
**Plastics — Polyamide (PA) moulding
and extrusion materials —**

**Part 1:
Designation system and basis for
specifications**

*Plastiques — Matériaux à base de polyamide (PA) pour moulage et
extrusion —*

Partie 1: Système de désignation et base de spécifications



STANDARDSISO.COM : Click to view the full PDF of ISO 16396-1:2022



COPYRIGHT PROTECTED DOCUMENT

© ISO 2022

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	2
4 Designation system.....	2
4.1 General.....	2
4.2 Data block 1.....	3
4.2.1 General.....	3
4.2.2 Blends.....	4
4.3 Data block 2.....	5
4.4 Data block 3.....	5
4.5 Data block 4.....	7
4.5.1 General.....	7
4.5.2 Viscosity number.....	7
4.5.3 Tensile modulus.....	9
4.5.4 Nucleating additive.....	10
4.6 Data block 5.....	10
5 Examples of designations.....	10
5.1 Designations without specification.....	10
5.2 Designation transformed into a specification.....	12
Annex A (informative) Designation of polyamides.....	14
Bibliography.....	16

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 9, *Thermoplastic materials*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 16396-1:2015), which has been technically revised.

The main changes compared to the previous edition are as follows:

- “marking of products” has been deleted in the subtitle; the subtitle has been replaced by “Part 1: Designation system and basis for specifications”;
- the abbreviation for “Injection moulding” has been changed back to “M” in [Table 4](#);
- “Multiple processing modes” has been added in [Table 4](#);
- the reference to ISO 1874-2 has been changed to ISO 16396-2.

A list of all parts in the ISO 16396 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In practice, ISO 1043 and ISO 11469 are, in combination, being "improperly" used as a designation system for, e.g. marking. The aim of this document is to simplify the data block system and to connect more to ISO 1043 and ISO 11469, where the first two blocks are used for generic identification and marking of products.

STANDARDSISO.COM : Click to view the full PDF of ISO 16396-1:2022

STANDARDSISO.COM : Click to view the full PDF of ISO 16396-1:2022

Plastics — Polyamide (PA) moulding and extrusion materials —

Part 1: Designation system and basis for specifications

1 Scope

This document establishes a system of designation for polyamide (PA) moulding and extrusion materials, which can be used as the basis for specifications.

The types of polyamide plastics are differentiated from each other by a classification system based on appropriate levels of the designatory properties

- a) viscosity number,
- b) tensile modulus, and
- c) nucleating additive,

and on information about composition, intended application and/or method of processing, important properties, additives, colorants, fillers, and reinforcing materials.

The designation system is applicable to all polyamide homopolymers, copolymers, and blends.

It is applicable to unmodified materials ready for normal use and materials modified, for example, by colorants, additives, fillers, reinforcing materials, and polymer modifiers.

This document does not apply to the following materials:

- monomer casting-type polyamides of PA 6;
- monomer casting-type polyamides of PA 12.

It is not intended to imply that materials having the same designation give the same performance. This document does not provide engineering data, performance data, or data on processing conditions which can be required to specify a material. If such additional properties are required, they can be determined according to the test methods specified in ISO 16396-2, if suitable.

In order to specify a thermoplastic material for a particular application, additional requirements can be given in data block 5 (see [4.1](#)).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 307, *Plastics — Polyamides — Determination of viscosity number*

ISO 527 (all parts), *Plastics — Determination of tensile properties*

ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

ISO 16396-2, *Plastics — Polyamide (PA) moulding and extrusion materials — Part 2: Preparation of test specimens and determination of properties*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

4 Designation system

4.1 General

The symbol “%” used in this document means mass fraction.

The designation system for thermoplastics is based on the following standard pattern:

Designation						
Description block	Identity block					
Thermoplastics (optional)	International Standard Block	Individual-item Block				
		Data block 1	Data block 2	Data block 3	Data block 4	Data block 5

The designation consists of an optional description block, reading “Thermoplastics”, and an identity block comprising the International Standard number and an individual-item block. For unambiguous designation, the individual-item block is subdivided into five data blocks comprising the following information.

- Data block 1: Position 1: Identification of the plastic by its abbreviated term (PA), in accordance with ISO 1043-1 and information about the composition of the polymer.
Position 2: Information on the use of plasticizer (P) or impact modifier (I) (see 4.2).
- Data block 2: Position 1: Fillers or reinforcements and their nominal content.
Position 2: Flame retardant information.
Position 3: Declaration of recyclate (R) (see 4.3).
- Data block 3: Position 1: Intended application and/or method of processing. Positions 2 to 8: Important properties, additives, and supplementary information (see 4.4).
- Data block 4: Designatory properties (see 4.5).
- Data block 5: For the purpose of specification, the fifth data block contains appropriate information (see 4.6).

