

# PPN Pharmacy Product Number Technical Specifications

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**IFA**

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## 1. Foreword

A stakeholder consortium consisting of pharmaceutical product manufacturers, distributors and pharmacies, in particular

- **ABDA – Bundesvereinigung Deutscher Apothekerverbände**  
(German Federal Association of Pharmacists)
- **Bundesverband der Arzneimittel-Hersteller e.V. (BAH)**  
(German Medicines Manufacturers` Association)
- **Bundesverband der Pharmazeutischen Industrie e.V. (BPI)**  
(German Pharmaceutical Industry Association)
- **PHAGRO | Bundesverband des Pharmazeutischen Großhandels e.V.**  
(Association of Pharmaceutical Wholesalers)
- **Pro Generika e.V.**  
(Association of Generic Medical Manufacturers)
- **Verband Forschender Arzneimittelhersteller e.V. (vfa)**  
(Association of Research-Based Pharmaceutical Companies)

developed the Pharmacy Product Number (PPN) in order to integrate existing local systems into global standards of the International Standardization Organization (ISO) and to ensure the PPN is internationally unique.

Informationsstelle für Arzneispezialitäten – IFA GmbH (IFA) acts as the executive organisation maintaining the PPN. The PPN allows the use of standardised modules for the verification of products and compliance with government requirements. The ASC Data Identifier system has been chosen to carry the PPN as it provides the required capacity and features for unique product labelling. The ANS MH 10.8.2 DI Maintenance Committee has assigned a specific Data Identifier (9N) to the PPN under the category “Industry Assigned Codes”. The PPN is open to any Product Registration Agencies (PRA) and other users who wish to use this ISO-compliant solution.

PRAs in need of a Product Registration Agency Code (PRA) assignment may submit an “Application Form PRA Code” to the IFA (<https://www.ifaffm.de/en/ifa-codingsystem/global-use-ppn.html>).

## 2. Scope

These specifications provide the definition of the Pharmacy Product Number and its structure. It reserves the codes for Product Registration Agencies and space for registered product references. These specifications do not include the definitions of the registered product codes to be embedded within a PPN but provide a shell for it. Additional data elements to be concatenated (i.e. lot, expiry date, serial number) as specific labelling requirements are not part of these specifications. This is the subject of additional mandated labelling requirements (e.g. the IFA Coding System).

The application of the Health Product Code (HPC) is described in this specification (chapter 6.2).

## 3. References

<b>ISO/IEC 15418</b>	Information technology – Automatic identification and data capture techniques – GS1 Application Identifiers and ASC MH 10 Data Identifiers
<b>ANSI MH10.8.2</b>	Data Identifier and Application Identifier Standard (DI part of ISO/IEC 15418)
<b>ISO/IEC 15434</b>	Information technology – Automatic identification and data capture techniques – Syntax for high-capacity media
<b>ISO/IEC 16022</b>	Information technology – Automatic identification and data capture techniques – Data Matrix bar code symbology specification
<b>EUROCODE IBLS</b>	International Blood Labelling System, <a href="http://www.eurocode.org">www.eurocode.org</a>
<b>PZN</b>	Pharmazentralnummer (German National Pharmaceutical Product Number), <a href="http://www.ifaffm.de">www.ifaffm.de</a>

## 4. Terms and definitions

<b>CIN</b>	Company Identification Number (Company Code)
<b>HPC</b>	Health Product Code
<b>IFA</b>	Registration agency for Product Registration Agencies and maintenance organisation for the PZN and PPN and Issuing Entity for UDI-DI
<b>PPN</b>	Pharmacy Product Number identified by DI "9N".
<b>PRA</b>	Product Registration Agency
<b>PRA Code</b>	A prefix for identifying a Product Registration Agency for health industry product numbers
<b>PZN</b>	Pharmazentralnummer (German National Pharmaceutical Product Number)
<b>RPN</b>	Registered Product Number

