

H.W. Sands Corp.

IR BLOCKING INKS



PRODUCT INFORMATION

H.W. Sands IR Blocking Screen Inks are formulated for Clear Card applications in the Payment Cards Industry. Cards produced with these transparent inks will meet the infrared opacity requirements of ISO/IEC 7810.

Quick Reference

Use: Clear/Transparent Payment Cards for ATM

Notes Mix Thoroughly before using

Coverage ~ 43,000 inch² (277K cm²) / ~ 6000 cards per Kg

Print Method Screen Print with 230-280 mesh

Ink Format Solvent Screen Ink

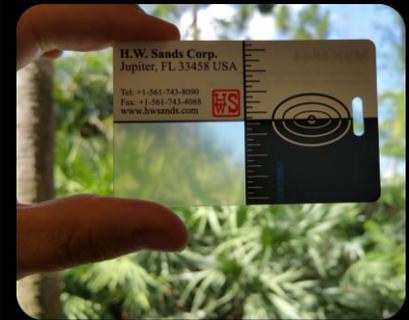
DESCRIPTION

IR Blocking inks are similar in structure and body to conventional solvent screen inks; however, the highly technical components used in their production necessitate special consideration in their storage and use. H.W. Sands IR Blocking Screen Inks are formulated to work across the widest range of production environments. This bulletin outlines procedural guidelines that should be followed to obtain the optimum, desired results.

APPLICATION GUIDELINES

Transaction cards printed with these inks, in accordance with guidelines, will perform properly in ATM machines and other readers possessing IR sensors to detect the presence of the card.

IR blocking inks must be printed and dried in a clean environment. Ensure that the screens, squeegees, and any other equipment that comes into contact with the IR blocking inks are clean and dry and completely free of all solvents or other matter. In addition, IR blocking inks are sensitive to UV light, high storage temperatures and other chemicals. Exposure should be limited.



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HWS No.	Product Name	Color	Shelf Life
MSK4844	Neutral/Light Grey IR Blocking Solvent Ink for Silk Screen.	Neutral Grey	6 Months
MSD4800	Neutral/Tan IR Blocking Solvent Ink for Silk Screen	Neutral Tan	3 Months
MSA4444	Black IR Blocking Solvent Ink for Silk Screen	Black	3 Months
MSC4812	Blue/Green IR Blocking Solvent Ink for Silk Screen	Blue Green	3 Months
MSC4816	Plum IR Blocking Solvent Ink for Silk Screen	Plum	3 Months
MSD4833	Royal Blue IR Blocking Solvent Ink for Silk Screen	Royal Blue	3 Months
MSD4834	Twilight Blue IR Blocking Solvent Ink for Silk Screen	Twilight Blue	3 Months
MSD4870	Deep Lime IR Blocking Solvent Ink for Silk Screen	Deep Lime	3 Months
MSD4829	Magenta IR Blocking Solvent Ink for Silk Screen	Magenta	3 Months
MSC4830	Vivid Cerise IR Blocking Solvent Ink for Silk Screen	Vivid Cerise	3 Months
MSC4826	Light Peach IR Blocking Solvent Ink for Silk Screen	Light Peach	3 Months
MSC4841	Strawberry IR Blocking Solvent Ink for Silk Screen	Strawberry	3 Months
MSC4861	Light Red IR Blocking Solvent Ink for Silk Screen	Light Red	3 Months
MSB6720	Yellow IR Blocking Solvent Ink for Silk Screen (Two pass)	Yellow	12 Months
MSD6720	Yellow IR Blocking Solvent Ink for Silk Screen (One pass)	Yellow	12 Months
MSA8462	Red/Orange IR Blocking Solvent Ink for Silk Screen	Red Orange	3 Months
MSA8464	Orange IR Blocking Solvent Ink for Silk Screen	Orange	3 Months
MSA8465	Bright Orange IR Blocking Solvent Ink for Silk Screen	Bright Orange	3 Months
MSB8466	Burnt Orange IR Blocking Solvent Ink for Silk Screen	Burnt Orange	3 Months
MSA3833	Grey IR Blocking Solvent Ink for Silk Screen	Grey	3 Months

PRODUCT PROPERTIES

Thinning

Thinning of IR Blocking Inks is not recommended. This will reduce concentration of the IR Blocking components in the ink, resulting in decreased IR blocking performance and 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 necessary to meet the IR blocking requirements. Cyclohexanone is the preferred solvent for thinning. Thoroughly mix to ensure performance of the resulting ink. If the IR Blocking Ink is used with complementary interference ink layers, thinning may be used to meet a preferred (lower) viscosity goal and/or lay-down goal. A higher screen mesh will also achieve the same goal.