The first character of the individual-item block shall be a hyphen. The data blocks shall be separated from each other by commas.

If a data block is not used, this shall be indicated by doubling the separation sign, i.e. by two commas (,,). Terminal commas can be omitted.

NOTE Data blocks 1 and 2 together form the part marking symbol, connected with a hyphen, and placed between the punctuation marks “>” and “<”, where no spaces are used between the codes.

EXAMPLE

Designation										
Description block (op- tional)	Identity block									
	ISO Stand- ard	Individual-item block								
Data block 1		Data block 2			Data block 3		Data block 4	Data block 5		
Polymer		Performance and origin			Application and processing		Properties	Additional information		
Type		Additive	Filler	Flame re- tardant	Recyclate	Processing	Characteristics			
Ther- mo-plastics	16396	PA 6	P	(GF+MD) 25	FR(30)	(R50)	M	A	S14-060	
>Part marking<										
No	No	Yes		Yes			No		No	No

Designation: ISO 16396-PA 6-P,(GF+MD)25 FR(30) (R50),MA,S14-060,,

Part marking: >PA 6-P-(GF+MD)25FR(30)(R50)<

4.2 Data block 1

4.2.1 General

In this data block, after the hyphen, the plastic is identified by its abbreviated term (PA) in accordance with ISO 1043-1 and a symbol indicating the composition as specified in [Table 1](#).

Polyamides containing plasticizer(s) can be designated by adding the letter P after the symbol, separated from it by a hyphen (example: PA 6-I-P).

Polyamides containing impact modifier(s) can be designated by adding the letter I after the symbol, separated from it by a hyphen (example: PA 6-I).

Examples of symbols indicating the chemical structure of copolyamide materials are given in [Table 2](#).

Table 1 — Symbols indicating the chemical structure of polyamide materials in data block 1

Symbol	Name and chemical structure
Aliphatic — One monomer	
PA x	Polyamide, where x represents the number carbon atoms in the monomer. Examples: PA 6: Polyamide 6, homopolymer based on ε-caprolactam. PA 11: Polyamide 11, homopolymer based on 11-aminoundecanoic acid (see Annex A).
Aliphatic — Two monomers — Diamine/dicarboxylic acid	
PA xy	Polyamide, where — x represents the number carbon atoms in the diamine and — y represents the number of carbon atoms in the dicarboxylic acid (see Annex A). Examples: PA 46; Polyamide 46, homopolymer based on tetramethylenediamine and adipic acid PA 612; Polyamide 612, homopolymer based on hexamethylenediamine and dodecanedioic acid

Table 1 (continued)

Symbol	Name and chemical structure
	Semi aromatic — Two monomers — (aromatic) Diamine/(aromatic) dicarboxylic acid
PA xy	Polyamide, where — x represents the number carbon atoms in the diamine or the abbreviation of the diamine and — y represents the number of carbon atoms in the dicarboxylic acid or the abbreviation of the dicarboxylic acid (see Annex A). Examples: PA 4T, Polyamide 4T; homopolymer based on tetramethylenediamine and terephthalic acid. PA MXD6, Polyamide MXD6; homopolymer based on m-xylylenediamine and adipic acid.

Table 2 — Examples of symbols indicating the chemical structure of copolyamide materials in data block1

