (e.g., drawings, requirement specification books, further specifications, legal/environment requirements, packaging regulations etc.) prepared by HELLA or legally mandatory, must be analyzed and evaluated by the SUPPLIER in the context of checking the contract. This check provides the SUPPLIER with the possibility of submitting his experience and suggestions to the advantage of both sides. A feasibility study must be presented to Purchasing, together with the quotation, and is a prerequisite for order placement. For each new/changed drawing the feasibility study must be updated by SUPPLIER and has to be agreed with HELLA.

Please note: The analysis of legal requirements is not limited to pre-defined HELLA specifications. Each SUPPLIER is responsible on its own to identify, analyze and comply with all necessary legal requirements (in process validation and series production).

In preparation for SUPPLIER nomination, HELLA might carry out together with the SUPPLIER a detailed “Characteristic Based Feasibility Study” (CBFS) with regard to every characteristic on the drawing.

5.2 ADVANCED PRODUCT QUALITY PLANNING

To ensure “zero defect(s) quality” in all phases of the cooperation, the SUPPLIER is obligated to draw up a binding advanced quality plan for prototypes, pre-series samples and serial production deliveries, to document this in test sequence plans (Control Plan) and to coordinate it with HELLA.

The Control Plan is in accordance with the requirements of IATF 16949 [4], annex A. It must be agreed in advance if the advance quality planning should meet the requirements of VDA, Volume "Maturity Level Assurance for new parts" [22], or the AIAG documents (APQP/Advanced Product Quality Planning) [11], according to the APQP-report form on the HELLA-website. For APQP submission, HELLA expects the SUPPLIERS to use the APQP Module with the HELLA Business Partner-Portal (access via eppap.hella.com) as electronic supported procedure of the Advanced Product quality process, unless otherwise agreed.

The commitment to “zero defect(s) quality” and therewith to defect prevention as well as to continuous improvement is an essential part of the contract and valid without any acceptance. As part of the APQP process HELLA reserves the right to submit APQP claims to the supplier to request improvement actions if the current delivered parts maturity does not correspond to the maturity previously agreed between HELLA and the supplier and has a negative impact on production.

5.3 PLANNING CONTENTS

SCHEDULING

The SUPPLIER draws up a project-related schedule based on the deadlines presented by HELLA. The schedule is updated regularly by the SUPPLIER during the whole project phase and presented to HELLA if requested. Potential deviations from the schedule have to be indicated by the SUPPLIER in good time and agreed with HELLA.

WORK-/ PRODUCTION FLOW CHART

The SUPPLIER prepares a production flow chart for the whole process chain. Work plans have to be drawn for all component parts and components. These must contain complete information of process steps, internal and external transportation, means of transport as well as the machinery and equipment used. Manufacturing and raw part drawings as well as process descriptions have to be drawn as required.

RELIABILITY REQUIREMENTS

The reliability requirements contained in the requirement specification/drawing must be implemented with the aid of suitable methods of reliability management and validated based on respective reliability tests and evaluations.
According to VDA volume 3 part 1 and part 2 [23] reliability requirements and proof of fulfillment are part of quality management. The verification of those customer requirements is part of the development phase. Therefore, it is required to perform a systematic test planning providing evidence to achieve reliability targets.
According to test plans the supplier shall indicate how required reliability requirements will be ensured.

5.4 DESIGN AND PROCESS FMEA

Taking the application of his products at HELLA and HELLA´s customers into account, the SUPPLIER shall carry out preventive risk analysis (FMEA) for all products delivered to HELLA and the processes linked with these and updates the FMEA whenever deviations of product and/or process quality occur as well as when changes are made as described in section 4.9. All parameters affecting product safety must be integrated in the analysis. Points evaluated as critical must be improved in the short-term by means of suitable corrective and preventive actions to enable specifications, properties and product safety as well as capable manufacturing to be guaranteed. To implement the actions, deadlines, and responsible persons have to be named and proved if required.

Independently of the design- and process-FMEAs prepared on his own responsibility, the SUPPLIER agrees to cooperate in the system or interface FMEAs initiated by HELLA. Results must be taken into account in the SUPPLIER's further development process. The SUPPLIER shall make the Process-FMEA available for review on HELLA's request. On demand a reverse FMEA must be performed.

