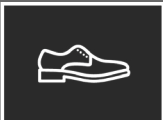
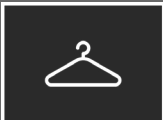


QUALITY  
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## AMANN Group – the Specialist for Sewing and Embroidery Yarns

Since its foundation in 1854, the AMANN Group has developed into one of the largest globally operating sewing thread manufacturers and has a reputation in the business for innovative products of the very highest quality.

The automotive industry imposes the highest demands on materials and processes and requires the reliable delivery of the respective parts and components in order to be able to satisfy the customers' high demands in terms of quality and production efficiency.

In close collaboration with the automotive components supplier industry, our modern production plants enable us to develop and manufacture technical yarns with precisely defined performance profiles. In doing so, we follow the provisions of the standard IATF 16949 and Customer Specific Requirements ("CSR").

## Worldwide AMANN Management Standard

### **AMANN Management System**

The AMANN Group maintains the AMANN Management System in compliance with DIN EN ISO 9001 and IATF 16949. The AMANN Group's automobile manufacturing locations are constantly developed further all over the world according to IATF 16949 and certified by an external independent company, some locations according to DIN EN ISO 14001.

### **Global Process Approval**

The AMANN Group's centrally valid and administered management system guarantees the implementation of identical processes or those that are equivalent in terms of production, in all production locations, the monitoring of which is guaranteed by the global process approval system.

All new processes, technologies and machines to be introduced are evaluated by the AMANN Group through the global development department set up centrally in Augsburg. This ensures that qualitatively comparable and robust processes and machines are used, no matter where the production site is located.

## Product Development / Product Realization

### **Product development**

The procedure used in developing the product very much depends on the complexity of the requirements. At AMANN we make a distinction between the processes for the adjustment of colors, the development of an adaptation and new innovative development. Complex development topics are processed using the Phase Gate process. All development projects are controlled in an interdisciplinary manner using a system-supported workflow and then approved according to the defined development phases. Depending on the complexity of the development this is phased into both color development and product development.

### **Risk Assessment and Risk Minimization**

A system of preventive error management makes it possible to assess the risks with respect to potential weak points in both product and process. Error management is carried out using the

Design and Process FMEA (Failure Mode Effective Analysis) method in conformity with AIAG provisions.

Based on the risk assessment that serves to detect errors early and to monitor the processes, monitoring activities are recorded in the production control plans. The control plans are created depending on the article group and its production flow. The corresponding documents can be viewed within the framework of an audit at the location.

### Special features

For new product developments CC and/or SC characteristics are agreed with the customer, if customer specifications exist. Otherwise, the definition of CC and/or SC characteristics is carried out using the AMANN specification.

Calculation of long-term performance values (cpk) for SC and CC characteristics is carried out at article level, independent of color, using the test results of the last 12 months. Calculations of short-term performance values (ppk) are not carried out for existing standard articles due to the unchanged product definition over many years.

### The AMANN Product Specification

The AMANN Product Specification describes the technological performance profile of AMANN articles. It is the definitive basis of the supply relationship and forms the perfect quality base for each individual article. The AMANN product range is the result of many years of constant development work in conjunction with the respective customer's requirements. The products that exist today have established themselves in the market as overarching standards than can be used for all applications and customers. Customer specifications are checked and, if necessary, adapted to AMANN's stipulated limit values. Due to the applied process, customer-specific adaptations are possible only to a very limited extent. The specified limits are calculated on the basis of the natural spread in question (technological features) or are based on our specialist know-how (color fastness, hot light fastness).

The approval inspection during series production focuses on:

- Breaking tensile strength (DIN EN ISO 2062)
- Elongation at break (DIN EN ISO 2062)
- Fineness (DIN EN ISO 2060)
- Twists (DIN EN ISO 2061)

As a rule, the technological tests that are of relevance for the sewing thread are destructive tests. This is why we evaluate the product quality on the basis of sampling inspections. The measuring equipment used is subjected to specific calibration intervals and its suitability for the respective measuring task is - if applicable for destructive tests - defined on the basis of the AIAG MSA Reference Manual.