Symbol ^a	Chemical structure ^b
PA 66/610	Polyamide copolymers based on hexamethylenediamine, adipic acid and sebacic acid.
PA 6/12	Polyamide copolymers based on ϵ -caprolactam and lauro lactam.
PA 6/66/PACM6	Polyamide ternary copolymers based on ϵ -caprolactam, hexamethylenediamine, adipic acid, bis(p-aminocyclohexyl)methane and adipic acid.
PA 46/6	Polyamide copolymers based on tetramethylenediamine, adipic acid and ϵ -caprolactam.
PA 4T/6T	Polyamide copolymers based on tetramethylenediamine, hexamethylenediamine and terephthalic acid.
PA 6T/XT	Polyamide copolymers based on hexamethylene diamine, an unspecified diamine and terephthalic acid.
PA 6T/66	Polyamide copolymers based on hexamethylene diamine, terephthalic acid and adipic acid.
PA 6T/6I	Polyamide copolymers based on hexamethylene diamine, terephthalic acid and isophthalic acid.
PA 6T/6I/66	Polyamide copolymers based on hexamethylene diamine, terephthalic acid, isophthalic acid and adipic acid.
PA66/6I	Polyamide copolymers based on hexamethylene diamine, adipic acid, and isophthalic acid.
PA NDT/INDT	Polyamide copolymers based on 1,6 diamino-2,2,4-trimethylenehexane, 1,6 diamino-2,4,4-trimethylenehexane and terephthalic acid.
PA 12/IPDI	Polyamide copolymers based on lauro lactam, isophoronediamine, and isophthalic acid.
The following three designations include an indication of the mass fraction (see Annex A).	
PA 66/6(90/10)	Polyamide copolymers based on 90 % hexamethylenediamine and adipic acid and 10 % ϵ -caprolactam.
PA 6/66 (80/20)	Polyamide copolymers based on 80 % ϵ -caprolactam and 20 % hexamethylenediamine and adipic acid.
PA 66/6 (80/20)	Polyamide copolymers based on 80 % hexamethylenediamine and adipic acid and 20 % ϵ -caprolactam.
^a Semi-crystalline polyamides can also be called polyphthalamides (PPA) if the residues of terephthalic acid or isophthalic acid or a combination of the two comprise at least 55 mole percentage of the dicarboxylic acid portion of the repeating structural units of the polymer chain (see ASTM D 5336).	
^b Other monomer combinations are possible	

4.2.2 Blends

Blends can be made from materials mentioned in both tables and/or other polymers (see ISO 1043). For polymer blends or alloys, use the abbreviated terms for the basic polymers with the main component in first place followed by the other components in descending order according to their mass fractions, separated by a plus sign and no space before or after the plus sign.

EXAMPLE A blend of polyamide12 and polypropylene is designated: PA 12+PP.

4.3 Data block 2

In this data block, the type of filler and/or reinforcing material is represented by a single code letter in position 1, and its physical form by a second code letter in position 2, where the code letters are as specified in Table 3. Subsequently (without a space), the actual content by mass percent can be given by a two figure number in position 3.

Mixtures of filler materials or forms can be indicated by combining the relevant codes using the sign “+” and placing the whole between parenthesis or by combining the relevant codes using the sign “+” and placing the whole between parentheses followed by the total filler content. For example, a mixture of 25 % glass fibre (GF) and 10 % mineral powder (MD) would be indicated by (GF25+MD10) or (GF+MD)35.

For marking purposes, combining the relevant codes followed by the total filler content outside the parentheses is preferred.

Table 3 — Coding system for fillers and reinforcing materials in data block 2

Code-letter	Material (Position 1)	Form (Position 2)
B	Boron	Balls, beads, spheres
C	Carbon ^a	
D		Powder, dry blend
F		Fibre
G	Glass	Granules; ground
H		Whiskers
K	Calcium carbonate (CaCO ₃)	
M	Mineral ^a	
ME	Metal ^b	
N		Nano
S	Organic, synthetic ^a	
T	Talcum	
X	Not specified	Not specified
Z	Others ^a	Others

^a These materials can be identified after the code-letter, e.g. by chemical symbol or additional codes to be agreed upon.

^b Metal filler shall be identified by the chemical symbol (in capital letters) after the mass content. For example, iron whiskers can be designated “MEH05FE”.

Separated from the reinforcement code by a space, the addition of a flame retardant or flame retardant behaviour is represented by the abbreviated term “FR” followed, without a space, by a two digit code number between parentheses of the flame retardant type according ISO 1043-4.

Separated by a space from the flame retardant or the reinforcement code if no flame retardant code is used, the declaration of recycle is represented by the code R between parentheses (R). Following the code R, the mass content can be given between the parentheses without a space. For example, a PA 66 containing 20 % glass fibre based upon a resin composed nominally of 70 % recycle and 30 % virgin material will be indicated ISO 16396-PA 66,GF20 (R70).

4.4 Data block 3

In this data block, information about intended application and/or method of processing is given in position 1 and information about important properties, additives, and colour in positions 2 to 8. The code letters used are specified in Table 4. If information is presented in positions 2 to 8 and no specific information is given in position 1, the letter X (no indication) shall be inserted in position 1.

