

Thermoplastic materials for rollers for sliding and folding door fittings

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1 Purpose and scope

1.1 Purpose

Thermoplastics, thermosets and elastomers are important construction materials in the development of hardware parts.

Due to the different types and modifications or in-house developments, it is necessary to define their specification, i.e. to clearly define their designations and the place of designation, to standardize types and designations.

This internal standard RIS_3049 specifies special thermoplastic materials for use as rollers in carriages, control units and the like for sliding door or folding door fittings within the companies of Roto Frank Fenster- und Türtechnologie GmbH.

The aim of this standard and its enclosed documents (e.g. RIS_3036, Catalogue of Materials "Material List") is to achieve a clear specification of the materials and to reduce the number of material types to the necessary level.

1.2 Scope

This Internal Standard RIS_3049 specifies special thermoplastic materials for use within the companies of Roto Frank Fenster- und Türtechnologie GmbH for the series production of rollers in running carriages, control units and similar components for sliding or folding door fittings. Designated suppliers supply these special materials.

These special materials have different specifications compared to public standards and thus also have special quality and delivery conditions.

This internal standard describes the specifications of these materials using the manufacturer's accessible data sheets.

This standard also specifies the designation of the material in the font header field of the technical drawing or the associated 2D/3D CAD data, and in the Material field in the SAP basic data.

No definitions are given regarding further delivery conditions with regard to the form of delivery of powder, granules or other semi-finished products. These are specified elsewhere.

2 Terms

The terms used in this standard correspond to the relevant public standards - in particular DIN EN ISO 1043-1 and Roto's internal language.

3 Responsibility and validity

3.1 Responsibility

The product design department is responsible for defining and passing on the relevant information regarding the surface color and material.

Drawing management department is responsible for checking the correct implementation of the given material, surface, or color specification from the drawings into the SAP basic data.

The Central Standards Body is responsible for the necessary updates to this standard and the related Applicable Documents.

The production or prototype construction department is responsible for conducting the work in accordance with this standard.

Purchasing is responsible for integrating the suppliers approved for these procedures.

Quality Assurance monitors compliance with this standard.

3.2 Validity

This standard is applied in the companies of Roto Frank Fenster- und Türtechnologie GmbH.

4 Embedding this standard in the system of important internal standards of material and surface

This internal standard RIS_3049 specifies special thermoplastic materials for use as rollers in carriages, control units and the like for sliding door or folding door fittings within the companies of Roto Frank Fenster- und Türtechnologie GmbH.

The Internal Standard RIS_3016 "Thermoplastic, Thermoset or Elastomer Components: Specifications and Designations of Materials" describes the type of material specification for typically injection-molded or extruded components made of thermoplastic, thermoset or elastomers.

The internal standard RIS_2003 specifies the information that is to be entered in the individual fields of the drawing header as characteristics [..].

The colouring of plastic parts is often based on colouring of the base material in the process of manufacturing the moulded parts or profiles (RIS_2058). The Internal Standard RIS_2058 "Colouring of components made of thermoplastic, thermoset or elastomers by colouring" describes the test criteria for colouring by colouring and regulates the forms and scope of information in technical documents.

The internal standard RIS_3036 "Catalogue of Materials (Material List)" catalogues the specifications of all materials, in particular according to the material designations in the documents or data objects of the product design and SAP.

The Internal Standard RIS_3038 "Catalogue of Coatings and Surfaces of Components (Surface List)" catalogues the specifications of all surfaces, in particular the surface designations in the documents or data objects of product design and in SAP, according to the procedures and codes of the processes as well as colour designations in the public marketing by Roto Frank FTT GmbH.

These Internal Standards are closely related to each other because:

- the type of designations of the semi-finished products and materials of the components according to the present standard is to be formed in accordance with the RIS_3016 "Components made of thermoplastics, thermosets or elastomers: specifications and designations of the materials".
- the selection and designation of the semi-finished products and materials of the components in accordance with this standard is to be selected from the RIS_3036 "Materials List".
- the primary definition of the designation of the semi-finished products and materials of the components (semi-part standard and possibly semi-part dimensions as well as material standard and material designation) in the drawing and the 2D/3D geometry objects associated with it must be carried out in accordance with the specifications of the RIS_2003 "Title Blocks in Technical Drawings: Content, Regulations, Organization".
- the selection and designation of the surface colours of components made of materials in accordance with this standard is to be selected from the RIS_3038 "Surface List".
- when selecting processes for further coatings or colouring in accordance with RIS_3038 "Surface List", the limiting specifications of the Internal Standards for Surfaces RIS_2030 et seq. must be observed (check for compliance of the requirement specification requirements with the specifications of the Internal Standards RIS_2030 et seq.).
- the selection of the colouring of the materials of the components according to the present standard is often to be selected according to the RIS_2058 "colouring of components made of thermoplastic, thermoset or elastomers by colouring". The surface colours are largely determined by the material and its colouring. Furthermore, the material also influences the quality of applied surface colours.

