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	Title	Requirements for technical documentations from suppliers of the MAPAL Group							
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Foreword

This design guideline defines the requirements for documentations, those of suppliers of the MAPAL Group are required.

Changes

Compared to KR-NR.04.65:2023-06, the following changes have been made:

- KR-NR.04.37 changed to MN774-1,
- Normative references and relevant text revised,
- Company name MAPAL updated in text.

Past editions

KR-NR.04.65:2023-03, 2022-07, 2015-11, 2015-08, 2015-04, 2023-03

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1. Scope

This design guideline applies to the departments purchasing, sales and design of all domestic companies of the MAPAL Group.

This design guideline is also the basis for the design of documentation of the suppliers of merchandise or Private Label MAPAL and specifies the requirements for the data exchange of products, in particular 2D drawings and 3D models based on the norm series of standard DIN4000, DIN4003 and ISO/TS 13399.

2. Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. The supplier must ensure knowledge of the applicable DIN/ISO standards himself, guidelines and internal standards of MAPAL will be made available to the supplier on request.

- 6558, *MAPAL frame*
- 606387196, *Demodata purchase*
- DIN 4000-102, *Tabular layouts of properties – Part 102: Data exchange for tabular layouts of properties with XML schema*
- DIN 4003-1, *Concept for the design of 3D models based on properties according to DIN 4000 – Part 1: Overview and fundamental principles*
- ISO 10303-242, *Industrial automation systems and integration – Product data representation and exchange – Part 242: Application protocol: Managed model- based 3D engineering*
- ISO 19005-1, *Document management – Electronic document file format for long term preservation – Part 1: Use of PDF 1.4 (PDF/ A- 1)*
- ISO/TS 13399-70, *Cutting tool data representation and exchange — Part 70: Graphical data layout — Layer setting for tool layout*
- ISO/TS 13399-71, *Cutting tool data representation and exchange — Part 71: Graphical data layout — Creation of documents for standardized data exchange: Graphical product information*

- ISO/TS 13399-72, *Cutting tool data representation and exchange — Part 72: Creation of documents for the standardized data exchange — Definition of properties for drawing header and their XML-data exchange*
- KR-NR.04.47, *2D CAD- Layer structure*
- MN774-1, *Drawing frame - Layout*

3. Terms and definitions

No terms and definitions are listed in this document.

4. Description

4.1. Requirement for supplier documentation

In principle is for all externally procured products a documentation from the supplier required. The required design of the documentation will be communicated to the supplier by MAPAL. The responsible contact person is the purchasing employee noted on the order.

4.1.1. Products according to MAPAL definition "Standard"

For all products that are procured according to the MAPAL definition of "standard" [except DIN/ ISO components], a documentation must be create based on MAPAL drawing frames and in accordance with MAPAL regulations (see section 4.3.).

4.1.2. Products according to MAPAL definition of "special" and "externally specified"

For all products according to the MAPAL definition of "special" and "externally specified", is the special design of the documentation based on MAPAL drawing frames and in accordance with MAPAL regulations (see section 4.3.) always then to create, when customer requirements for MAPAL have to be met.

Otherwise, at least one documentation based on supplier guidelines must be provided. This is managed internally by MAPAL in document type SD1.

4.2. Time of delivery of documentation

At the time of the initial order, documentation as described in section 4.3. must be provided, available and stored in MAPAL SAP. Deviations from this must be clarified with the contact person noted on the order. However, the latest possible permissible time of delivery is 2 weeks before delivery of the products.

The data for filling in document header and parts lists (spare parts lists) will be provided by MAPAL if required.

If documentation is required for several articles, a sample must be sent in advance for verification.

In many cases, however, it is already necessary during the design process at MAPAL, that data (CAD 2D/ 3D, parts list data, etc.) must be available, for example in the case of documentation of assemblies or for customer approval.

4.3. Preparation of documentation in accordance with MAPAL regulations

The layout specified by MAPAL according to MN774-1, *Drawing frame - Layout* is to be used as the document frame. Only numbers and designations identifying MAPAL are permitted in the document header and in the parts list, and for patent law reasons, the supplier reference may be established in the documentation in special cases.

For the verification of functionality, all relevant dimensions, tolerances and surface specifications (with the roughness depth Rz) must be specified. The documentation must be designed to scale and scalable. The mass of the component or assembly shall be expressed in kilograms. The supplier is responsible for the function of the respective product.

In the case of assemblies, documentation must be supplied for all interchangeable parts for the purpose of the material master system, which clearly identifies the component. Standard components according to DIN, ISO, etc. must be clearly and completely specified. The need for documentation must be agreed with MAPAL.

Alternatively, ISO/TS 13399-71, *Cutting tool data representation and exchange — Part 71: Graphical data layout — Creation of documents for standardized data exchange: Graphical product information* it is possible to proceed. This means, that according to ISO/TS 13399-70, *Cutting tool data representation and exchange — Part 70: Graphical data layout — Layer setting for tool layout* a tool graphic as well as a data table according to ISO/TS 13399-72, *Cutting tool data representation and exchange — Part 72: Creation of documents for the standardized data exchange — Definition of properties for drawing header and their XML- data exchange* (XML-File) have to be delivered with the data of the document frame.

MAPAL internally exists document 6558 (LO1) with *MAPAL frame*, which must be sent with the documentation requirements.

MAPAL internally exists Document 606387196 (PD0), *Demodata purchase* with sample documents that can be sent with the documentation requirements.

4.4. Required data formats

NOTE Exemplary application examples from the DIN4000, DIN4003 and ISO-TS 13399 series of standards are listed in the bibliography.