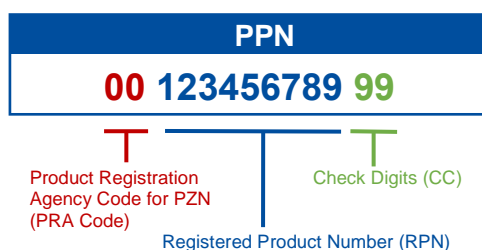
## 5. PPN Definition

The Pharmacy Product Number PPN is structured in three elements – PRA Code, RPN and CC:

Table 1: PPN elements

Element	Remark	Character		
		Type	Length	Subset
PRA Code	Product Registration Agency Code assigned by IFA	Alphanumeric	2	0-9; A-Z uppercase
RPN	Registered product number dedicated by PRA	Alphanumeric	1-18	0-9; A-Z uppercase <sup>1)</sup>
CC	Check digits; Modulo 97 calculation	Numeric	2	0-9

<sup>1)</sup> if not stated otherwise by the Product Registration Agency



### Sample

Illustration of a PPN with a generic PRA Code of "00", a 9-digit numeric RPN and "99" as placeholder for the two check digits.

## 6. Registered Product Number (RPN)

Among the registered product codes, a distinction must be made between central and decentral assigned product codes. Central assigned product codes (e.g. PZN assigned by IFA) are usually allocated by a national Issuing Agency, whereas in the case of decentral assigned product codes the manufacturer assigns the article numbers to its products itself.

In accordance with ISO/IEC 15459, a globally valid hierarchy of numbering systems managed by accredited Issuing Agencies (IAC) ensures the internationally unique identification of product codes.

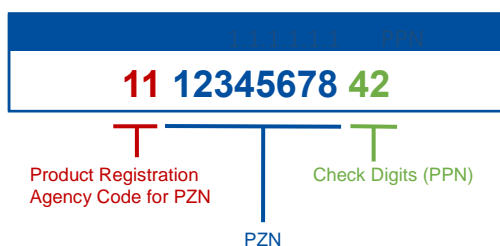
As an IAC, IFA offers manufacturers both central and decentral assigned product codes (PZN and HPC), which are described in more detail in the following chapters.

### 6.1. Pharmazentralnummer (PZN)

Since 1968 the PZN is a one-to-one identification key for medicinal products, medical devices and other pharmacy-typical products in the German pharmaceutical market and healthcare system. The centralised issuing of the PZN as a machine readable primary key, guidelines for data recipients and an extensive quality assurance form the prerequisite for the PZN's one-to-one correspondence and the consistency of information. A PZN remains through its "lifetime" clearly recognisable despite e.g. supplier changes, company mergers or alterations. A PZN-recycling is not permitted.

The PZN serves as efficient, internal and external product-related communication (i. a. supply chain, billing) of trade partners and organisations in the healthcare system. At the same time it is a national tag according to § 300 Social Code Book V, that must be affixed machine readable and in human readable form to the outer package of medicinal products by pharmaceutical entrepreneurs according to § 131 SGB V. Thus, the PZN accomplishes a vital contribution to therapeutic safety, in logistics and legally watertight billing.

Internationally unique, the PZN is covered in the PPN format prefixed with "11".



#### Sample

Illustration of the PZN "12345678" as a PPN with the dedicated PRA Code "11" and the resulting check digits: "42".

### 6.2. Health Product Code (HPC)

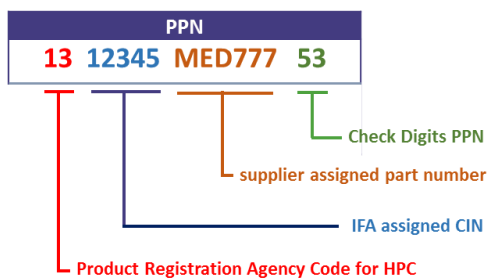
For products traded in the health care sector and which are not covered by the regulations of § 300 SGB V, such as some types of medical devices, IFA offers manufacturers to label the products with their own numbers.

