INSTANT SMART CARD PRINTING & PERSONALIZATION

As chip technology becomes more common in ID issuance across different markets, issuers must consider its impact on their issuance practice — including card substrate—and the print technology used to personalize each card. Use this guide to understand best practices and become familiar with typical challenges with printing on chip cards.

KEY CHALLENGE:

Printing Near a Contact Chip. There are two primary technologies used to print ID cards: direct-to-card printing and retransfer printing. The implementation of chip cards brings new challenges to these long-standing print technologies that must be fully understood to ensure quality card production.

RECOMMENDATIONS AND BEST PRACTICES:

When Using Any Direct-To-Card Technology: To ensure quality with direct-to-card printing on chip cards, the entire chip must be recessed **at least 1 mil (.001") minimum** below the surface of the card. As this is a more stringent requirement than standard ISO specifications, it is important to work with your card manufacturer or supplier to understand if this requirement can consistently be obtained.

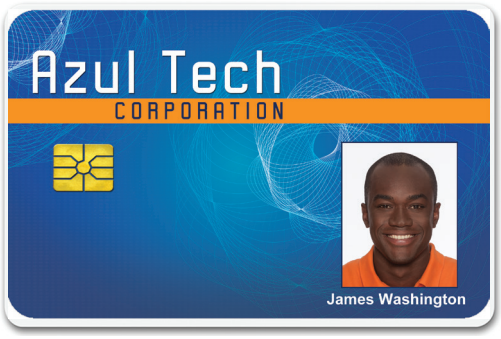
To ensure quality direct-to-card printing on chip cards, the chip must be recessed at least 1 mil (.001") minimum below the surface of the card. This requirement must be communicated to the card manufacturer at time of order.

Additionally, due to potential print quality issues and or possible damage to the chip, when or if this specification cannot be maintained, it is recommended that you consider choosing a **lithographic pre-printed cardstock** rather than blank white from your card manufacturer. A lithographic pre-printed card provides a very high-quality and durable finished card at the most affordable price point for personalization supplies.

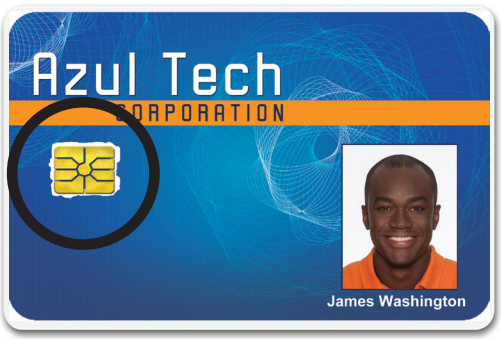
POTENTIAL PRINT ISSUES DUE TO NON-RECESSED CHIPS WHEN USING DIRECT-TO-CARD TECHNOLOGY

If chip card designs are not laid out correctly, you may experience design flaws when using direct-to-card technology (regardless of the manufacturer). When using direct-to-card technology to print onto a blank white chip card, ensure that the chip is recessed to the recommended depth. If the chip is not recessed to the recommended depth, the printhead could come in contact with the card itself, resulting in unintentional white space or lost data around the chip.