The documentation provided must be designated in accordance with the following nomenclature of the MAPAL SAP-DVS system.

Document Number-Document Part-Document Version-Document Type.File Format

Example: 606162636-000-00-ED1.pdf

To ensure future reproduction and usability, the files must meet the following requirements:

file format **.tif**

- Resolution: min. 400 dpi
- Number of colors: 2 (background white)
- Compression: CCIT T4

file format **.pdf**

- Completion the requirement of ISO19005-1

file format **.dxf**

- Format: AC1015

File format **.dwg**

- Format: AC1027

File format **.stp**

- Format: AP242 according to ISO10303-242

file format **.jpg**

- Resolution: min. 400 dpi

The following documentations are required and must be provided by the supplier:

1. 2D drawing (internal document type ED1) according to MN774-1, *Drawing frame - Layout*. ISO/TS 13399-70, *Cutting tool data representation and exchange — Part 70: Graphical data layout — Layer setting for tool layout* is to be used for the layer structure, alternatively according to KR-NR.04.47, *design guideline for 2D CAD- Layer structure*.
Required file formats: **.tif, .pdf, .dxf, .dwg**
2. 3D model (internal document type E43) according to DIN 4003-1, *Concept for the design of 3D models based on properties according to DIN 4000 – Part 1: Overview and fundamental principles with additional image file*.
Level of detail: Detailed
Required file formats: **.stp, .jpg**
3. 2D drawing (internal document type E42/ 2D graphic, main view of a tool without frame and a text stamp with logo containing reference to administrative data) according to ISO/TS 13399-70, *Cutting tool data representation and exchange — Part 70: Graphical data layout — Layer setting for tool layout* to apply.
Required file formats: **.tif, .pdf, .dxf, .dwg**
4. Tabular layout of property (internal document type E40) according to DIN 4000-102, *Tabular layouts of properties – Part 102: Data exchange for tabular layouts of properties with XML schema*. Alternatively, as an EXCEL file according to MAPAL scheme/ 606787126 (FOL).
Required file formats: **.xml**, respectively **.xls(x)**

4.5. Acceptable media

Preferably by e-mail with file attachment, for large amounts of data also CD/DVD-ROM, USB stick.

4.6. Change service

The supplier is responsible for updating the documentation. If, on the part of the supplier, changes should be made, the MAPAL purchasing department must be informed. The decision regarding the acceptance of corresponding change requests is the responsibility of product management/sales and is specified in the respective quality assurance agreement (QAA) between MAPAL and the supplier. In the case of changes approved by MAPAL, a new version of the documentation must be delivered within 5 working days.

4.7. Delivery address for documentation

The responsible contact person is the purchasing employee noted on the order.

5. Deviations from the requirements

Deviating requirements must be clarified between suppliers and the responsible lead buyer purchasing, in coordination with the specialist department, regardless of individual orders or project awards.

6. Verification

We hereby agree to the guideline KR-NR.04.65 "Requirements for technical documentation from suppliers of the MAPAL Group", as well as possible consequences if they are not complied with. We undertake to provide the relevant documents to the MAPAL Group. As a contractor, we agree to MAPAL forwarding documents according to this guideline to third parties as order-relevant documentation.

Bibliography

- DIN 4000-76, *Tabular layouts of properties — Part 76: Inserts, indexable*
- DIN 4000-81, *Tabular layouts of properties — Part 81: Drills and counter sinking tools with non-indexable cutting edges*
- DIN 4000-82, *Tabular layouts of properties — Part 82: End mills with non-indexable cutting edges*
- DIN 4000-83, *Tabular layouts of properties — Part 83: Milling cutter with arbore hole and non-indexable cutting edges*
- DIN 4000-86, *Tabular layouts of properties — Part 86: Drills and counter sinking tools for indexable cutting inserts*
- DIN 4000-89, *Tabular layouts of properties — Part 89: Adaptive items for tools and extenders*
- DIN 4000-180, *Tabular layouts of properties — Part 180: Tool assemblies*
- DIN 4003-76, *Concept for the design of 3D models based on properties according to DIN 4000 — Part 76: Inserts, indexable*
- DIN 4003-81, *Concept for the design of 3D models based on properties according to DIN 4000 — Part 81: Drills and counter sinking tools with non-indexable cutting edges*

- DIN 4003-82, *Concept for the design of 3D models based on properties according to DIN 4000 — Part 82: End mills with non-indexable cutting edges*
- DIN 4003-90, *Concept for the design of 3D models based on properties according to DIN 4000 — Part 90: Tool holders for indexable cutting inserts*
- [1] ISO 128-2, *Technical product documentation (TPD) — General principles of presentation — Part 2: Basic conventions for lines*
- [2] ISO 6428, *Technical drawings — Requirements for microcopying*
- [3] ISO 10303-28, *Industrial automation systems and integration — Product data representation and exchange — Part 28: Implementation methods: XML representations of EXPRESS schemas and data, using XML schemas*
- [4] ISO 16016, *Technical product documentation — Protection notices for restricting the use of documents and products*
- [5] ISO/TS 13399-2, *Cutting tool data representation and exchange — Part 2: Reference dictionary for the cutting items*
- [6] ISO/TS 13399-3, *Cutting tool data representation and exchange — Part 3: Reference dictionary for tool items*
- [7] ISO/TS 13399-4, *Cutting tool data representation and exchange — Part 4: Reference dictionary for adaptive items*
- [8] ISO/TS 13399-5, *Cutting tool data representation and exchange — Part 5: Reference dictionary for assembly items*