Table 4 — Codes used in data block 3

Code-Letter	First letter	Letters 2 to 8
A		Processing stabilized
B	Blow moulding	Antiblocking
C		Coloured
C1		Coloured but transparent
C2		Coloured, but non-transparent
D		Powder
D1		Dry-blend
E	Extrusion	Expandable
E1	Extrusion of pipes	Electrically conductive
E2	Extrusion of profiles	
E3	Extrusion of sheets	
E4	Extrusion of tubing	
F	Extrusion of film and thin sheeting	Special burning
F1		Non-flammable
F3		Flammable
G	General use	Granules
G1		Pellets
H	Coating	Heat-ageing stabilized
H1	Powder coating	Stabilized against radiation
K	Cable and wire coating	
L	Monofilament extrusion	Light and/or weather stabilized
L1		UV-stabilized
L2		Artificial light stabilized
M	Injection moulding	
N		Natural (not coloured)
O1		Laser transparent
O2		Laser printable
P	Multiple processing modes	Impact modified
R	Rotational moulding	Moulding release agent
S	Sintering	Lubricated
T	Tape manufacture	Transparent
T1		Translucent
T2		Opaque
T3		Improved transmission in UV
T4		Light diffuser
W		Stabilized against hydrolysis
X	No indication	
X1		X-ray detectable
Z		Antistatic

4.5 Data block 4

4.5.1 General

In this data block, the range of designatory property 1 is represented by a 3-figure code number (see 4.5.2), the range of designatory property 2 by a 3-figure code number (see 4.5.3). The code numbers are separated from each other by hyphens.

If a property value falls on or near a range limit, the manufacturer shall state which range will designate the material. If subsequent individual test values lie on, or on either side of, the limit because of manufacturing tolerances, the designation is not affected.

NOTE Not all combinations of the values of the designatory properties are provided by currently available materials.

The types of polyamide plastics are differentiated from each other by a classification system based on appropriate levels of the following designatory properties:

- a) viscosity number;
- b) tensile modulus;
- c) nucleating additive.

4.5.2 Viscosity number

The viscosity number shall be determined in accordance with ISO 307, using the solvent specified in Table 5. The possible values of the designatory property 1 are divided into ranges, each represented by a 3-figure code number as specified in Table 5.

For copolyamides, sulfuric acid with 96 % should preferably be used as solvent, but some copolyamides dissolve better in *m*-cresol or phenol/1,1,2,2-tetrachloroethane (60 %/40 %). Information concerning the most suitable solvent can be obtained from the supplier of copolyamides and homopolyamides which are not covered in the last column of Table 5.

Table 5 — Code numbers for designatory property viscosity number in data block 4

Code-number	Range of viscosity number			Applicable to
	Solvent 96 % sulfuric acid	Solvent <i>m</i> -cresol	Solvent phenol/1,1,2,2-tet- rachloroethane (60 %/40 %)	
S09	≤ 90			PA 6,
S10	>90 to ≤ 110			PA 66,
S12	>110 to ≤ 130			PA 69,
S14	>130 to ≤ 160			PA 610,
S18	>160 to ≤ 200			PA 612,
S22	>200 to ≤ 240			PA 613,
S27	>240 to ≤ 290			PA MXD6, polyam- ide blends,
S32	>290 to ≤ 340			and Copolyamides
S34	>340			

Table 5 (continued)

Code-number	Range of viscosity number			Applicable to
	Solvent 96 % sulfuric acid	Solvent <i>m</i> -cresol	Solvent phenol/1,1,2,2-tet- rachloroethane (60 %/40 %)	
C11		≤ 110		PA 1010,
C12		>110 to ≤ 130		PA 1012,
C14		>130 to ≤ 150		PA 1212,
C16		>150 to ≤ 170		PA 11,
C18		>170 to ≤ 200		PA 12, polyamide
C22		>200 to ≤ 240		blends, and copoly-
C24		>240		amides
P12			≤ 120	PA 6T/66, PA
P13			>120 to ≤ 140	6I/66, PA 6I/6T,
P15			>140 to ≤ 160	PA 6T/6I/66, PA
P17			>160 to ≤ 180	6T/6I, PA 10T PA
P19			>180 to ≤ 200	6I/6T/66, PPA, pol-
P20			>200	amide blends and copolyamides

NOTE Viscosity numbers determined with 90 % formic acid as solvent can be converted into viscosity numbers determined in 96 % sulfuric acid using the following formulae, in accordance with ISO 307:

For PA 6: $\ln y = 0,416\ 1 + 0,927\ 6 \ln x$

For PA 66: $\ln y = 0,454\ 1 + 0,926\ 1 \ln x$

For PA 69: $\ln y = 0,463\ 4 + 0,909\ 5 \ln x$

For PA 610: $\ln y = 0,982\ 3 + 0,793\ 2 \ln x$

where

x is the viscosity number in 90 % formic acid;

y is the viscosity number in 96 % sulfuric acid.