Direct-to-Card, Full Card Printing on Blank White Chip Card

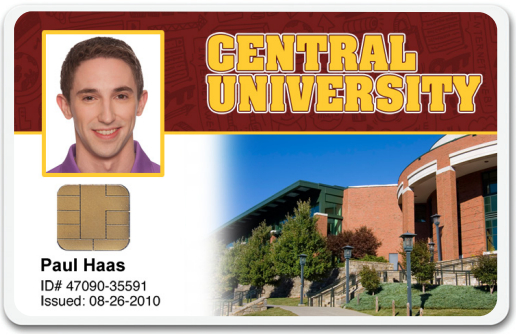


CHIP RECESSED TO RECOMMENDED DEPTH

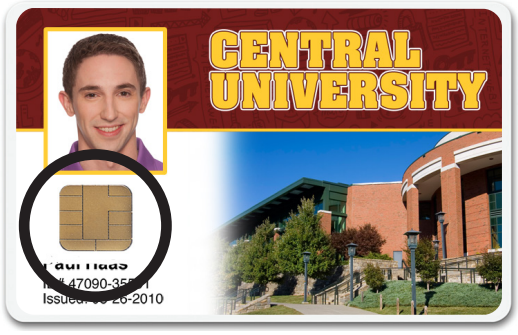


CHIP NOT RECESSED TO RECOMMENDED DEPTH

Printing on a Lithographic Direct-to-Card, pre-printed chip card



CHIP RECESSED TO RECOMMENDED DEPTH



CHIP NOT RECESSED TO RECOMMENDED DEPTH

Recommended Card Design when printing full color on a blank white Chip Card

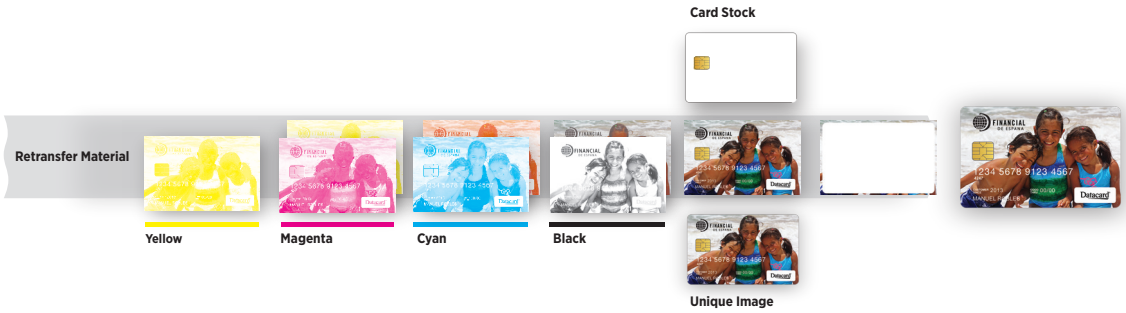
Leave white space around the chip on a card so that the chip does not interfere with direct-to-card printing

SUMMARY OF RECOMMENDED PRINT TECHNOLOGY USE CASES

	Pre-Printed Litho			Blank White		
Card Type	**No Chip**	**Contactless Chip**	**Contact Chip**	**No Chip**	**Contactless Chip**	**Contact Chip**
Printing Technology						
Direct-to-Card						
Text Print		✓	1	✓	N/A	N/A
Full Panel Print	N/A	N/A	N/A	✓	Not recommended	1
Retransfer						
Text Print	✓	✓	✓	✓	✓	✓
Full Panel Print	N/A	N/A	N/A	✓	✓	✓

1. To ensure high quality printing on EMV blank white chip cards, the chip surface (every point) must be recessed at least 0.001 inch or 1 mil below the card surface, provided the card surface was not deformed near the chip cavity during chip embedding. If the card manufacturer supplies cards outside of that specification, the results will be poor. Printing on the back of card directly behind the chip area should also be avoided. Last, depending on size and location of the chip, the PAN information may need to be moved further away from the bottom of the chip in order to ensure optimal print quality.

When Using Retransfer Technology: When an issuance program involves multiple card designs, retransfer printing provides the most flexible personalization solution. Starting with blank white card stock, this technology provides full card, "over-the-edge" color printing. Additionally, since the color imagery is transferred to InTM media, then transferred to the card via heat and pressure, this technology is most suitable for applications when printing over contactless chips, or near and up to the edge of contact chips.



OTHER CONSIDERATIONS:

Card Formats & Card Designs

As you design your card program to accomodate a chip, note that your design may need to change in order to avoid any flaws in the printing around the chip.

BEFORE

AFTER

Smart Card Options

There are multiple types of smart card chips that are in the market: a six contact plate and an eight contact plate option. These two chips are very different in size and will have a significant impact on your card design.

SIX CONTACT

EIGHT CONTACT

As you migrate to chip cards, the experts at Entrust Datacard will be by your side to help answer questions, keep you informed of valuable insights and to help you make the best decisions on what card substrate, print technology and supplies offering fits your program needs to create trusted, long-lasting chip cards.

For more information, contact your sales representative.

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