



Ferrites and accessories

Quality and environment

Date: September 2006

Corporate goals

Our aim is to play a leading role among the world's most competitive companies in the sector of electronic components. This aim is shared by the EPCOS quality and environment management system:

1 EPCOS quality system

1.1 Extract from EPCOS quality policy

- The quality of our products and services represents a key constituent of our corporate strategy, whose principal aim is customer satisfaction.
- Our quality management system is continuously oriented to the international standards that stipulate the highest requirements.

1.2 Quality management system

The quality management system to ISO/TS 16949:2002 is applied throughout the company and is used to implement the EPCOS quality policy. The implications include:

- As a rule, product and process developments follow the rules of APQP¹⁾,
- Quality tools such as FMEA²⁾, DoE³⁾ and SPC⁴⁾ minimize risks and ensure continuous improvements in conjunction with regular internal audits and QM reviews.

The documents of the quality management systems are posted on the EPCOS Intranet and are available to all employees.

1.3 Certification

The EPCOS quality management system forms the basis for the company certification to ISO 9001:2000 and ISO/TS 16949:2002 that includes all EPCOS plants and sales organizations. The company certificates are posted on the EPCOS Internet (www.epcos.com/quality).

1.4 Production sequence and quality assurance

The business units implement the corporate specifications for quality management in procedural and work instructions referred to products and processes.

The following example shows quality assurance applied to the production sequence of ferrites.

