Series IRB-0642-N

spectraCARD IRB – Transparent IR Blocking Ink, neutral gray

Series IRB-0642-N is a security ink family of the product group spectraCARD IRB which can be processed in the screen printing technology and is suitable for the creation of transparent credit and debit cards.

This new iteration of IR blocking screen printing inks features not only improved color neutrality while practically maintaining the opacity of our proven IR Blocking ink line-up. We have furthermore doubled the storage stability of the previous series to 12 months. IR blocking screen printing inks are unique in that they strongly absorb in the Near IR region of 800–1000 nm and transmit a high percentage of light in the visible spectrum (400–700 nm). Figure 1 shows this special combination of interaction with light by way of example. Our inks were specially formulated to fulfill opacity criteria according to optical reference (ORM7810) for the production of ISO/IEC 7810 compliant debit and credit cards. Cards printed with Series IRB-0642-N, in accordance with the guidelines herein, perform properly in ATM machines and other devices possessing IR sensors to detect the presence of the card.

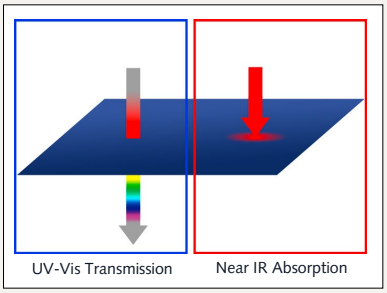
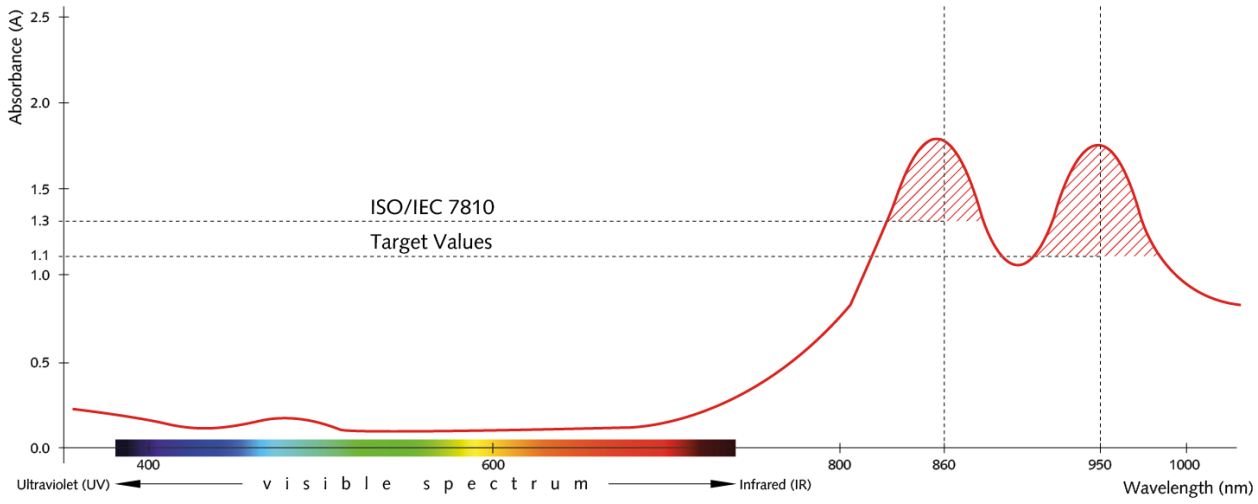


Figure 1 Exemplification of the process of transmission (blue) and absorption (red) of light on a surface. The IR Blocking inks are transparent to the human eye (blue) but absorb Near IR light (red) at the same time.

The graph below show the measurement results of Series IRB-0642-N in terms of color neutrality and opacity, printed in a single print run with a 90 threads per cm (230 threads per inch) mesh.



The IR Blocking inks are similar in structure and body to conventional solvent screen inks; however, the highly technical colorants used in their production necessitate special consideration in their storage and use. While each screen printing operation has its own differences and nuances, these special IR Blocking screen inks are formulated to work around the respective differences. This technical data sheet outlines procedural guidelines that should be followed to obtain the optimum, desired results.

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Application

› Transparent debit cards

› Transparent credit cards

Substrates

Substrate	Rating	Hints
PVC	★★★★★	

Legend	★★★★★	Very well suited	★	Detailed pre-tests necessary

Characteristics

Feature	Rating	Hints
Block resistance	★★★	
Drying	★★★★	
Flexibility	★★★★★	
IR opacity	★★★★★	
Lamination	★★★★★	
Light fastness	★★	
Overprinting	n/a	Not recommended
Printing speed	★★★★★	Cylinder press
Temperature resistance	★★★★	Suitable for PVC (130–150 °C)
Transparency	★★★★★	

Legend	★★★★★	Very good product properties	n/a	No information available
	★	Product properties not available		

Product Range

Series IRB-0642-N	spectraCARD IR Blocking Ink, neutral gray

Auxiliaries

Thinner	Series IRB-0642-N is print-ready. Thinning is not recommended.

Thinning of IR Blocking Inks to reduce the viscosity is not suggested. This will cause a decrease of the IR Blocking component in the inks resulting in decreased lay-down of the IR Blocking components and ultimate non-conformance of the card. If thinning is required to meet a preferred viscosity goal, testing must be performed to determine the appropriate screen mesh and/or number of print passes required to meet the IR Blocking requirements. In this case, please first get in touch with your Printcolor contact.

Processing

General

IR Blocking Inks must be printed and dried in a clean environment. Always be sure that the screens, squeegees, knives, spatulas, or any other equipment that comes into contact with the IR Blocking Inks are clean and dry, completely free of all solvents or other matter. In addition, the sensitivity of the IR Blocking Inks to UV light and high temperatures and specific chemicals should always be considered.