Details are defined in AIAG & VDA FMEA-Handbook [24] . Results must be recorded as described in section 4.7 "Quality Documentation".

5.5 CONTROL PLAN

Within the Control Plan, the results of the Design-FMEA, Process-FMEA, experience with similar processes and products as well as the utilization of methods of improvement have to be considered. A detailed description of the procedure of drawing up a Control Plan is available in VDA Volume 4 [25] and in the AIAG documentation (APQP) [11].

Based on the Control Plan, the SUPPLIER assures compliance with all the routine tests, taking the agreed measurement and inspection equipment as well as the sampling scheme into consideration.

The Control Plan must also include all necessary actions to comply with the legal requirements (in EU/ECE regulations called "Conformity of Production"). This is compulsory for legal requirements which have to be identified both by HELLA and by the SUPPLIER at his own responsibility.

The Control Plan and all other related documents (records of part and process approvals as well as inspection results) have to be provided to HELLA on request.

5.6 PLANNING SERIAL PRODUCTION

The planning of lines and operating equipment includes the planning and manufacturing/procurement of all the operating equipment required to produce the component. The capability or suitability of operating equipment must be proved. Capabilities must be proved individually for multiple jigs or molds. Care must be taken that operating equipment in sufficient capacity and function is available at the latest when off-tool parts are produced at the sampling date. Internal and external means of transport and packaging must also be taken into consideration.

COORDINATION OF SERIAL MONITORING

All product and process characteristics are important and must be kept in a reliable process. Special characteristics require the proof of process capability. For this purpose, the SUPPLIER shall use suitable methods e.g., quality control cards (SPC) to monitor these characteristics. If process capability cannot be proven, a 100% test must be carried out. Characteristics that cannot be measured or only measured in a destructive test must be monitored and documented using suitable methods.

BOUNDARY SAMPLES

Where necessary, boundary samples must be agreed between HELLA and the SUPPLIER. In the case of decorative parts, this is obligatory.

5.7 CAPABILITY OF TESTING EQUIPMENT, MACHINES AND PROCESSES

By applying suitable statistical procedures, the SUPPLIER shall guarantee that the used machines, tools, measuring and test equipment as well as the processes in which these are introduced are suitable and capable for the production of products supplied to HELLA.

The characteristics for which capability studies have to be provided will be agreed between HELLA and the SUPPLIER. However, this does not release the SUPPLIER from his responsibility of defining further characteristics related to his processes or characteristics of the sub-SUPPLIERS.

CAPABILITY OF TESTING EQUIPMENT

For all characteristics, the SUPPLIER defines the testing method with the appropriate testing equipment. For the planned measuring equipment, a suitability of the test-process has to be proven. The measuring process and the tolerances of the characteristic to be measured has to be considered for this.
Proof has to be brought in accordance with the requirements of VDA Volume 5 [26] (test process suitability) or AIAG [11].

SPECIFIC REQUIREMENTS FOR GAUGES

The purpose of this section is to outline the specific requirements for gauges which are used for series control of customer defined special test characteristics (SC/IC in accordance with HN 20037 [27]). These requirements are intended to ensure that all products from the SUPPLIER (parts, systems, modules, components, raw materials, etc.) meet their specifications and thus contribute to customer satisfaction.

Before the building of the gauge is started by the supplier, an alignment between the SUPPLIER and the responsible SQA shall be done based on a proposed concept (e.g., 3D files, drawing, specification) by the SUPPLIER.

General design: All gauges must be agreed during the development phase with HELLA and shall be available for the first sample production unless otherwise agreed.

Once the gauge design is completed, following activities must be aligned:

- The gauge shall address all tolerances as shown on the HELLA specification of the purchased part.
- All gauges shall have a steel or aluminum base unless otherwise agreed by the responsible HELLA Design Engineer and SQA.
- The gauge shall be verified by the SUPPLIERs measuring experts to the latest production part data.