For the viscosity number of PA 612, which can be determined in accordance with ISO 307 in either *m*-cresol or 96 % sulfuric acid, the conversion formula shown as [Formula \(1\)](#) applies:

$$\ln y = 0,285\ 7 + 0,985\ 9 \ln x \quad (1)$$

where

x is the viscosity number in 96 % sulfuric acid;

y is the viscosity number in *m*-cresol.

These conversion formulae have been calculated from the results of an interlaboratory investigation carried out in 1982 (see ISO 307). The accuracy of the conversions depends on both the size of the viscosity number and the type of PA, the latter resulting from the fact that different numbers of the different PA types were included in the investigation. The 95 % confidence intervals for the values of the nominal viscosity number in 96 % sulfuric acid, converted from different values of the nominal viscosity number in the other solvent, are given in [Table 6](#).

Table 6 — Confidence intervals

Nominal viscosity number ^a	95 % confidence intervals for converted nominal viscosity numbers in 96 % sulfuric acid				
	PA 6	PA 66	PA 69	PA 610	PA 612
100	±0,8	±1,6	±2,0	±4,7	±4,4
140	±0,8	±1,4	±1,9	±4,1	±4,9
180	±0,7	±1,2	±2,9	±5,8	±10,2
220	±0,7	±1,3	±4,7	±9,0	±17,6
260	±0,8	±1,7	±6,9	±12,9	±26,0
300	±1,0	±2,4	±9,3	±17,2	±35,3
340	±1,3	±3,3	±11,9	±21,8	±45,3

^a Solvents: 90 % formic acid for PA 6, PA 66, PA 69 and PA 610; m-cresol for PA 612

4.5.3 Tensile modulus

The tensile modulus shall be determined in the dry state in accordance with the relevant part of ISO 527 under the test conditions specified in ISO 16396-2. The possible values of the designatory property tensile modulus are divided into ranges, each represented by a 3-figure code number as specified in [Table 7](#).

Table 7 — Code numbers for designatory property tensile modulus in data block 4

Tensile modulus	
Code number	Range MPa
001	≤ 150
002	> 150 to 250
003	> 250 to 350
004	> 350 to 450
005	> 450 to 600
007	> 600 to 800
010	> 800 to 1 500
020	> 1 500 to 2 500
030	> 2 500 to 3 500
040	> 3 500 to 4 500
050	> 4 500 to 5 500
060	> 5 500 to 6 500
070	> 6 500 to 7 500
080	> 7 500 to 8 500
090	> 8 500 to 9 500
100	> 9 500 to 10 500
110	> 10 500 to 11 500
120	> 11 500 to 13 000
140	> 13 000 to 15 000
160	> 15 000 to 17 000
190	> 17 000 to 20 000
220	> 20 000 to 23 000
250	> 23 000

4.5.4 Nucleating additive

Nucleated polyamides can be designated by the letter N in the very last position of data block 4.

4.6 Data block 5

Indication of additional requirements in this data block transforms the designation of a material into a specification for a particular material. This can be done, for example, by reference to a suitable national standard or to a standard-like, generally established specification.

5 Examples of designations

5.1 Designations without specification

An unfilled polyamide material (PA 6) for injection moulding (M), with moulding release agent (R), having a viscosity number of 150 ml/g (S14) and a tensile modulus of 2 700 MPa (030), and with a nucleating additive (N), will have the following designation.

Designation										
Description block (optional)	Identity block									
	ISO Standard	Individual-item block								
Data block 1		Data block 2			Data block 3		Data block 4	Data block 5		
Polymer		Performance and origin related information			Application and processing		Properties	Additional information		
Type		Modification	Filled	Flame retardant	Recyclate	Processing	Characteristics			
Thermoplastics	16396	PA 6				M	R	S14-030N		
>Part marking<										
No	No	Yes		Yes			No		No	No

Designation: Thermoplastics ISO 16396-PA 6,,MR,S14-030N,, or

ISO 16396-PA 6,,MR,S14-030N,, or

ISO 16396-PA 6,,MR,S14-030N

Part marking: >PA 6<

A polyamide material (PA 66) reinforced with 37 % glass fibre (GF) for injection moulding (M) containing heat-ageing stabilizer (H), and having a viscosity number of 140 ml/g (S14) and a tensile modulus of 10 200 MPa (100), will have the following designation.

