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June 12, 2003

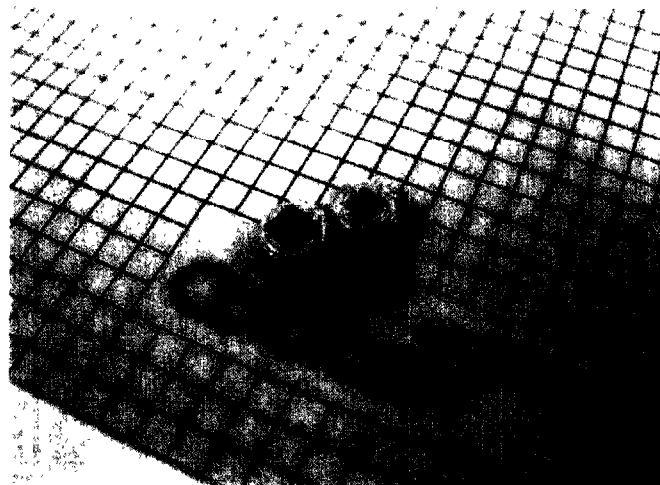
Dockets Management Branch (HFA-305)
Food and Drug Administration
5630 Fishers Lane
Room 1061
Rockville, MD 20852

**RE: Docket No. 02N-0204
21 CFR Parts 201, 606, and 610
Bar Code Label for Human Drug Products
And Blood; Proposed Rule**

As previously noted in our comments of April 7, 2003, Colorcon is a global formulator and manufacturing leader of color film coating systems and state-of-the-art solid dosage imaging technologies for the pharmaceutical industry. Our technologies are used by pharmaceutical companies worldwide to distinguish and protect solid dosage forms, especially tablets.

Colorcon has developed state-of-the-art technologies for tablet and other solid dosage forms in partnership with other leading dosage imaging technology companies (Printing International, AC Compacting and Biocode). Colorcon and its partners have developed technology that allows a pharmaceutical company to distinguish its tablets and other dosage forms for the purpose of reducing medication errors and to enhance patient compliance.

A relevant new technological development by Colorcon is the commercial ability to print and scan two dimensional (2D) bar codes on color film coated tablets (and other solid dosage forms) as shown below.

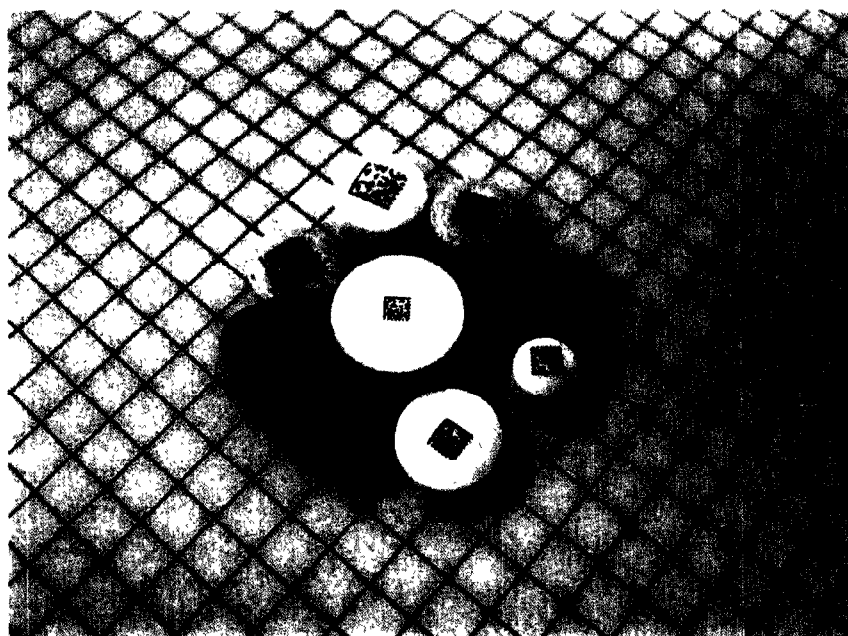


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Additionally, Colorcon and its partners have developed the ability to covertly authenticate pharmaceutical dosage forms using globally approved pharmaceutical markers in the form of molecular bar codes. In combination, Colorcon can commercially enable 3D bar coding of solid dosage forms, essentially a covert bar code within an overt bar code.

In combination with unique film coating colorant technology and high definition printing technology, Colorcon can enable commercial use of imaging systems, that when used in combination with the Colorcon 3D bar code™ technology, can allow for visual identification, electronic scanning identification, and immediate evidential in-field chemical identification.



All of these technologies are commercially available, and currently employ equipment that is available and largely in use by the pharmaceutical industry today.

