

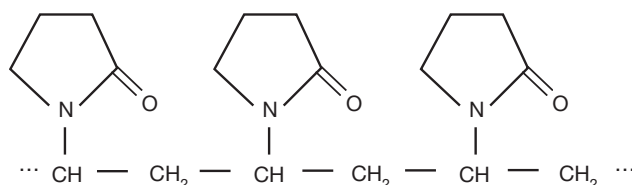
## 2 Soluble polyvinylpyrrolidone (Povidone)

### 2.1

#### Structure, product range and synonyms

Soluble polyvinylpyrrolidone is obtained by free-radical polymerization of vinylpyrrolidone in water or 2-propanol, yielding the chain structure of Fig. 6 [1, 141].

The current range of povidone consists of pharmaceutical grade products with different nominal K-values given in Table 1. All povidone grades are produced in according to the cGMP regulations.



**Fig. 6.** Chemical structure of soluble polyvinylpyrrolidone (povidone)  $\text{Mr } (111.1)_x$

**Table 1.** Povidone grades available in the market

Povidone grade	Trade names	Manufacturer
Povidone K 12*	Kollidon® 12PF	BASF
Povidone K 17*	Kollidon® 17PF, Plasdone® C-15	BASF, ISP
Povidone K 25	Kollidon® 25, Plasdone® K-25	BASF, ISP
Povidone K 30	Kollidon® 30, Plasdone® K-29/32	BASF, ISP
Povidone K 90	Kollidon® 90F, Plasdone® K-90	BASF, ISP
	Plasdone® K-90 D**, Plasdone® K-90 M**	ISP

\* endotoxin or pyrogen free grades; \*\* D = densified, M = milled

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**Table 2.** Official names and abbreviations for soluble polyvinylpyrrolidone

Name/abbreviation	Origin/area of application
Povidone	Current valid Pharmacopoeias (e.g. USP 26, Ph.Eur. 5, JP 14)
Polyvidon(e)	Former editions of Pharmacopoeias (e.g. Ph.Fr. IX)
Povidonum	Pharmacopoeias (e.g. Ph.Eur. 5)
Polyvidonum solubile	Former edition of the DAC (1986)
Poly(1-vinyl-2-pyrrolidon)	Deutsches Arzneimittelgesetz 1984 § 10 (6)
PVP	General abbreviation, commercial name for cosmetics/technical grade

Spray drying technology is used in the production of all povidone grades with the exception of povidone 90. Because of its very high average molecular weight, it has to be dried on a roller.

Soluble polyvinylpyrrolidone is known under the names and abbreviations given in Table 2, most of which are specific to the pharmaceutical industry.

The CAS number of polyvinylpyrrolidone is 9003-39-8.

This book subsequently uses the name “Povidone”.

## 2.2

### Product properties

#### 2.2.1

##### Description, specifications, pharmacopoeias

##### 2.2.1.1

###### *Description*

All povidone grades are of pharmaceutical purity. They are free-flowing white or yellowish-white powders with different particle sizes (see Section 2.2.4).

The typical odour of the individual products depends on their method of synthesis and is therefore not the same for all the grades of povidone. Povidone K 25 and Povidone K 30, for instance, always have a typical amine or ammonia odour, as ammonia is used for neutralisation.

All the povidone types give aqueous solutions with very little taste.