- All gauges for HELLA purchased parts shall be clearly identified (on the gauge itself and in the control plan) and shall pass an approved gauge repeatability and reproducibility procedure as outlined in the section "CAPABILITY OF TESTING EQUIPMENT". If necessary, additional measures can be agreed between HELLA and the SUPPLIER.
- All engineering changes that influence the gauge and all modifications to the gauge will follow the same process and must be reviewed with the responsible HELLA Design Engineer and SQA.
- It is in the responsibility of the supplier to perform an internal release process for the gauge and the evidence must be attached to the final PPA/PPAP documentation.

PROOF OF MACHINE AND PROCESS CAPABILITY

The investigation of machine capability and process capability are basically described in VDA Volume 4 [25] and must be performed according to this. For all agreed special characteristics, the following capability indices are binding:

Short-term/machine capability index: Cmk ≥ 1.67
Note: here, a large number of random checks is taken and evaluated within a short period of time.

Preliminary process capability index: Ppk ≥ 1.67
Long-term process capability index: Cpk ≥ 1.33
Note: here, smaller numbers of samples are taken and evaluated over a longer period.

If these minimum requirements are not met, 100% tests must be carried out until the capability is achieved through corrective actions. Deviations from this must be agreed with HELLA. The requirements of the special characteristics are specified in HN 20037 [27] (Guideline for the Uniform Marking of Special Characteristics and their Verification Requirements). In certain cases, the following capability indices can be agreed for special characteristics or process parameters:

Short-term/machine capability index: Cmk ≥ 2.0
Preliminary process capability index: Ppk ≥ 2.0
Long-term process capability index: Cpk ≥ 1.67

5.8 STATUS OF SUB-SUPPLIERS AND THEIR PRODUCTS

The use of sub-SUPPLIERS that meet the quality requirements as well as the environmental, health and safety requirements and those arising from the HELLA CODE OF CONDUCT for SUPPLIERs [28] has to be guaranteed for the project and is the responsibility of the SUPPLIER. In case of nonperformance, sub-SUPPLIER development programs have to be set up. Implementation must be guaranteed before the start of series deliveries at the latest.

The status of quality planning for purchased parts must be reported regularly. The production process and product release of products from sub-SUPPLIERS has to be concluded before production process and product release of HELLA SUPPLIERS.

5.9 PRODUCT AND PROCESS RELEASE

INITIAL SAMPLES

For product release, the SUPPLIER is obligated to submit initial samples to HELLA before the start of serial production; these samples must comply with all the specifications and properties specified in the contract:

- Dimensions (GD&T Geometrical Dimensioning and Tolerancing regulations must be followed)
- Materials and processing
- Applications/functional interface
- Boundary samples

Unless agreed otherwise, this proof must be brought on at least 5 parts/cavity.

This allows any deviations to be corrected in good time, thereby preventing systematic errors in serial production.

PRODUCTION PART APPROVAL PROCESS

Without part and process approval any series deliveries are forbidden. Initial samples and all component parts and materials used for their production, have to be produced under series conditions with series equipment without any exception. Reference samples from initial sampling must be kept by the SUPPLIER for at least 15 years after EOP, unless otherwise agreed in writing. If necessary, boundary samples (e.g., photometric samples) must be regularly updated in agreement with HELLA.

For ISIR/ PSW submission as well as for measurement reports from tool optimization loops, HELLA expects the SUPPLIERS to use the ISIR Module with the HELLA Business Partner-Portal (access via eppap.hella.com) as electronic supported procedure of the Production Part Approval Process, unless otherwise agreed.

The content and complexity of necessary documents must be discussed with the HELLA Purchasing department for the specific project. The IMDS MDS or equivalent MDS submission by the SUPPLIER is mandatory.

It has to be decided in advance which bases for initial sample reports have to be used: VDA, Volume 2 [29] or AIAG documents [11]. The respective submission level must be defined.

The alignment points given on the drawing must always be considered. If the HELLA drawing does not contain this information, the alignment points determined during measurement must be recorded by the SUPPLIER in the release documentation (ISIR/PSW).

SERIAL PROCESS RELEASE

The process release at the SUPPLIER's is granted when a process audit according to VDA Volume 6 Part 3 [5], has been passed successfully with rating A, as well as after a Full-Run capacity test passed according to HELLA guidelines. The duration of the Full-Run has to last minimum one shift. The duration can be reduced in agreement with HELLA SQA-department. The result of the Full-Run conducted by the SUPPLIER has to be attached to ISIR/PSW.