For this purpose, IFA assigns manufacturers a manufacturer identification number/manufacturer code (CIN), which the manufacturer will use as a prefix to its part number. The product code generated in this way is covered in the PPN format with the prefix "13" and is therefore internationally unique as a product

code. This product code can be used, for example, as a UDI-DI for the marking of medical devices in accordance with Regulations (EU) 2017/745 (MDR) and (EU) 2017/746 (IVDR).

The CIN is assigned by the IFA to the manufacturer, it is the five-digit IFA supplier number.

As a supplier assigned part number, the manufacturer can use already existing numbers, e.g. its own Ref-Numbers or similar, which can be numeric or alphanumeric. To avoid misinterpretation, the specifications for the character set must be observed in accordance with the table 1 in Chapter 5.



### Sample

Illustration of an HPC with supplier part number “MED777”, CIN “12345”, the dedicated PRA Code “13” and the resulting check digits “53”.

## 7. PPN Data Identifier

Automatic identification and data capture (‘AIDC’) are based on standardized data structure and data identifier (see Appendix A). Worldwide unique identification is given by Data Identifier (DI) “9N”, exclusively assigned for the PPN. Registered in ANSI standard MH10.8.2 (with normative reference to ISO/IEC 15418).

DI	PPN		
9N	00	123456789	99

Illustration of a PPN with the DI “9N”.

## 8. Registered PRA Codes

Table 2 shows registered PRA Codes at the time of issue of these technical specifications.

Table 2: PRA Code table

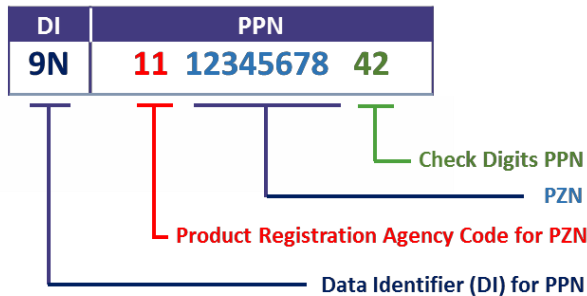
PRA Code	Assigned to	Reserved for	Used for
00-09	Reserved		
10		GS1	GTIN / NTIN
11	IFA; Germany		PZN - medicinal and other pharmacy products Germany
12	EUROCODE IBSL		Registered Blood Product Number
13	IFA; Germany		HPC - Health Product Code, administered by Companies
14		Association Pharmaceutique Belge (APB)	CNK code
15		Italian Ministry of Health	AIC code
16		Austria Association of Pharmacists	PZN-Austria
17		INFARMED	Portugal Registration Number of Medicine Presentation
18		Z-Index; Netherlands	Z-Index - pharmaceutical products Netherlands
19	NENSI d.o.o.; Slovenia		NENSI code - pharmaceutical products Slovenia
20	CIP; France		CIP Code - medicinal products France
21	CIP; France		CIP Code - pharmaceutical services France
22	ACL; France		ACL Code - other pharmacy products France
23	ACL; France		ACL Code - pharmaceutical services France
24-99			
AA-ZZ			

Note: This table is subject to maintenance.

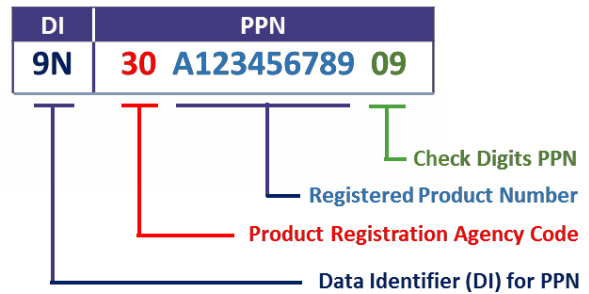
Current registered and reserved PRA Codes are listed under <https://www.ifaffm.de/en/ifa-codingsystem/global-use-ppn.html>