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Mesh

Single print with 90.40 or 90.48 polyester mesh (US count: 230 mesh)

Single print with a 90.40 or 90.48 mesh polyester monofilament or lower is recommended. This recommendation is based on the expectation of the IR Blocking Ink being the only vehicle for blocking IR light. If interference printing is to be used, a higher screen mesh may be suitable, as the corresponding opacity of the interference ink may diminish the overall requirements for the IR Blocking Ink. The intended mesh should be tested, with the final test card analyzed for opacity prior to finalizing the process conditions and moving forward with full scale production.

Important: When using IR Blocking Inks, a dedicated screen should always be used. Using a screen that has been used with pigment inks (e.g. pearlescent inks) can cause insufficient transfer of the IR Blocking Ink to the substrate due to screen blockages. The result will be insufficient blocking of IR light. Also, the solvent base of the IR Blocking Inks can dissolve inks used previously with a non-dedicated screen, resulting in discoloration of the printed substrate.

Squeegee

It is preferable to use a medium or medium-hard (65 durometer) rounded edge squeegee.

Stencils

All commercially available and solvent resistant stencils can be used. Make sure that the stencil is properly dried/cured.

Drying

Air	Physically drying at 20 °C *(68 °F)* ambient temperature / 50 % relative humidity.
Continuous dryer	Depending on dryer capacity, the print is stackable after 60 seconds. The recommended drying temperature lies between 50–60 °C *(122–140 °F)*.

It is important that the printed stock be completely dry before laminating. If the printed ink is not allowed to dry completely or properly (e.g. drying is performed too quickly, and/or at too high a temperature, or printed sheets are not racked for a sufficient amount of time) the potential to «skin over» is a real concern. In this situation, the top layer is dry but the ink remains wet under the surface with the print appearing dry to the eye and touch; however, upon sitting, the wet ink below the surface will redissolve the surface layer resulting in a tacky or wet print surface. This is a primary cause of «blocking» during storage and can result in poor lamination with a reduction of print clarity in the final card.

Lamination Temperature

Lamination temperatures of 130–150 °C *(266–302 °F)* for 20–30 minutes are standard for IR Blocking Inks. These inks are capable of withstanding higher temperatures with an appropriate decrease in the overall exposure time. Prolonged exposure at higher temperatures will decrease the IR blocking efficiency of the ink.

Further Processing

- Punching
- Cutting
- Lamination

Special Features & Tips

Mixing of IR Blocking Inks

IR Blocking Inks may separate slightly upon standing. It is highly recommended that the inks be thoroughly mixed/stirred/shaken prior to use. After stirring and shaking please let the container rest for approx. 30 minutes in order to let possible air bubbles disappear.

It is not recommended to mix IR Blocking Inks with any other ink.

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UV Light/UV Curing

Excessive exposure to UV light can degrade the IR ink, thereby causing a decrease in its IR blocking efficiency. If the screen printing equipment contains UV curing lamps, it is imperative that these lamps be disabled/turned off when processing IR Blocking Inks. It is important that any UV cured inks used in the card body construction be printed prior to the application of the IR Blocking Inks to minimize any potential of the IR Blocking Ink being subject to UV exposure.

Chemical Interactions

Laminating adhesives containing ammonia, ammonia containing compounds or amine compounds can decrease the IR Blocking efficiency of these inks. These types of chemicals are common in some water based laminating adhesives. In general, a laminating adhesive is not required when using the IR Blocking Inks, as the base varnish is a laminating varnish; however, it has been seen that even using these types of adhesives, on alternate core layers, can negatively impact the IR Blocking efficiency of these inks.

Storage

Ink Storage

Please refer to our Technical Information regarding «Storage of Printing Inks and Varnishes and Ink Series Storage Stability».

IR Blocking inks should be stored out of direct sunlight, preferably in the dark, to minimize the impact of UV light on the inks. If the inks are transferred to another container, that container should also be opaque.

Printed Sheet Storage

In general, once printed the IR inks are extremely stable. Printed sheets (core stock) should be maintained in a humidity, temperature and light controlled environment. A temperature between 18–23 °C *(64,4–73,4 °F)* is preferable, with the printed sheets being covered to minimize the impact of UV light on the ink. Under these conditions, there is no reason that a twelve (12) month shelf life, or greater, should not be achievable.

Printed sheets should not be stored in the direct presence of solvents or other chemicals. One should be certain that the inks are completely dry prior to stacking, and stacking should be kept to a minimum. If the inks are not completely dry prior to stacking, this will result in «blocking» where sheets stick to adjacent sheet causing a transfer of ink with the potential to ruin the sheets. If the sheets are stored in an environment where solvents are used on a regular basis, the printed inks can absorb these solvents with the potential to cause «blocking».

Productivity

A productivity of 7000 cards is to be expected with a mesh 90 mesh.

Others

Delivery	1 kg / 5 kg / 25 kg
Other	–

Safety Information

Actual Material Safety Data Sheets according to EC-Regulation 1907/2006 are available for all products mentioned in this data sheet.

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Important Information

Our technical advice whether spoken, written, or through test trials corresponds to our current knowledge to inform about our products and their use. This is not meant as an assurance for certain properties of the products nor their suitability for each application. You are, therefore, obliged to conduct your own tests with our supplied products to confirm their suitability for the desired process or purpose. The selection and testing of the ink for specific applications is exclusively your responsibility. Should, however, any liability claims arise, such claims shall be limited to the value of the goods delivered by us and utilized by you with respect to any and all damages not caused intentionally or by gross negligence.

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