A process release can also be granted in the case of a B rating. An improvement plan must be drawn up and processed for the open points.

HELLA reserves the right to carry out the process audit and Full-Run test, or request the results of the process release, at the SUPPLIER's and at the sub-SUPPLIER's if necessary.

For standard parts as well as products for the aftermarket, releases can be agreed based on "SUPPLIER data sheets" upon request and requirement by HELLA Purchasing. Only products for the aftermarket can be exempted from the requirement to submit IMDS MDS or equivalent MDS upon agreement by HELLA Purchasing.

SAFE LAUNCH

With start of the Production Part Approval Process (PPAP acc. to AIAG [11]) / Production process and product approval (PPA acc. to VDA Volume 2 [29]), and latest with the start of serial production, the SUPPLIERS should participate in Safe Launch Planning under the direction of their assigned SQA.

5.10 REQUALIFICATION TEST

Contents, complexity and intervals are agreed between HELLA and the SUPPLIER before the start of series production and documented within the Control Plan. If there is no agreement, requalification tests have to be carried out at least once a year.

In the event of negative test results, the reason for the defect must be determined, corrective actions initiated and the Quality Assurance staff in the Incoming Goods department of the plant to be supplied must be informed immediately.

Unless otherwise agreed, the respective requirements from IATF 16949 [4] or the AIAG documents [11] are valid. All products are subject to a complete dimensional and functional test, in accordance with the Control Plan, taking the customer's specifications for material and function into account. The SUPPLIER provides HELLA with the documentation within three working days on request. After previous agreement with HELLA, for parts that are similar for HELLA, the requalification can be carried out per product group ("family").

In case that critical characteristics related to legal and regulatory requirements (SC/L) are defined for a product on the drawing or in the specification according HN20037 [27] the supplier must submit the relevant requalification test results to HELLA annually without being requested to do so.

5.11 FUNCTIONAL SAFETY

As far as the scope of the SUPPLIER's product development tasks for parts that can be either electronic components, SW component, assemblies or complete devices including SW and HW development, the SUPPLIER shall in particular comply with the requirements of "Functional Safety" according to ISO 26262 [30] (FuSa).

Work products required by FuSa shall be available as defined in Development Interface Agreement (DIA). On HELLA's request Organization-specific rules and processes for functional safety and Evidence of competence at Supplier shall be provided in writing in a standard form as applicable.

5.12 QUALITY REQUIREMENTS FOR DEVELOPMENT OF EMBEDDED SOFTWARE

The term „software" refers to the software-related services and deliveries that are specific for Automotive Industry and are expected to be developed according to automotive state-of-the-art standards for system and software engineering. SUPPLIERs shall understand the term "software" as vehicle-related and vehicle-integrated software that includes the following:

- Software embedded in hardware components (e.g., embedded system applications, hardware abstractions, operating, system)
- Software as a stand-alone product or service

For these types of software, the SUPPLIER must comply with:

- The HELLA Guiding Principles for Software Suppliers (AD-01101) [31]:
- The HELLA Standard Development Requirements for Suppliers (AD-01100) [32]: The SUPPLIER accepts the requirements of this document by filling in the "Automotive Supplier Self-Assessment Questionnaire for Software and Cyber Security" HF-00601 [33]

6 | METHODS OF SUPPLIER ESCALATION

6.1 ESCALATION PROCESS FOR SUPPLIERS

In case of repeated quality or logistic problems (e.g., unsuccessful complaint management of the SUPPLIER, long-term and/or multiple cases of missed target agreements, customer complaints due to defective purchased parts, ...) at the SUPPLIER's, the HELLA escalation process will apply. The aim of the process is to implement suitable actions at the SUPPLIER's so that the products and materials delivered meet HELLA requirements again. Depending on the duration and seriousness of the problems, they are classified in one of three escalation levels.