Based upon these commercially available technologies, Colorcon desires to enable the pharmaceutical industry to employ the imaging systems described above as a viable complement or alternative to the bar coding of single dose packaging as proposed in 21 CFR Parts 201, 606, and 610 Bar Code label for Human Drug Products and Blood; Proposed Rule. With this purpose as our platform, we provide our final comments regarding our most recent evaluation of the commercial potential to authenticate and bar code pharmaceutical tablets and potentially all solid dose forms.

Color Contrast Evaluation between 2-D Bar Code Inks and Color Film Coated Solid Dosage Forms

Colorcon has evaluated the feasibility of combining colored bar code ink applied to color film coated tablets to determine color contrast requirements or limitations. The following photographs provide some of the color combinations that have been tested and successfully scanned.

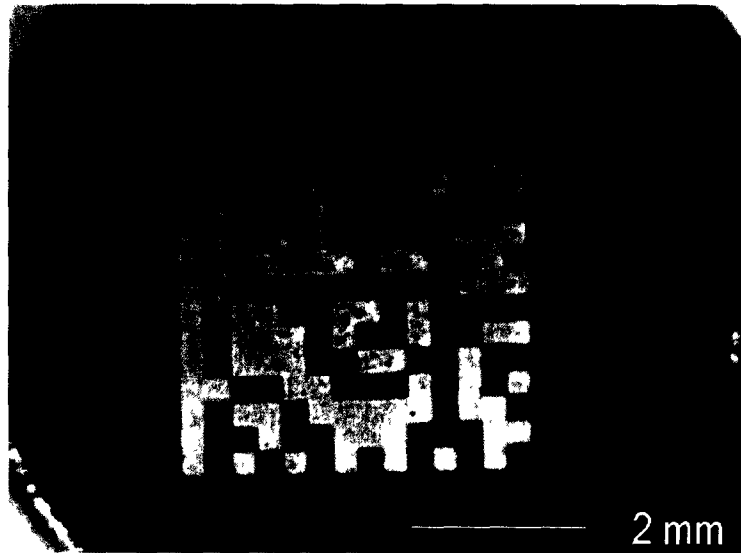


Figure 1. White Ink on Purple Film Coat

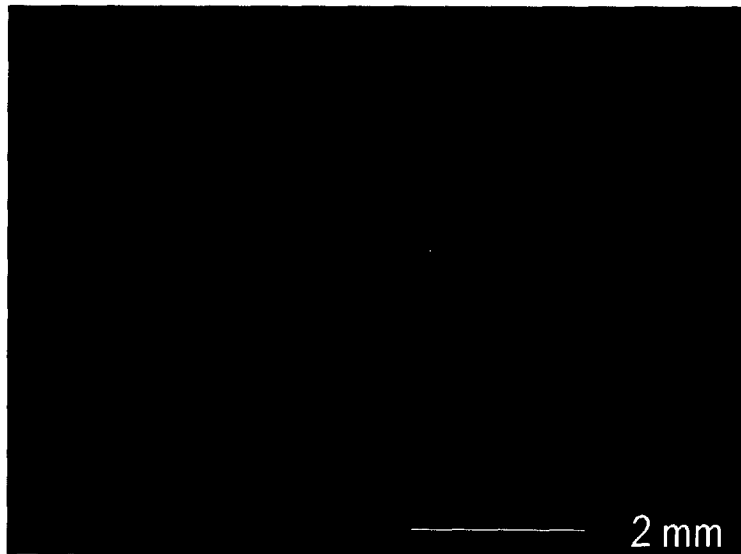


Figure 2. Black Ink on Red Film Coat

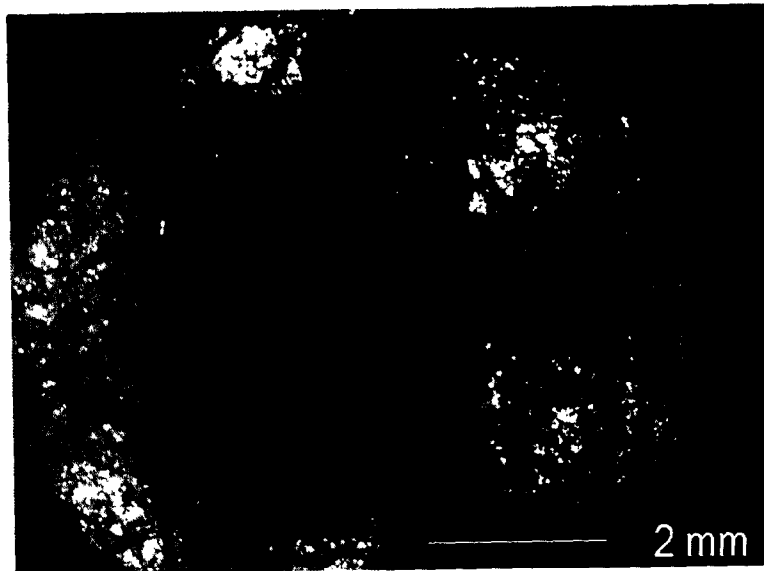


Figure 3. Red Ink on Yellow Film Coat

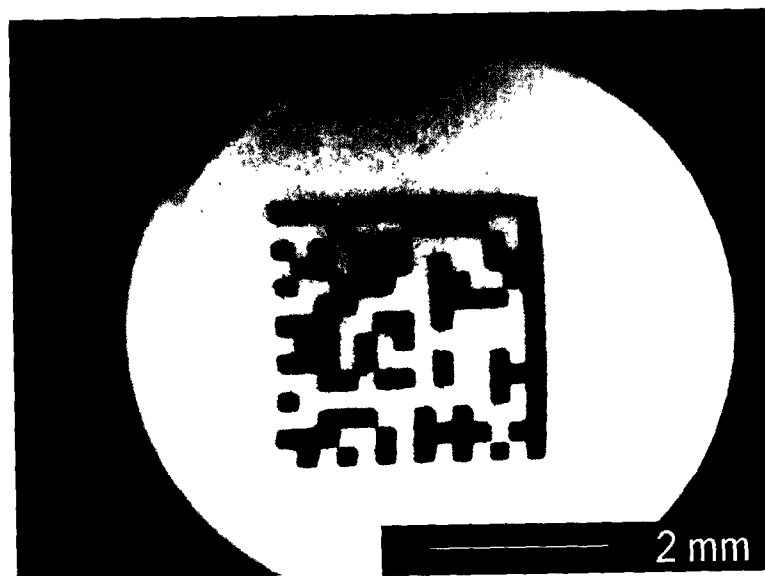


Figure 4. Black Ink on White Film Coat

