Technology, formulation and application of powder coatings

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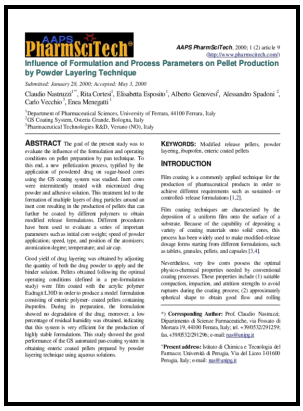
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Influence of Formulation and Process Parameters on Pellet Production by Powder Layering Technique

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ABSTRACT The goal of the present study was to evaluate the influence of the formulation and operating conditions on pellet preparation by pan technique. To this end, a new pelletization process, typified by the application of powdered drug on sugar-based cores using the GS coating system was studied. Inert cores were intermittently treated with micronized drug powder and adhesive solution. This treatment led to the formation of multiple layers of drug particles around an inert core resulting in the production of pellets that can further be coated by different polymers to obtain modified release formulations. Different procedures have been used to evaluate a series of important parameters such as initial core weight; speed of powder application; speed, type, and position of the atomizers; atomization degree; temperature; and air cap.

Good yield of drug layering was obtained by adjusting the quantity of both the drug powder to apply and the binder solution. Pellets obtained following the optimal operating conditions (defined in a pre-formulation study) were film coated with the acrylic polymer Eudragit L30D to endow a model formulation consisting of enteric polymer–coated pellets containing ibuprofen. During its preparation, the formulation showed no degradation of the drug; moreover, a low percentage of residual humidity was obtained, indicating that this system is very efficient for the production of highly stable formulations. This study showed the good performance of the GS automated pan-coating system in obtaining enteric coated pellets prepared by powder layering technique using aqueous solutions.

KEYWORDS: Modified release pellets, powder layering, ibuprofen, enteric coated pellets

INTRODUCTION

Film coating is a commonly applied technique for the production of pharmaceutical products in order to achieve different requirements such as sustained- or controlled- release formulations [1,2].

Film coating techniques are characterized by the deposition of a uniform film onto the surface of a substrate. Because of the capability of depositing a variety of coating materials onto solid cores, this process has been widely used to make modified-release dosage forms starting from different formulations, such as tablets, granules, pellets, and capsules [3-4].

Nevertheless, very few cores possess the optimal physico-chemical properties needed by conventional coating processes. These properties include (1) suitable compaction, impaction, and attrition strengths to avoid ruptures during the coating process; (2) approximately spherical shape to obtain good flow and rolling

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Powder Application Methods

The photoinitiators, part of the coating, absorb the UV energy from the ultraviolet light source and initiate a series of chemical reactions that rapidly convert the molten film to a solid cured finish in a matter of seconds. Advances in microprocessors and robotics are also allowing increased production in powder coating facilities. It works with all standard powder chemistries, allowing for improved manufacturing flexibility.

The Technology, Formulation and Application of Powder Coatings, Powder Coatings

The spectro2profiler can measure color, gloss, and three-dimensional topography of surface texture. Recently the pace of transition from TGIC to HAA has increased. They are used globally, and their usage continues to grow.

New Advances in Powder Coating Technology

Recently the suspected human carcinogen methylene chloride is being replaced by with great success. Epoxy powder coating films containing AMI microcapsules repaired the breach in the coating and significantly outperformed the control powder coating, which did not contain the microcapsules.

Creation of a Powder Coating: Formulation and Manufacturing Terminology > Powder Coated Tough

Preheating can help to achieve a more uniform finish but can also create other problems, such as runs caused by excess powder. These porous substrates evolve entrapped air and moisture during film formation and can result in pinholing or bubble defects.

Powder Application Methods

The use of UV LED curing systems, which are highly energy efficient and do not generate IR energy from the lamp head, make UV-cured powder coating even more desirable for finishing a variety of heat-sensitive materials and assemblies.

Powder Coatings: Materials, Technologies and Applications

These can be used to create bright, clean blue shade white colors. Coatings with greater durability corrosion resistance and UV durability save materials, energy and labor. BONDED METALLIC POWDERS Progress in Organic Coatings journal published a paper in 2020 that detailed a new technique to bond metallic particles such as aluminum flake to powder coatings.

New Advances in Powder Coating Technology

The clearcoat being applied to BMW automotive body panels benefits from a complex series of twists and bends of a robotic gun, programmed to even shut the car door during the clearcoat application.

Powder Application Methods

The quantity and value of various powders and parts shipments are projected from 2016 to 2017, and then over a five-year period from 2017 to 2022. This is primarily due to the emission of e-caprolactam, from most urethanes during curing, which contributes to the buildup of undesirable residues. Nouvex, a new antimicrobial polymer additive that was developed by Purdue School of Materials Engineering and commercialized by Poly Group LLC, has been approved by the U.

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