The basic procedure for each level is as follows:

- Analysis of the escalation cause and of the problem
- Agreement on an action plan to eliminate the causes of the escalation, in order to bring back the quality in line with targets
- Implementation of the action plan
- Monitoring/tracking of the action plan
- Depending on the effectiveness of the actions, either escalation or de- escalation takes place to the next level

If the subjects and actions are not processed efficiently by the SUPPLIER, HELLA retains the right to compel the SUPPLIER to obtain external help from a competent service provider.

Escalation level 1: Escalation level 1 is activated when the problems cannot be processed satisfactorily within the scope of normal workflow. In the course of the escalation process, the SUPPLIER has to set up an effective problem-solving process and present this to the Quality department of the HELLA production plant regularly on site.

Escalation level 2: In escalation level 2 the action plan is monitored on site at the SUPPLIER's to make sure it is adequate and effective. This shall take place within the context of quality and/or logistics audits. The results of the onsite analysis are documented in an action plan. The SUPPLIER is responsible for implementing the actions and has to report to those responsible about the respective status at regular intervals.

Escalation level 3: If the quality requirements in escalation level 2 are not fulfilled, the SUPPLIER is classified under escalation level 3. This means the SUPPLIER is blocked for new inquiries and placement of orders for all HELLA companies world-wide. HELLA also reserve the right to forward the information to the SUPPLIER's certification authority.

At escalation level 3 the existing problems are analyzed by a HELLA team on site. The SUPPLIER must be prepared to support all activities of the HELLA team. The SUPPLIER's general management must ensure the compliance with all the actions agreed. In order to guarantee the implementation and effectiveness of the planned actions, progress is supervised and documented based on regular reviews.

Escalation level 3 ends with de-escalation. If a SUPPLIER support project does not run successfully and the reason for this is caused by the SUPPLIER, a re-positioning of this SUPPLIER in the portfolio of HELLA Purchasing will take place.
HELLA reserves the right at escalation level 2 and 3 to charge costs (e.g., audits, expert support, ...) caused by the escalation to the supplier.

6.2 ADDITIONAL CONTROL LEVEL

The “Additional Control Level” is an additional inspection of purchased parts. The purpose of this process is to implement a filter which avoids defective purchased parts caused by poor SUPPLIER quality performance arriving at HELLA production lines.

ACL 1 (Additional Control Level 1): ACL 1 requires an additional 100 % inspection of the material to be provided by the SUPPLIER. The appropriate testing station must be separated from production (minimum distance 10 m). The test results must be documented every day at the testing station. The marking of the purchased parts checked by the SUPPLIER must be agreed between HELLA and the SUPPLIER.

The SUPPLIER must report the inspection results regularly to HELLA according to ACL report (HELLA form 1280).

ACL 2 (Additional Control Level 2): ACL 2 requires an additional inspection of the purchased parts by an independent service provider representing HELLA interests. The SUPPLIER pays the costs incurred for this inspection. The selection of the service provider must be agreed with HELLA, since customer requirements (OEM) must be taken into account.

A weekly report of the inspection results must be sent to HELLA by the service provider according to ACL report (HELLA form 1280).

- To revoke ACL 1 / ACL 2, all the following conditions must be met:
- Preventative measures must be implemented, and their effectiveness proved
- At least four weeks of faultless additional 100 % test
- or at least as many faultless parts during the additional 100 % testing as would make up 5 delivery batches

7 | SPECIFIC REQUIREMENTS FOR ELECTRONIC COMPONENTS

7.1 RELEASE OF ELECTRONIC COMPONENTS

The following proofs are to be provided by the SUPLLIER for all new electronic components to be introduced at HELLA:

- Successful implementation of the release test according to the qualification requirements of the Automotive Electronic Council (e.g., AEC-Q100/101/102/200) [34, 35, 36, 37] (more detailed tests must be carried out in addition if required)
- Complete proof methods according to PPAP level 3

Furthermore, all the requirements documented in “HELLA Requirements for Electronic Components” HELLA norm HN 67500 [38] must be met.

7.2 PROOF OF PROCESS CAPABILITY

Process capabilities, in accordance with section 5, must be proven for electronic components for all functional-, safety- and quality- related processes. In addition, the use of statistical methods such as Part Average Test and Statistical Bin Analysis are a prerequisite to support the zero defect(s) strategy.