1) APQP= Advanced Product Quality Planning

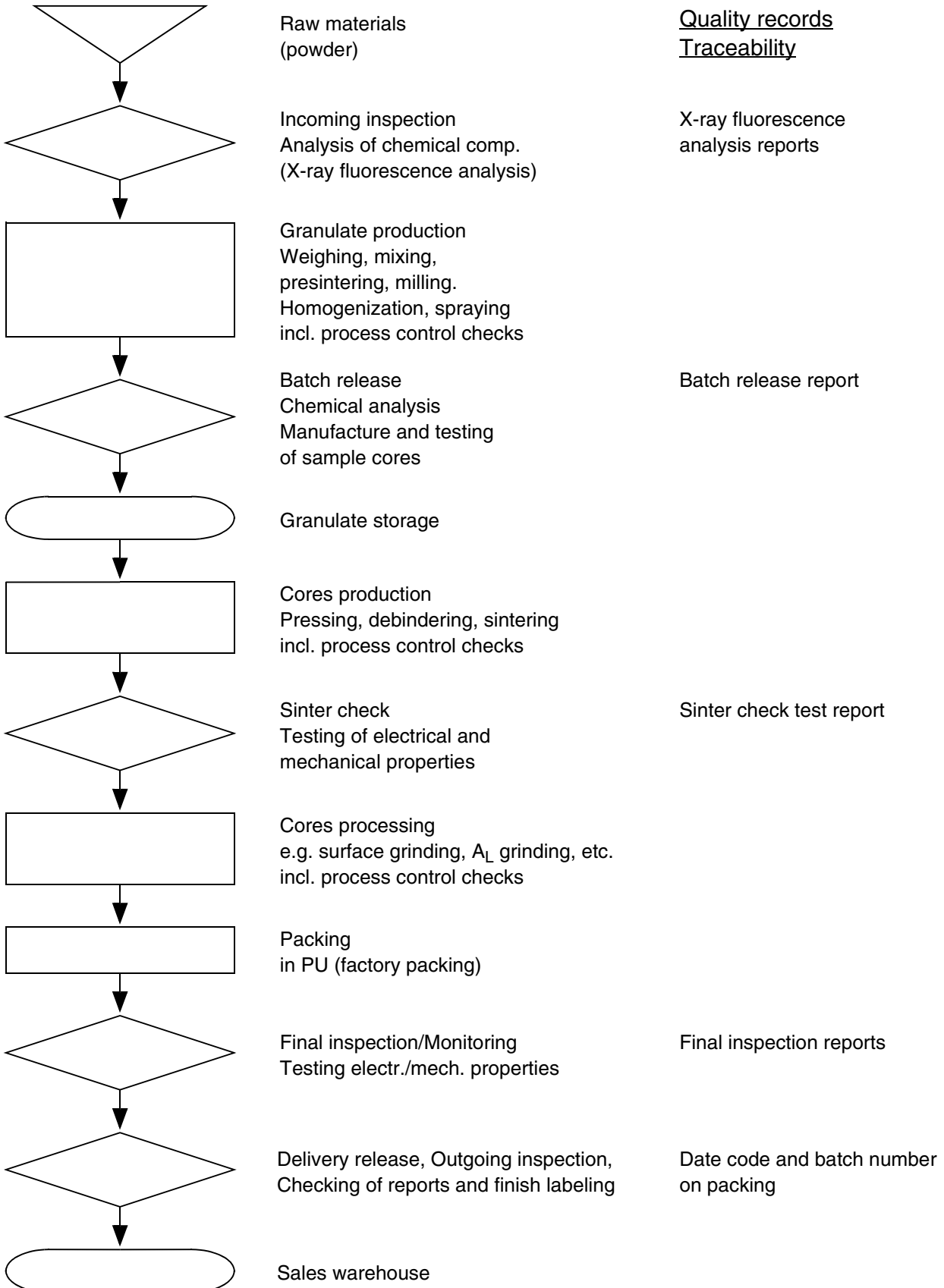
2) DoE= Design of Experiments

3) FMEA= Failure Modes and Effects Analysis

4) SPC= Statistical Process Control

Quality environment

Production sequence and quality assurance during ferrite manufacture (schematic)



1.5 Delivery quality

“Delivery quality” means compliance with the agreed data at the time of delivery.

1.6 Failure criteria

A component is defective if one of its features does not correspond to the specification of the data sheet or an agreed delivery specification.

1.7 Incoming goods inspection at the customer

For the incoming inspection, we recommend the use of a random sampling plan to DIN ISO 2859 Part 1 (contents compliant with MIL STD 105 D or IEC 60410).

The test methods used and the AQL must be agreed between the customer and supplier.

1.8 Service life/reliability

The service life in terms of reliability is the time period during which random failures occur, i.e. the range in the product operating life in which the failure rate remains largely constant (early failures and end of operating life excepted). The value depends strongly on conditions of use.

1.9 Traceability

By recording the lot or batch numbers on the documentation accompanying the process, complete traceability is maintained in the production sequence.

After delivery, traceability to the internal release inspections (“quality control gates”) is ensured by the batch number which is printed on the label.

1.10 Electrical properties

The measuring conditions can be found in the chapter “General – Definitions”. The product data and relevant tolerance limits are defined in the respective data sheets. The material data given in the chapter “SIFERRIT materials” are to be understood as typical values.

Measuring conditions deviations from the data book require an agreement between the customer and the EPCOS Ferrites Division.

1.11 Dimensions

The dimensional drawings in the individual data sheets are definitive for the dimensions.

1.12 Finish

Assessment of the finish of ferrite cores is performed in accordance with EPCOS finish specifications. These are based on IEC 60424. Detailed drawings, which are available on request, specify the maximum permissible limit values for damage which can never be totally excluded with ceramic components. Assessment of the solderability of terminal pins for coil formers and clamps is carried out for PTH types to IEC 60068-2-20, test Ta, method 1 (aging 3) and for SMD types to IEC 60068-2-58.

1.13 AQL values

Within the framework of our quality goals, we are gradually tightening the AQL values which are intended for use in the customer's incoming goods inspection, currently the value AQL 0.25 is applicable, if not otherwise specified.

1.14 Conditions of use

EPCOS products may only be used in line with the technical specifications and installation instructions and must comply with the state of the art. Non-observance of limits, operating conditions or handling guidelines can lead to disturbances in the circuit and other undesirable consequences such as a higher failure rate.

In this connection, please note the “Important notes”.

Should you have any application-referred questions, please contact our experts, who will be pleased to advise you.

1.15 Customer complaints

If a fault occurs in a product despite careful manufacture and testing, please contact your local sales organization. They will register your complaint as an RMA¹⁾ process and forward it to the relevant technical departments for rapid handling.