5 Individual materials or groups of thermoplastic materials for door rollers

The following chapters describe individual materials or groups of equivalent materials that can be used throughout the company.

A single material is chosen if a specifically specified material is required for the specific component. This means that the material designation specified in the drawing and SAP must be implemented. Material designations according to RIS are used as the designation of individual materials (exact designation of the materials in the drawing and SAP: see Chapter 6).

A group of materials is selected if all the materials assigned in the table can be used in principle for the specific component. This means that the manufacturer or the company's own plant can offer the component with all the materials specified in this group and deliver it in the event of subsequent acceptance and approval. Collective material designations according to RIS are used to designate groups of equivalent materials (exact designation of the material group in drawings and SAP: see Chapter 6). For the concept of "equivalent materials" and how to deal with material changes, see RIS_3036, Chapter 4.2, Rule 10.

6 Materials Overview

6.1 Collective material designations for a group of specific materials

Type designation	Manufacturer	Single Material Designation in Drawing and SAP	Collective Material Designation in Drawing and SAP
TECHNYL C 216 V50 NC	DOMO Engineering Plastics; Premnitz	Th.PI. RIS_3049-21	Th.PI. RIS_3049-01
Ultramid C 216 V50 NATURAL	BASF SE, Ludwigshafen, Germany	Th.PI. RIS_3049-22	

For more detailed explanations, see the following chapters.

6.2 Individual material designations for each material in this group(s)

Description	Manufacturer	Single Material Designation in Drawing and SAP
TECHNYL C 216 V50 NC	DOMO Engineering Plastics; Premnitz	Th.PI. RIS_3049-21
Ultramid C 216 V50 NATURAL	BASF SE, Ludwigshafen, Germany	Th.PI. RIS_3049-22

For more detailed explanations, see the following chapters.

7 Materials of a group of thermoplastic materials with collective material designation "Th.Pl. RIS_3049-01" (see Table Chapter 6.1)

7.1 Type designations

- See Table Chapter 6.1 on the individual materials

7.2 Manufacturer

- See table in Chapter 6.1 and further related information on the individual materials

7.3 Features

- See table in Chapter 6.1 and further related information on the individual materials

7.4 Uses in the hardware sector

- Rollers in carriages, control units and similar components for sliding or folding door fittings designed for moderate roller loads

7.5 Special features

- Indoor and outdoor applications
- High dynamic and static continuous load
- High thermal stability

7.6 Specification of the material group in the title block of the drawing and in SAP

The group of thermoplastic materials listed in the table in Chapter 6.1 with the collective material designation "Th.PI. RIS_3049-01" shall be given the following collective material designation in the title block of the drawing or the associated 2D/3D geometry data and in SAP:

Th.PI. RIS_3049-01

7.7 Concrete specification of semi-finished products & materials in the drawing font according to RIS_3016

Feature [06] in the title block of the drawing: Not specified

Feature [07] in the title block of the drawing: Th.PI. RIS_3049-01

Halbzeug und Werkstoff / Semi-finished Product and Material		Oberflächenbehandlung / Surface Protection		Generell mitgeltende Standards Generally applicable Standards RIS 0099	
[06] Not specified Th.PI. RIS_3049-01 [07]		-		Tolerierung/Tolerancing ISO 8015	
Erstausgabe		Design	21.08.2017	A. Muster	Geometrische Toleranzen / Dimensional Tolerances
-		Check	28.08.2017	B. Muster	DIN 16742 - TG6
-		Standards	-	-	DIN 16742 - TG6
-		Maßstab Scale	1:1	Musterteil (-)	
0		Roto Frank AG		876543	
Änderung / Revision		Ersetzt / Replaces		Blatt/Sheet	Index
-		-		1/1	01
5		6		7	
				8	

(Fictitious example)

7.8 Specific specification of semi-finished product standard and material in SAP Basic Data 2 by RIS_3016

Concrete Specification of the semi-finished product standard in SAP: Not specified

Concrete Specification of the material in SAP: Th.PI. RIS_3049-01

<

SAP

Material anzeigen (Halbfabrikat)

✓

→ Zusatzdaten

OrgEbenen

Grunddaten 1

Grunddaten 2

WM Execution

WM Packaging

Material

876543

Musterteil_UNDYED

Sonstige Daten

Fert./Prüfhinweis

Normbezeichnung

Not specified

DIN-Format

CAD-Kz.