8 | APPLICABLE DOCUMENTS, LITERATURE AND ABBREVIATIONS

[1]	ISO 14001	Environmental management systems
[2]	ISO 45001	Occupational health and safety management systems – Requirements with guidance for use
[3]	EN ISO 9001	Quality management systems – Requirements
[4]	IATF 16949	Quality management system requirements for automotive production and relevant service parts organizations
[5]	VDA Volume 6 Part 3	Process audit
[6]	VDA Volume 6 Part 5	Product audit
[7]	VDA Volume 6 Part 7	Process audit
[8]	DIN EN 10204	Metallic products – Types of inspection Documents
[9]	MAQMSR	Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers – Sections of IATF 16949 selected for supplier QMS development
[10]	VDA Volume 6 Part 1	QM-system audit serial production
[11]	AIAG	Automotive Industry Action Group manuals: Advance Product Quality Planning and Control Plan (APQP) Measurement System Analysis (MSA) Potential Failure Mode Effects and Analysis (FMEA) Production Part Approval Process (PPAP) Statistical Process Control (SPC)
[12]	VDA Product Integrity	Product Integrity - Recommended action for organizations regarding product safety and conformity
[13]	ISO 14040	Environmental management — Life cycle assessment — Principles and framework
[14]	ISO 14044	Environmental management — Life cycle assessment — Requirements and guidelines
[15]	(EC) No. 1907/2006 (REACh)	EU Regulation concerning the Registration, Evaluation, Authorization and Restriction of Chemicals
[16]	2000/53/EC (ELV)	EU-Directive on End of Life Vehicles
[17]	2011/65/EU (RoHS)	EU-Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment
[18]	HELLA Norm HN20100-02	Environmental Standard - Restrictions for the use of hazardous substances
[19]	HELLA Norm HN20103	Restrictions and prohibitions of Substances
[20]	VDA Volume	VDA Field Failure Analysis & Audit Standard
[21]	VDA Volume 1	Documentation and Archiving – Code of practice for the documentation and archiving of quality requirements and quality records
[22]	VDA Production creation	Maturity Level Assurance for new Parts
[23]	VDA Volume 3	Reliability Assurance
[24]	FMEA-Handbook	AIAG & VDA FMEA-Handbook
[25]	VDA Volume 4	Quality Assurance in the Process Landscape
[26]	VDA Volume 5	Capability of Measurement Processes; Capability of MeasurinSystems
[27]	HELLA Norm HN 20037	Guideline for the Uniform Marking of Special Characteristics and their

	Verification Requirements
[28] HELLA Regulation SCoC	CODE OF CONDUCT for SUPPLIERS and SERVICE PROVIDERS
[29] VDA Volume 2	Quality Assurance for Supplies Production process an and product approval PPAP
[30] ISO 26262	Road vehicles – Functional safety
[31] AD-01101	HELLA Guiding Principles for Software Suppliers
[32] AD-01100	HELLA Standard Development Requirements for Suppliers
[33] HF-00601	Automotive Supplier Self-Assessment Questionnaire for Software and Cyber Security
[34] AEC-Q100	Failure Mechanism Based Stress - Test Qualification for Integral Circuits
[35] AEC-Q101	Failure Mechanism Based Stress Test Qualification for Discrete Semiconductors
[36] AEC-Q102	Failure Mechanism Based Stress Test Qualification for Discrete Optoelectronic Semiconductors in Automotive Applications
[37] AEC-Q200	Stress Test Qualification for Passive Components
[38] HELLA Norm HN 67500	HELLA Requirements for Electronic Components

ABBREVIATIONS

TERM	DEFINITION
8D-Report	Eight Disciplines Problem Solving
ACL	Additional Control Level
AD	Additional Document
AEC	Automotive Electronics Council
AIAG	Automotive Industry Action Group
APQP	Advanced Product Quality Planning
CAMDS	Chinese Automotive Material Data System
CAQ	Computer-Aided Quality
CBFS	Characteristic Based Feasability Study
Cpk	Long-term process capability
CPM	Cooperate Purchase Management
Cmk	Short-term machine capability
Co.	Compagnie
.de	Top-level domain Germany
DIN Standards	Deutsches Institut für Normung (German institute for standardization)
DMAIC	Define, Measure, Analyze, Improve and Control
EC	European Community
e.g.,	For example (exempli gratia)
EVL	End of Life Vehicles
EN	European Norm Standards
EOP	End of Production
ePPAP	Electronic supportet procedure of the Production Part Approval Process
ERP	Enterprise-Ressource-Planning
etc.	And so on (ecetera)