EPCOS treats technical complaints according to the 8D methodology; i.e. with the use of interdisciplinary teams who aim to implement rapid countermeasures and sustained corrections and answer all complaints with an 8D report (8D = 8 disciplines).

In order to be able to deal quickly and smoothly with complaints, the following data are helpful:

- Number of components subject to complaint or returned
- Fault description
- How and when was the fault detected?
- Logistics data (date code, delivery note no.)
- Operating conditions
- Operating duration up to occurrence of the fault
- Measurement parameters in the case of divergent technical data

In the event of transport damage, we would ask you to describe this in more detail and if required to mark it so that it can be distinguished from any further damage sustained during the return shipment. The original package should also be checked and any damage to be described. In order to avoid further damage, the original packaging should also be used for the return shipment.

¹⁾ RMA = Return of Material Authorization

2 Environmental management system

2.1 Environmental policy

Our fundamental commitment to environmental protection is laid down in the EPCOS environmental policy.

EPCOS defines the following environmental protection principles:

- Above and beyond statutory and administrative requirements, we are continuously working to minimize the burden on the environment and to reduce consumption of energy and natural resources.
- We are taking all precautions necessary to protect our environment against damage.
- Potential impact on the environment is assessed and incorporated in product and process planning at the earliest possible stage.
- Our environmental management system ensures that our environmental protection principles are effectively put into practice. The technical and organizational procedures required are regularly monitored and updated.
- Each employee is required to act in an environmentally conscious manner. It is the constant duty of management to increase and encourage awareness of responsibility at all levels.
- We work with our business partners to promote conformity with similar objectives. We supply our customers with information on ways to minimize any potentially adverse environmental impacts of our products. We work in a spirit of cooperation with the relevant authorities.
- We inform the public of the impact on the environment caused by the company and our activities related to the environment.

2.2 Environmental management system

The EPCOS ISO 14001 based environmental management system is applied company wide for implementing the EPCOS environmental policy. It is posted on the EPCOS Intranet and is thus accessible to all employees.

2.3 Certification

The EPCOS environmental management system forms the basis for the ISO 14001 company certification in which all the plants are being successively integrated.

The company certificate is posted on the EPCOS Internet:
(www.epcos.com/environmental_management).

2.4 RoHS

The term “RoHS-compatible” shall mean the following:

The components described as “RoHS-compatible” are compatible with the requirements of the regulations listed below (“Regulations”) and with the requirements of the provisions which will result from transformation of the Regulations into national law to the extent such provisions reflect the Regulations.

- Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
- Commission Decision of 18 August 2005 amending Directive 2002/95/EC for the purpose of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment (2005/618/IEC)
- Commission Decision of 13 October 2005, 21 October 2005 and of 21 April 2006 amending the Annex to Directive 2002/95/EC (2005/717/EC; 2005/747/EC; 2006/310/EC)

2.5 Banned and hazardous substances in components

As a manufacturer of passive components, we develop our products on the basis of sustainability. In order to guarantee a standardized procedure for EPCOS worldwide, a mandatory list of banned substances and substances of special interest is part of our environmental management system. The planning and development instructions include regulations and guidelines that aim to identify environmental aspects and to optimize products and processes with respect to material use and environmental compliance, to design them with sparing use of resources and to substitute hazardous substances as far as possible.

Consideration of the environmental aspects is checked and recorded in the design reviews: the environmental officer provides support in the assessment of the environmental impacts of a development project.

2.6 Material data sheets for product families

EPCOS posts material data sheets on the Internet (www.epcos.com/material) that show typical compositions of product groups by selected representatives. The materials are listed with their percentage weight distribution referred to the respective component.

As per IEC 61906 PAS, all materials with a weight percentage exceeding 0.1 are listed. All specifications are typical data and may vary slightly within a product group or production lot.

The material data sheets do not represent guaranteed properties, but are merely given for purposes of information.

Please note in this connection the “Important notes”.

2.7 Disposal

All ferrite components can be disposed off, reused or recycled.

However as disposal is regulated by national law, the respective national provisions have to be observed.