Werkstoff

Th.PI. RIS_3049-01

Oberfläche

UNDYED NATURE RIS_2058 DYED CAST (PROCESS)

(Fictitious example)

RIS_3049_UU_EN | Version 1.0

8 Single material with individual material designation "Th.Pl. RIS_3049-21" (see Table Chapter 6.2)

8.1 Type designation

- TECHNYL C 216 V50 NC
- PA6,GF50,M1,S12-160 according to ISO 16396

8.2 Manufacturer

- DOMO Engineering Plastics; Premnitz

8.3 Features (according to manufacturer's data sheet)

- TECHNYL C 216 V50 NC is a polyamide 6 with 50% glass fiber reinforcement, with improved fluidity for injection molding

Colors:

- Natural dyes in delivery

Fillers:

- 50% Glass Fiber

Typical mechanical properties

- | | |
|------------------------------------|---------------------|
| ▪ Tensile Module (ISO 527-1/-2): | 16,500 / 11,000 MPa |
| ▪ Yield stress (ISO 527-1/-2): | 225 / 160 MPa |
| ▪ Yield elongation (ISO 527-1/-2): | 2,6 / 4,5 % |

Thermal properties

- | | |
|--------------------------------------|-------|
| ▪ Melting temperature (ISO 11357-1): | 221°C |
|--------------------------------------|-------|

Physical properties

- | | |
|-----------------------|------------------------|
| ▪ Density (ISO 1183): | 1.56 g/cm ³ |
|-----------------------|------------------------|

8.4 Uses in the hardware sector

- Rollers in carriages, control units and similar components for sliding or folding door fittings designed for moderate roller loads

8.5 Special features

- Indoor and outdoor applications
- High dynamic and static continuous load
- High thermal stability

8.6 Specification of the material in the title block of the drawing and in SAP

The thermoplastic from the manufacturer DOMO Engineering Plastics with the in-house designation TECHNYL C 216 V50 NC is given the following designation of the material in the title block of the drawing or the associated 2D/3D geometry data and in SAP:

Th.PI. RIS_3049-21

8.7 Concrete specification of semi-finished products & materials in the drawing font according to RIS_3016

Feature [06] in the title field of the drawing:

Not specified

Feature [07] in the title field of the drawing:

Th.PI. RIS_3049-21

Halbzeug und Werkstoff / Semi-finished Product and Material [06] Not specified Th.PI. RIS_3049-21 [07]		Oberflächenbehandlung / Surface Protection -		Generell mitgeltende Standards Generally applicable Standards RIS_0099	
Erstausgabe		Design	21.08.2017	A. Muster	Tolerierung/Tolerancing ISO 8015
-		Check	28.08.2017	B. Muster	maß-Toleranz / Dimensional Tol. DIN 16742 - T66
-		Standards	-	-	Geometrie Tol. / Geom. Tolerances DIN 16742 - T66
-		Maßstab Scale	Musterteil (-)		
0		1:1			
Änderung / Revision		Roto Frank AG		765432	
Ersetzt / Replaces		Roto		Blatt/Sheet 1/1	
Alternative Nr./No.				Rev. Datum/Date 30.11.2017	
Modell Name				Index 01	

(Fictitious example)

8.8 Specific specification of semi-finished product standard and material in SAP Basic Data 2 by RIS_3016

Concrete Specification of the semi-finished product standard in SAP:

Not specified

Concrete Specification of the material in SAP:

Th.PI. RIS_3049-21

Material anzeigen (Halbfabrikat)

☒

Grunddaten 1 Grunddaten 2 WM Execution WM Packaging

Material 765432 Musterteil_UNDYED

Sonstige Daten

Fert./Prüfhinweis Normbezeichnung Not specified

DIN-Format ☐ CAD-Kz.

Werkstoff Th.PI. RIS_3049-21

Oberfläche UNDYED NATURE RIS_2058 DYED CAST (PROCESS)

(Fictitious example)

9 Single material with individual material designation "Th.Pl. RIS_3049-22" (see Table Chapter 6.2)

9.1 Type designation:

- Ultramid C 216 V50 NATURAL
- PA6,GF50,M1,S12-160 according to ISO 16396

9.2 Manufacturer

- BASF SE, Ludwigshafen, Germany

9.3 Features (according to manufacturer's data sheet)

- Ultramid C 216 V50 Natural is a polyamide 6 reinforced with 50% glass fibers for injection molding.
- Ultramid C 216 V50 Natural is characterized by high mechanical strength and a good surface appearance during injection molding.

