

Critical Review of the Kinetics and Toxicology of Polyvinylpyrrolidone Povidone

Polyvinylpyrrolidone (PVP), also known as povidone, is a water-soluble polymer with a wide range of applications in the pharmaceutical, food, and cosmetic industries. It is used as a binder, stabilizer, and film-forming agent, and is also found in a variety of medical devices. Due to its widespread use, there is a need for a comprehensive review of the kinetics and toxicology of PVP.

Kinetics of PVP

PVP is a synthetic polymer that is composed of repeating units of 1-vinyl-2-pyrrolidone. The molecular weight of PVP can vary from a few thousand to several million daltons. The solubility of PVP in water depends on its molecular weight, with higher molecular weight grades being less soluble. PVP is also soluble in a variety of organic solvents, including ethanol, methanol, and acetone.



Pvp: A Critical Review of the Kinetics and Toxicology of Polyvinylpyrrolidone (Povidone) by Wolfgang Schwarz

★★★★☆ 4.7 out of 5

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The kinetics of PVP have been studied extensively, and a number of models have been proposed to describe its behavior in solution. The most widely accepted model is the Flory-Huggins model, which treats PVP as a semi-flexible chain molecule. The Flory-Huggins model predicts that the solubility of PVP in water is inversely proportional to its molecular weight, and that the viscosity of PVP solutions increases with increasing molecular weight.

Toxicology of PVP

PVP has been shown to be non-toxic in a wide range of animal studies. The oral LD50 of PVP in rats is greater than 10 g/kg, and the dermal LD50 is greater than 2 g/kg. PVP has also been shown to be non-irritating to the skin and eyes.

In humans, PVP has been shown to be safe for use in a variety of medical applications. It is used as a blood plasma expander, a wound dressing, and a contact lens solution. PVP has also been used in a number of clinical trials for the treatment of a variety of diseases, including cancer and HIV/AIDS.

Applications of PVP

PVP has a wide range of applications in the pharmaceutical, food, and cosmetic industries. In the pharmaceutical industry, PVP is used as a binder, stabilizer, and film-forming agent. It is also used in a variety of medical devices, such as contact lenses and catheters.

In the food industry, PVP is used as a stabilizer and thickener. It is also used in a variety of food products, including candy, ice cream, and beer.

In the cosmetic industry, PVP is used as a film-forming agent and a hairspray. It is also used in a variety of other cosmetic products, such as toothpaste and deodorant.

PVP is a versatile polymer with a wide range of applications in the pharmaceutical, food, and cosmetic industries. It is non-toxic and has a good safety profile. PVP is a promising material for the development of new medical devices and drug delivery systems.



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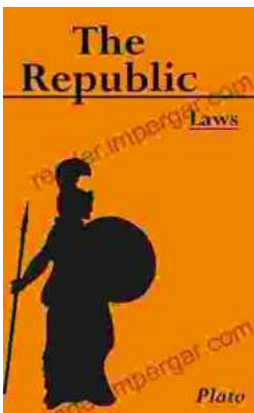
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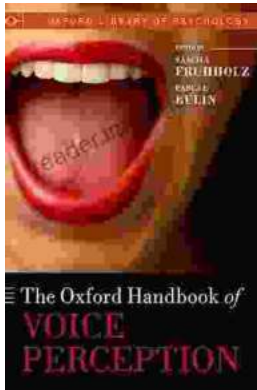
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