## 9. PPN examples applied with PRA Codes

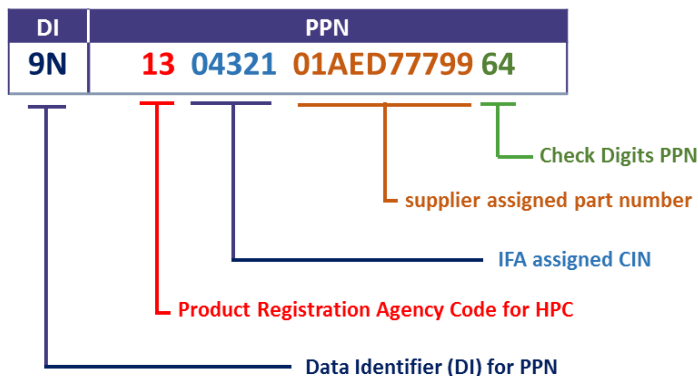
PPN example with PRA Code “11” for a PZN:



PPN example with PRA Code “30” and a 10-digit alphanumeric product number:



PPN example with PRA Code “13” for an HPC:



## 10. Syntax and additional data elements

PPN and additional data elements will be embedded with ISO/IEC 15434: *Information technology — Automatic identification and data capture techniques — Syntax for high-capacity ADC media* in format 06. Additional data elements shall be prefixed by an ASC Data Identifier according to 15418 (ANSI MH10.8.2). Typical Data Identifiers for completing the data information are (D) for expiry date, (1T) for the lot number, (S) for a serial number, (8P) for a GTIN.

For the ASC data structure, see [Appendix A](#).



## 11. AIDC Media

The PPN data structure has been designed as a media-independent structure. Nevertheless, Data Matrix (ISO/IEC 16022) is the recommended optical symbology for carrying a PPN in format 6 in conjunction with ISO/IEC 15434 specifically for a full set of concatenated data elements (e.g. PPN, Expiry Date, Lot, SN, etc.).

RFID is an alternative technology to be used alone or in a hybrid solution with optical codes. In all cases, the relevant ISO/IEC standards apply.

## 12. Calculation of PPN Check Digits

Each PPN requires two Modulo 97-calculated check digits for additional data integrity. To calculate the check digits, the ASCII value of the alphanumeric characters is used and multiplied by an ascending weight factor. The weighting of the digits starts on the left with two and increases by one for each following digit. The results of each multiplication are summed up and divided by 97, and the remainder are the check digits. If the remainder is only one digit, a leading zero is added.

Check digits generation is illustrated by the example in Table 3.

Note: 97 is a prime number providing a high security level if used in check digit calculation.

The check digits for PPN sample “**1103752864**” are “**14**” and calculated as follows:

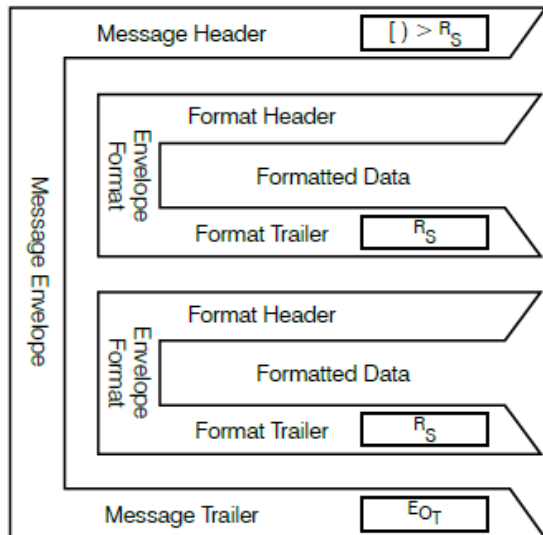
Table 3: Check Sum Calculation

PPN	PRA Code		PZN								check digits PPN	
	1	1	0	3	7	5	2	8	6	4	1	4
ASCII character value	49	49	48	51	55	53	50	56	54	52	↑	↑
Weighting factor	2	3	4	5	6	7	8	9	10	11		
Product from decimal value and weighting factor	98	147	192	255	330	371	400	504	540	572		
Sum	3409											
Division	3409 / 97 = 35 remainder 14											

## Appendix A: ASC Data Structure

### General

To ensure the unambiguous identification of data elements in a data string, they are embedded in accordance with the syntax of ISO/IEC 15434 (see Figure 1).