We are unable to carry out burn tests. If necessary, these have to be performed by the users themselves in cooperation with one another.

Supply and batch-specific test certificates can be issued in the form of an Acceptance Test Certificate in compliance with DIN EN 10204 3.1 and contain the aforementioned approval inspections under series production conditions in compliance with the agreed specification.

## Complaint Management

The receipt of a complaint will be confirmed within 1 working day using the 3D format.

As a rule, the error analysis starts with the receipt of the returned rejected sample spools. Within 14 days the complaint is initially answered using the AMANN 8D format. Should prolonged measures be required, the customer will be informed by us accordingly.

Generally, complaint costs have to be agreed on for the concrete individual case. The duty to mitigate and the principle of proportionality must be observed. Flat rates shall not be accepted.

## Initial Sampling

### **Production Part Approval Process (PPAP)**

The AMANN Group carries out initial sampling under series production conditions. On account of the nature of the textile production process and production machinery “initial samples” and “series” may be produced on different but comparable machines at different locations.

Color development is carried out centrally via the Color Competence Center. In cases where a color development precedes the creation of the PPAP, the initial sample inspection is carried out at the development location. The initial sample inspection qualifies all AMANN manufacturing locations, providing the specifications are observed. PPAP clearance applies basically to all spool formats.

Initial sampling is carried out as standard using the AIAG PPAP Manual. If the sampling inspection is carried out for the OEM according to VDA Volume 2, this is provided in the supply chain in cover sheet format. The type and size of the physical samples must be agreed on when ordering the sampling. OEM-independent sampling inspections in AMANN format have to be agreed separately.

Initial sampling inspections are generally provided in AMANN format. Available submission levels are Level 2 according to VDA, Level 3 according to AIAG and cover sheet sampling.

After preparation of the PPAP documentation the customer must give his approval or provide feedback within four weeks. If this is not the case, or if articles are ordered in the meantime without express approval, AMANN will treat the materials in question as being approved.

## Supplier Request for Engineering Approval (SREA)

If relevant to the specifications, in cases of relocation of production and change of supplier we provide this information by means of a Supplier Request for Engineering Approval. In individual cases the extent of qualification must be agreed separately.

## Parts History

From a technological point of view, our materials are not tied to a specific project, being standard materials that are not subject to any further development resulting from a change of project or model year; therefore no provision has been made for a parts history.

## Requalification

Requalification is carried out in accordance with the AMANN Requalification Concept.

In this process, representative articles and color combinations are checked during the first year in compliance with OEM and AMANN specifications. In the following years requalification is carried out in compliance with the AMANN specification (presuming an OK inspection took place in year 1). The inspections include both the technological and fastness properties.

In addition to the above, a product audit of a material is conducted for each production location.

## Zero-Error Target / PPM Agreement

As a long-standing partner to the automotive industry AMANN considers it as its aim to observe the zero-error target with regard to the form and implementation of all internal processes and workflows. If necessary, PPM agreements must be made separately in each individual case.

## Traceability

Traceability is ensured at the level of the process stage. By using a batch number system it is possible to retrace a product's life using the smallest possible amount in terms of material, color and batch.

## Run @ Rate

Sewing thread production of the AMANN Group is not order-related manufacturing, rather it relates to merchandise. Suitable orders are put together corresponding to the demand for individual products and manufactured on the available production lines. In this process, planning and capacities are closely monitored and adjusted if necessary.

## Acceptance Test Certificate

An acceptance test certificate is provided with the delivery, if requested.

## Documentation

For all quality-relevant data a retention period of 25 years after recording the information (specifications, test instructions, specification-relevant test data, acceptance test certificates, communicated PPAP data and product release approval records) applies.

All other documents are individually preserved in accordance with the legal or internal requirements.

## Supplier Management

As part of our cooperation with our suppliers, we implement the requirements that are relevant on the basis of the existing AMANN Quality Management System. Within the bounds of our possibilities we support a supplier audit by our customers. Raw material suppliers who deliver materials for our automotive articles are internally qualified on the basis of the AIAG PPAP Manual, which can be viewed within the framework of an audit.

sgd

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