The following chart indicates the variety of bar code ink colors that can be combined with color film coated tablets and scanned successfully.

To aid the reader, two examples of how to interpret the table below are provided:

1. A black ink color was scanned successfully on a white color film coated tablet 5 out of 5 times.
2. Black bar code ink on a purple film coated tablet was not successfully scanned due to the lack in color contrast between the bar code and the tablet surface color.

Color of Film Coated Tablet

<u>Color of Ink</u>	<i>White</i>	<i>Red</i>	<i>Purple</i>	<i>Yellow</i>
Black	5/5	5/5	0/5	5/5
White	-	0/5	5/5	0/5
Yellow	0/5	0/5	0/5	-
Grey	0/5	0/5	0/5	0/5
Brown	5/5	5/5	0/5	5/5
Red	5/5	0/5	0/5	5/5
Blue	5/5	5/5	0/5	5/5
Green	5/5	5/5	0/5	0/5

Imprinting 2-D Bar Codes on Film Coated Tablets of Various Shapes

The minimum size of bar code for an NDC code was found to be 2.5 sq. mm when a black ink was printed onto a white flat faced tablet although this increased to 3.0 sq. mm when printed onto curved tablets and 4.0 sq. mm when on colored tablets; i.e.:

Tablet Size	Round flat faced tablets (13mm)	Round normal curvature tablets (10mm)	Round concave tablets (6.35mm)	Caplets (19 x 7mm)	Round concave tablets (9.53mm)	Round double radius tablets (9.53mm)
Minimum Size Bar Code (Sq. mm)	2.5	3.0	3.0	4.0	4.0	4.0