The start sequence as System Identifier (SI) points uniquely to the structure employed.

The formal data structure is:

- Message Header •
- Format Header
- Data Fields 1 to n
- Format Trailer
- Message Trailer

Figure 1: Envelope structure as in ISO/IEC 15434

In the application described here, data element grouping is not required so that all data are embedded in one envelope format. The use of Data Identifiers is necessary for recognition and compulsory. A complete data element consists of a Data Identifier and a Data Field. Several data elements are combined in a code, in which the data elements are each separated by a field separator (see Table 4 and 5). The Field Separator at the end of the data elements is mandatory (ASCII 29, see Table 4).

Table 4: ISO/IEC 15434 Character set table Envelope control characters

Character	Decimal	HEX	Purpose
[	91	5B	Message Header
)	41	29	Message Header
>	62	3E	Message Header
RS	30	1E	Record Separator
GS	29	1D	Field Separator
EOT	04	04	Message Trailer

Table 5: Example of a complete data string with data elements PPN, batch number, expiry date and serial number

Elements	Interpretation	Code Content
Message Header	[>RS	Codeword 237
Format Header	06 GS	
Data Field 1 DI		9N
Data Field 1 Content		111234567842
Field Separator		GS
Data Field 2 DI		1T
Data Field 2 Content		1234567
Field Separator		GS
Data Field 3 DI		D
Data Field 3 Content		151200
Field Separator		GS
Data Field 4 DI		S
Data Field 4 Content		123456789012
Field Separator		GS (optional)
Format Trailer	RS	
Message Trailer	EOT	

The order of the data elements (fields) is not defined. Apart from the usual data elements, additional elements may be used if necessary.

## Message Header

The Data Matrix Code according to ISO/IEC 16022 "ASCII encodation" provides a means of abbreviating the header and trailer in one Macro codeword "237" as shown in Table 5 and the following table:

Table 6: Message Header

Macro-Codeword	Name	Interpretation Header	Interpretation Trailer
237	06 Macro	[>RS06GS	RS EOT

## Field Separator

Each data element ends with a field separator GS. At the end of the last data field, the field separator may be omitted, because the format and message trailers define the end of the data string.

## Message Trailer

The data string ends with a Format Trailer RS and EOT. In accordance with ISO/IEC 16022, this trailer is implied by the Macro 06.

## Appendix B: Document Maintenance Summary

The following changes were made to this document since the first issue.

Date	Action	Summary
2011-06-14	Update	Insertion of DI (9N) after proposal of the ASC DI Maintenance Committee for registration of (9N)
2011-08-26	Correction	Correction of wording according to ASC DI Metadata Form
2011-09-05	First release	
2011-09-30	Ed. corrections	Received editorial corrections implemented
2011-11-04	V.1.3: Corr. Figure 2	PRA Code "00" defined
2012-01-24	V 1.4 Editorial Changes	New layout, link for assigned PRA Codes
2018-12-31	V 2.0	Update to registered PRA Codes Adoption of illustration and examples Additional Appendix on "Data structure"
2019-07-22	V 2.1 Editorial Changes	New Layout
2020-05-04	V 3.0	HPC added
2020-08-01	V 3.1 Editorial Changes	Editorial changes implemented

Further information about IFA GmbH, the IFA Coding System, about PZN and PPN, about UDI as well as the technical specifications can be found at [www.ifaffm.de](http://www.ifaffm.de).

The content was created with the greatest care. If you discover errors or omissions, please contact us.



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