Designation										
Description block (optional)	Identity block									
	Thermoplastics	ISO Standard	Individual Item Block							
Data block 1			Data block 2			Data block 3		Data block 4	Data block 5	
Polymer			Performance and origin related information			Application and processing		Properties	Additional information	
Type			Modification	Filled	Flame retardant	Recycle	Processing	Characteristics		
	16396	PA 66		GF37			M	H	S14-100	
>Part marking<										
No	No	Yes		Yes			No		No	No

Designation: Thermoplastics ISO 16396-PA 66,GF37,MH,S14-100,, or

ISO 16396-PA 66,GF37,MH,S14-100,, or

ISO 16396-PA 66,GF37,MH,S14-100

Part marking: >PA 66-GF37<

An unfilled polyamide (PA 12) material containing plasticizer (P) for extrusion of pipes, profiles, and sheets (E), with a heat-ageing stabilizer (H) and a light and weather stabilizer (L), and having a viscosity number of 210 ml/g (S22) and a tensile modulus of 280 MPa (003), would have the following designation.

Designation										
Description block (optional)	Identity block									
	ISO Standard	Individual-item block								
Data Block 1		Data Block 2			Data Block 3		Data Block 4	Data Block 5		
Polymer		Performance and origin related information			Application and processing		Properties	Additional information		
Type		Modification	Filled	Flame re-tard-ant	Recy-clate	Pro-cessing	Character-istics			
T h e r - mo-plas- tics	16396	PA 12	P				E	HL	S22-003	
>Part marking<										
No	No	Yes		Yes			No		No	No

Designation: Thermoplastics ISO 16396-PA 12-P,,EHL,S22-003,, or

ISO 16396-PA 12,,EHL,S22-003,, or

ISO 16396-PA 12,,EHL,S22-003

Part marking: >PA 12-P<

5.2 Designation transformed into a specification

This subclause provides examples of how to use this designation system and how to turn the designations into specifications. When used only as designations, the pattern employs information from data blocks 1-4. When converting the designation into a specification, the pattern also includes information from data block 5.

An unfilled polyamide material (PA 6) for injection moulding (M), containing heat aging stabilizer (H), having a viscosity number of 150 ml/g (S14), and a tensile modulus of 2 200 MPa (020), and meeting the requirements of ASTM D6779 PA0213 would have the following specification.

Designation										
Description block (optional)	Identity block									
	ISO Standard	Individual-item block								
Data block 1		Data block 2			Data block 3		Data block 4	Data block 5		
Polymer		Performance and origin related information			Application and processing		Properties	Additional information		
Type		Modification	Filled	Flame retardant	Recycle	Processing	Characteristics			
Thermoplastics	16396	PA 6				M	H	S14-020	ASTM D6779 PA0213	
>Part marking<										
No	No	Yes		Yes			No		No	No

Specification: Thermoplastics ISO 16396-PA 6,,MH,S14-020,ASTM D6779 PA0213 or

ISO 16396-PA 6,,MH,S14-020,ASTM D6779 PA0213

Part marking: >PA 6<

A polyamide material (PA 6T/6I) reinforced with 33 % of glass fibre (GF) with special burning characteristics (FR) for injection moulding (M), having a tensile modulus of 8 000 MPa (080) and meeting the requirements of ASTM D5336 PPA012FL34 would have the following specification.

Designation										
Description block (optional)	Identity block									
	ISO Standard	Individual-item block								
Data block 1		Data block 2			Data block 3		Data block 4	Data block 5		
Polymer		Performance and origin related information			Application and processing		Properties	Additional information		
Type		Modification	Filled	Flame retardant	Recyclate	Processing	Characteristics			
	16396	PA 6T/6I		GF33	FR		M		X-080	ASTM D5336 PPA012FL34
>Part marking<										
No	No	Yes		Yes			No		No	No

Specification: Thermoplastics ISO 16396-PA 6T/6I,GF33 FR,M,X-080,ASTM D5336 PPA012FL34 or

ISO 16396-PA 6T/6I,GF33 FR,M,X-080,ASTM D5336 PPA012FL34

Part marking: >PA 6T/6I-GF33FR<