TERM	DEFINITION
EU	European Union
e. V.	Eingetragener Verein (registered association)
FIFO	First-In, First-Out
FMEA	Failure Modes Effects Analysis
FuSa	Functional Safety
GmbH	Gesellschaft mit beschränkter Haftung (Limited Liability Company)
HIS	Herstellerinitiative Software (OEM Initiative Software)
HN	HELLA norm
HP-C	HELLA Corporate procedure
IATF	International Automotive Task Force
IMDS	International Material Data System
incl.	inclusive
ISIR	Initial Sample Inspection Report
ISO	International Organization for Standardization
IT	Information Technology
KGaA	Kommanditgesellschaft auf Aktien (Partnership limited by shares)
MAQMSR	Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers
MDS	Material Data Sheet
OEM	Original Equipment Manufacturer
PPA	Production process and product approval
PCN	Product / Process change notification
PPAP	Production Part Approval Process
PPF	Produktionsprozess und Produktfreigabe
Ppk	Preliminary process capability

TERM	DEFINITION
PPM	Parts-per-Million
PU	Purchasing
PSCR	Product Safety & Conformity Representative
Q	Quality
QFD	Quality Function Deployment
QM	Quality Management
QMC	Quality Management Center of the VDA
REACh	Registration, Evaluation, Authorization and Restriction of Chemicals
RoHS	Restriction of Hazardous Substances
SOP	Start of Production
SPC	Statistical Process Control
SPICE	Software Process Improvement and Capability Determination
SQA	Supplier Quality Assurance
SVHC	Substances of Very High Concern
VDA	Verband der Automobilindustrie e. V. (German association of the automotive Industry)
www	World Wide Web

9 | REVISION HISTORY

CHAPTER	Minor update 2023-10-04
4.9	■ Update: PCN e-mail address pcn.hella@forvia.com
5.7	■ New: Special requirements for gauges

CHAPTER	Completely revised 2022-11-04
2	■ New: Health & Safety included ■ Updated: Environmental Policy
3	■ Merged: Chapters 3.1, 3.2 and 3.3 to 1 table ■ Deletion: Generic topics
4.1	■ Rephrased: Headline ■ Updated: Management System Requirements ■ Change: PSR (Product Safety Representative) changed to PSCR (Product Safety & Conformity Representative) ■ New: Sub-chapter "Sustainability" ■ Change: Separate sub-chapter for sub-suppliers, but same content
4.2	■ New: Sustainability assessment added ■ New: VDA 6.7
4.3	■ New: FiFo principle ■ New: Material test certificates in compliance with DIN EN 10204
4.4	■ New: Chapter separated into different sub-chapters ■ New: Requirements on deviation approval specified ■ New: GADSL (Global Automotive Declarable Substance List) ■ New: Customer standards (e.g., FORD RSMS) ■ New: Requirements in SVHC (Substances of very high concern) ■ New: Generic requirement to comply with environmental regulations and conventions
4.7	■ Updated: Documentation requirements according VDA Volume 1
4.16	■ New: Information Security
5.1	■ Rephrased: Minor changes in terms of wording
5.3	■ New: Reliability requirements specified
5.4	■ New: Reverse FMEA ■ Update: AIAG & VDA FMEA Handbook
5.9	■ New: Dimensions specified (GD&T Geometrical Dimensioning & Tolerancing) ■ New: PSW (Part Submission Warrant) added ■ New: Optimization loops added
5.10	■ Updated: Requirements on critical characteristics
5.12	■ New: Chapter completely updated
6.1	■ New: Reimbursement of costs specified

Details on the standards and methods of Quality Management specified in this guideline can be found in the respectively latest version of the following documents.

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or contact your dedicated Purchaser who will be glad to help with the interpretation and introduction of methods and standard requirements.