Colors:

- Natural dyes in delivery

Fillers:

- 50% Glass Fiber

Typical mechanical properties

- Tensile Module (ISO 527-1/-2): 17,500 / 10,200 MPa
- Yield stress (ISO 527-1/-2): 225 / 145 MPa
- Yield elongation (ISO 527-1/-2): 2,86 / 5,5 %

Thermal properties

- Melting temperature (ISO 11357-1): 222°C

Physical properties

- Density (ISO 1183): 1.56 g/cm³

9.4 Uses in the hardware sector

- Rollers in carriages, control units and similar components for sliding or folding door fittings designed for moderate roller loads

9.5 Special features

- Indoor and outdoor applications
- High dynamic and static continuous load
- High thermal stability

9.6 Specification of the material in the title block of the drawing and in SAP

The thermoplastic from the manufacturer BASF SE with the company's internal designation Ultramid C 216 V50 NATURAL is given the following designation of the material in the title block of the drawing or the associated 2D/3D geometry data and in SAP:

Th.PI. RIS_3049-22

9.7 Concrete specification of semi-finished products & materials in the drawing font according to RIS_3016

Feature [06] in the title field of the drawing:

Not specified

Feature [07] in the title field of the drawing:

Th.PI. RIS_3049-22

Halbzeug und Werkstoff / Semi-finished Product and Material				Oberflächenbehandlung / Surface Protection		Generell mitgeltende Standards Generally applicable Standards RIS 0099	
[06] Not specified Th.PI. RIS_3049-22 [07]				-			
Erstausgabe				Design	21.08.2017	A. Muster	Tolerierung/Tolerancing ISO 8015
-				Check	28.08.2017	B. Muster	Maß-Toleranzen / Dimensional Tol.
-				Standards	-	-	Geometrie Tol. / Geom. Tolerances
-				Maßstab Scale	Musterteil (-)		
0				1:1			
Änderung / Revision				Roto Frank AG		654321	
Änderung / Revision - Ausgabe / Issue				Blatt/Sheet		Rev. Datum/Date	
Ersetzt / Replaces				1/1		30.11.2017	
Alternative Nr./No.				Index		01	
Model Name							
-				Roto			
5				6		7	
						8	

(Fictitious example)

9.8 Specific specification of semi-finished product standard and material in SAP Basic Data 2 by RIS_3016

Concrete Specification of the semi-finished product standard in SAP:

Not specified

Concrete Specification of the material in SAP:

Th.PI. RIS_3049-22

<

SAP

Material anzeigen (Halbfabrikat)

✓

→ Zusatzdaten

OrgEbenen

Grunddaten 1

Grunddaten 2

WM Execution

WM Packaging

Material

654321

Musterteil_UNDYED

i

Sonstige Daten

Fert./Prüfhinweis

Normbezeichnung

Not specified

DIN-Format

CAD-Kz.

Werkstoff

Th.PI. RIS_3049-22

Oberfläche

UNDYED NATURE RIS_2058 DYED CAST (PROCESS)

(Fictitious example)

10 Applicable documents

Any standard numbers marked with * are only relevant for internal users of the Roto Group in relation to this standard.

RPD_0001*	Controlled documents in the PI process
RPD_0010*	Document Types and Identification
RIS_0098*	Specifications for the creation, amendment and publication of Roto Internal Standards (Supplements to the RIS_0099)
RIS_0099_DE / WN00.00.00.0099	General information on the application of standards in the Company of Roto Frank Fenster- und Türtechnologie GmbH
RIS_1100	Special Characteristics
RIS_2003*	Title blocks in Technical Drawings
RIS_2011*	Standardized design specifications
RIS_2029	Procedure for specifying surfaces in SAP
RIS_2058	Colouring of plastic parts by dyeing
RIS_3016	Components made of thermoplastic, thermoset or elastomers: Specifications and designations of materials
RIS_3036*	Catalogue of materials (list of materials)
RIS_3038*	Component Coatings and Surfaces Catalog (Surface List)

11 Revision service

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First publication



Roto Frank Fenster- und Türtechnologie GmbH
Leitprozeß Produkt Innovation Standard
Lead Process Product Innovation Standard
Wilhelm-Frank-Platz 1
D-70771 Leinfelden-Echterdingen
<https://ftt.roto-frank.com>

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