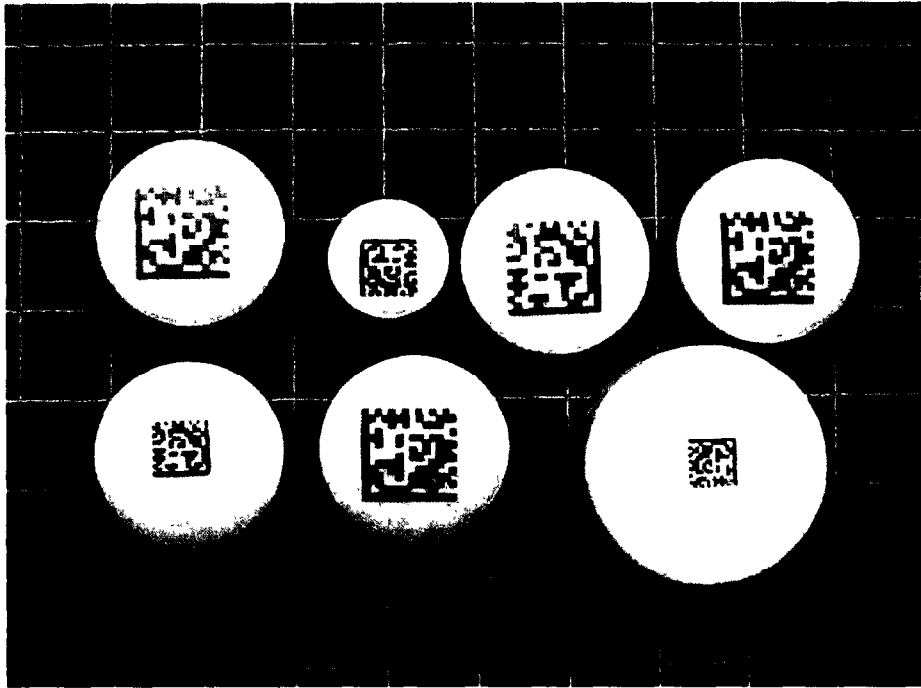


Figure 5. Various Color Inks and Bar Code Sizes on Normal Curvature and Flat-faced Tablets

Minimum Size Limitations of 2-D Bar Codes

The minimum size of the bar code required depends upon a number of factors; e.g.: number of digits being coded, resolution of scanner, curvature of substrate, and degree of color contrast between ink and substrate. The minimum size bar code that can contain the NDC code is 2.5 mm square. It is possible to reduce the size of the bar code further if the full NDC code is not required. The limits of the high-resolution bar code scanner may then be the determining limit for the minimum size of the 2-D data matrix bar code.

Reliability of 2-D Data matrix Bar Code Symbology

2D Data matrix bar codes are robust and readable even when there is only a partial image present - we found we could lose some of the code within the border and still successfully scan.

Bar Code Authentication – 3D Bar Codes™

Covert marking systems can be used in combination with color film coated systems and 2-D bar codes to validate and authenticate bar coded pharmaceutical products, and to enable ready identification of counterfeit solid dose systems. The authenticated 2-D bar code, otherwise referenced as a 3D Bar Code, that has been evaluated by Colorcon can enhance the safety of patients and medications as well as ensure product security through covert evidential authentication. Such 3D bar code systems could be complementary to the safety of all patients by ensuring the authenticity of the drug.

Colorcon has developed this combined system of overt and covert marking systems to enable quick, in-field evaluation and determination of drug authenticity through a combination of visual, electronic and chemical analysis.

The authentication systems are globally approved covert markers, and are evidentially robust for loss prevention and protection concerns. They also provide measures of patient and national security. The systems have been proven compatible and stable with color film coated systems for solid dosage form pharmaceutical and nutritional supplement applications.

These covert markers cannot be detected by the human senses, and are extremely difficult if not impossible to detect through normal analytical techniques. The markers can be incorporated into a solid dosage film coating to enshroud the solid dose form thereby providing a continuous security “package” in the form of a coating around the solid dose form.

The covert marking system can provide a “chemical bar code” to render such information as source of manufacture, date of expiration, channel of distribution, etc. Hence, the covert marker can serve as a carrier of information that extends beyond the NDC code which is contained in the 2D bar code on the surface of the film coated tablet or other solid dose form.

Potential to Reduce Unit Dose Packaging Requirements

The current FDA proposed regulation primarily addresses the need for unit dose packaging which is bar coded for use in hospitals as a way to reduce medical errors. In many cases, drug products that are used in hospitals may not be available in bar coded unit dose packages in their current packaging configurations on the market today. Therefore, the proposed regulation will require these products to have this type of packaging available in the future which will change the paradigm significantly and increase the costs of these medications. In many cases today, nurses dispense medications which are counted out by pharmacies from a larger container into a dispensing cup before being given to the patient at the bedside.

The new bar code technology that we have discussed in this document opens up a different approach which could be considered which still would allow nurses to monitor

bar codes at the hospital bedside but which would not require all of these drugs to be packaged in unit doses at higher costs. This technology also addresses cases where the tablet/capsule is removed from the primary or unit dose package before being given to the patient.

Summation of Options

In support of enhancing medication safety and reducing medication errors, Colorcon would appreciate the opportunity to present the technologies referenced above and answer any questions related to the commercial capability of applying 2D bar codes to tablets and other solid dosage forms.

Additionally, Colorcon would be pleased to advise the FDA of relevant commercial technologies that are complementary to ensuring the safety of patients and medications through covert evidential authentication and security systems. Such systems, referred to above as 3D bar codes, could be complementary to the safety of all patients by ensuring the authenticity of the drug.

Colorcon would be interested in participating in a meeting with FDA to further discuss the potential for this technology to reduce medication errors and improve patient safety. Please let me know when we could possibly set up a meeting. My telephone number is 215-661-2513.

Thank you for the opportunity to comment on your proposed regulation.

Very Truly Yours,

A handwritten signature in black ink, appearing to read "David R. Schoneker", with a long horizontal flourish extending to the right.

David R. Schoneker
Director of Global Regulatory Affairs