

# **Sustainable Use of RFID Tags in the Pharmaceutical Industry**

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## **Abstract**

With the increasing use of RFID technology the demand for resources for tag manufacturing rises. Nowadays, RFID tags for use with fast-moving goods are designed for a single pass through the entire supply chain. Once the product reaches the end-consumer the packaging material is recycled completely regardless whether it contains tags or not. This paper motivates a sustainable use of RFID tags in the pharmaceutical industry to reduce the demand for tag-specific natural resources, such as copper, gold, or silver. The impact of tag artifacts on the recycling process of pharmaceutical packaging materials, such as paper or glass, is evaluated. RFID technology and data matrix are compared regarding their impact on current recycling processes and engineering guidelines are presented to prevent the injection of tag artifacts. These guidelines face challenges introduced by heavy use of RFID tags in the pharmaceutical sector. They address tag reuse as the primary option to support a sustainable use of natural resources needed to produce RFID tag components.