H. W. Sands' IR Blocking Inks are formulated using a laminating varnish; therefore, any thinning of the ink may reduce post lamination peel strength and will jeopardize meeting ISO Standards.

MIXING OF IR BLOCKING INKS

IR Blocking Inks may separate slightly upon standing. **It is highly recommended that the inks be thoroughly mixed/stirred prior to use.** If separation is of concern, the inks should be brought to approximately 35°C for 30 – 60 minutes with subsequent mixing. This process will re-dissolve components that have separated during standing.

It is not recommended to mix IR Blocking Inks with other inks. The IR blocking components within the ink may react negatively with chemical components in other inks. Degradation of the IR blocking components will result in a loss of clarity or change in color and a reduction of IR blocking capabilities in the final card. If a color other than the IR Blocking base ink is desired, the interference process of printing is the preferred method. By printing on an alternate surface, interactions of the inks are minimized; therefore maintaining the integrity of the individual ink components.

If overprinting on top of the IR Blocking Ink is required, it is suggested that an aqueous, non-amine ink be used. Inks with amine components can negatively react with the IR Blocking components or dissolve the IR Blocking Ink. In addition, the layer of IR Blocking Ink should be completely dry prior to the overprinting. If the IR Blocking Ink layer is not dry, interactions between the layers can occur, resulting in less than optimum transparency or color.

PRINTING RECOMMENDATIONS

Print Equipment

H. W. Sands' IR Blocking Screen Inks are press ready inks formulated to work on hand or automatic; sheet or web-fed screen printing equipment.

Squeegee

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

Cylinder – It is preferable to use 80 durometer semi-rounded squeegee at a 15 degree angle.

Tip: use a fine emery paper to smooth the squeegee after sharpening.

Screen

Flatbed - A US 230-mesh polyester monofilament screen (230 lines/inch) or 90 metric (90 lines/cm) or lower is recommended.

Cylinder – A US 280-mesh polyester monofilament screen (280 lines/inch) or 110 metric (110 lines/cm) or lower is recommended. Recommended speed for cylinder printing is approximately 2,000 sheets/hour.

This recommendation is based 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. The corresponding opacity of the interference ink may diminish the overall requirements for the IR Blocking Ink. The intended mesh should be tested, with analysis of opacity results prior to finalizing process conditions and moving into 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.

HEAT AND DRYING

Drying/Lamination

Drying through use of racks or forced air at temperatures of 50°C is standard with IR Blocking Inks. It is important that the printed stock be completely dry before lamination. 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 of 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 dissolve 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 temperatures of 150°C 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.

STABILITY

UV Light

Excess exposure to UV light can degrade the IR blocking components in the ink which reduces 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

Products or materials containing ammonia 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, using these types of adhesives, on alternate core layers, can negatively impact the IR blocking efficiency of these inks.

STORAGE AND HANDLING

It is recommended that IR Blocking Screen Inks be used as soon as they are received. Prolonged storage of these inks past the stated shelf life may cause deterioration of certain compounds contained in the inks. This results in a reduction of IR blocking efficiency and a corresponding change in the original color. Short term storage of these inks should be in a humidity and temperature controlled environment, with the temperature being at 16-24°C. Do not refrigerate.

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 AND SHELF LIFE

In general, once printed the IR Inks and their internal components are extremely stable. Printed sheets (core stock) should be maintained in a humidity, temperature, and light controlled environment. A temperature of 24°C or below is preferable, with the printed sheets being covered to minimize the impact of UV light on the ink. Under these conditions, greater shelf life is achievable.

Printed sheets should not be stored in the direct presence of solvents or other chemicals. Ensure the inks are completely dry prior to stacking. Keep stacking to a minimum number of sheets. If the inks are not completely dry prior to stacking, this will result in “blocking” where sheets stick to adjacent sheets, causing a transfer of ink. 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” of the stack.

All applications using this product should be thoroughly tested prior to approval for production.

The information herein is believed to be reliable and is to assist customers in determining whether our products are suitable for their applications. However, no warranty, express or implied, is made as to its accuracy or completeness and none is made as to fitness of this material for any purpose. Our products are intended for sale to industrial and commercial customers. We request that customers inspect and test our products before use and satisfy themselves as to contents and suitability. Nothing herein shall constitute any other warranty, express or implied, including any warranty of merchantability or fitness, nor of protection from any law or patent to be inferred. All patent rights are reserved. The exclusive remedy for all proven claims is replacement of our materials and in no event shall we be liable for special, incidental, or consequential damages. We shall not be liable for damages to person or property resulting from its use. Consult the Safety Data Sheet for additional information.