Technical Data Sheet

SCREEN PRINTING INKS FOR SYNTHETIC SUBSTRATES

With over 60 years of manufacturing experience, Colormaker Industries is recognised by professional printers and fine artists as a producer of premium screen printing inks. This great record continues with the completely re-engineering of our ink range for synthetic substrates used in the Promotional Products Industry. In keeping with our heritage of industry leading products, we have developed a totally water-based printing product with superior performance that eliminates the use of solvents.

The development of **PERMAPRINT® Hybrid** inks represents a revolution in screen printing inks. By using a blend of advanced polymer technology combined with pure pigment colours in a 100% solvent free base, the unique formula of **PERMAPRINT® Hybrid** inks offers an environmentally friendly, easy-to-use ink that provides excellent colour brightness together with unsurpassed performance and eliminates the need for additives.

PERMAPRINT® Hybrid inks are a water-based screen printing ink range that is formulated to provide great adhesion on a wide range of substrates typically used in the Promotional Products industry. It exhibits good water resistance once dried. This makes it a highly versatile multi-purpose screen printing ink that is much safer for the printer and much more friendly to the environment.

PERMAPRINT® Hybrid inks are 100% solvent free, so equipment can be quickly and easily cleaned with water and solvent fumes are eliminated.

Important: Stir well before use.
Compatibility with all substrates should be checked before commencing a production run.

MAIN CHARACTERISTICS

Mesh Range	Monofilament. Polyester 43-90T (110-229 tpi) depending on application for Standard Colours and Metallic Pearl Colours. Nylon mesh is NOT recommended. It is water sensitive and screen tensions can be affected with water based inks. Polyester mesh is recommended.
Stencil Type	Emulsions must be water resistant, fully dried and cured. Dual cure direct emulsions such as KIWO POLYCOL® MULTI-TEX/VERSA-TEX™ or Fujifilm Dirasol® 916 or ULANO® 925WR or Chromaline® CP-Tex™ or MacDermid Autotype PLUS 6000 or Murakami TXR®/ T9 are recommended for long print runs and maximum print resolution.

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	Care should be taken to ensure that stencils are properly dried and exposed as under-exposure will render most direct emulsions sensitive to premature breakdown with water-based inks.
Coverage	15-21m^2/L with 62T mesh. 611-856 square feet per US gallon with 155 tpi mesh.
Substrates	Polypropylene tote bags, polyester nylon carry cases, rain wear and umbrellas. Care should be taken with some vinyls as plasticiser migration may soften the ink over time. Care should also be taken with some uncoated papers as cockling may occur.
Squeegee	Sharp square urethane squeegees from 60 to 75 Shore hardness are recommended for best image reproduction.
Printing	Screen meshes of 43-90T (110-229 tpi) monofilament polyester are suitable for most **PERMAPRINT® Hybrid** Ink applications. General purpose work is best with meshes around 77T (195 tpi). Ensure that there is adequate ink on the screen for an even print. Between prints, ensure that ink is flooded over the entire image area to prevent drying-in. Ensure that screen emulsions and blockout are water-resistant and fully cured. **IMPORTANT: When printing with PERMAPRINT® Hybrid Inks, it is essential to flood the image area after lifting the screen following each print stroke. Thin deposits of ink retained in the mesh will dry in very fast. By flooding straight away, fresh ink will wet out these deposits and prevent premature drying in.**
Open Time	If drying in the screen too quickly, add 1-2% .**PERMASET® Print Retarder**
Drying	For optimum fastness **PERMAPRINT® Hybrid** Inks should be air dried, or may be jet dried at maximum airflow. **PERMAPRINT® Hybrid** inks dry by simple evaporation over 20-30 minutes, depending on ambient temperature and humidity or can be jet dried at 65-75°C (149-167°F) for approximately 30-45 seconds using maximum air flow. **PERMAPRINT® Hybrid** inks may also be dried with R.F. or Microwave dryers. When the temperature is below 10°C (50°F) AND only air-dry facilities are available, these inks should not be used. In the case of porous substrates, drying is aided by absorption. Drying

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	rates in all cases will be affected by ink thickness. Testing under print shop conditions on common substrates is recommended before commencing any production print run. Ensure that adequate ventilation is provided during drying and that cooling is allowed before stacking to prevent blocking problems. NOTE: Whilst the information above is a guide, any heating schedule used should be chosen to suit the heat resistance of the substrate being printed. Care must be taken with IR dryers. When printing on synthetic substrates, lower temperatures and longer drying times are recommended. If your drying conditions fall outside these recommendations, please contact your local representative for technical assistance. Any drying temperature guidelines quoted above are recommendations for ink deposit temperatures, not dryer temperatures. This should be checked with temperature strips or IR gun to ensure that the appropriate temperatures are being achieved.
Fastness	Light Fastness is very good-excellent. Most colours achieve a rating of 8/8 on the Blue Wool Scale (BWS), but all Colours except Glow Colours rate not less than 6/8. Figures for the Glow range are substantially lower, but not quantified at this time.
Thinning & Wash-up	If necessary, thin with up to 1-2% water. Wash screens out whilst still wet with water and detergent. Dried in ink may be washed out with conventional or eco-friendly screenwash.
Applications	Ideally suited to application on promotional products printed on heat sensitive substrates, but where some flexibility is also required.
Properties	Matt Finish. Solvent-free. Low odour. Intermixable, light fast*, non-bleeding† colours. Good opacity. Soft Handle. Limited wash resistance; not dry-cleanable. *Some Glow colours may bleed when over printed. Test before use. † Some Glow colours may bleed when over printed. Test before use.
Product Resistance	After air dry, prints exhibit good water resistance.
Colour Range	**PERMAPRINT® Hybrid** Ink Colours Black White Yellow G/S (Primrose) Yellow R/S (Golden Yellow)

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	Orange Red Y/S (Scarlet) Red B/S (Carmine) Magenta Violet Blue Green Print Paste/Extender *Available in 1 L, 4 L & 15 L* **PERMAPRINT® Hybrid** Glow Colours*† Glow Yellow Glow Orange Glow Red Glow Pink Glow Magenta Glow Violet Glow Blue Glow Green *Available in 1 L & 4 L* * All Glow colours exhibit diminished light fastness, particularly in direct sunlight. † Some Glow colours may bleed when over printed. Test before use. **PERMAPRINT® Hybrid** Metallic Pearl Colours Metallic Pearl White Metallic Pearl Silver Metallic Pearl Gold Metallic Pearl Copper *Available in 1 L & 4 L* **Ancillary Products** **PERMASET® Print Retarder** *Available in 500 mL, 1 L, 5 L & 15 L*
Environmental Information	**PERMAPRINT® Hybrid** inks do not contain ozone depleting chemicals such as CFCs and HCFCs. They are also formulated free of aromatic hydrocarbons. **PERMAPRINT® Hybrid** range is free of volatile organic solvent and does not contain any PVC resin nor phthalate plasticisers. **PERMAPRINT® Hybrid** inks are also free from Lead and other heavy metals.
Safety & Handling	**PERMAPRINT® Hybrid** inks have been formulated to be free of toxic chemicals. The range has no flash point, and as such is exempt from Flammable Liquids regulations. Comprehensive information on the safety and handling of products in the **PERMAPRINT® Hybrid** range of inks and ancillaries is provided in the appropriate Safety Data Sheets (SDS) which are available on request.

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Storage	Containers should be kept in a cool dark place out of direct sunlight and away from sources of heat. Containers should be tightly closed when not in use. Keep out of reach of children.
Suggested Safe Disposal Method	1. Wipe as much excess ink off the screen as possible, first with a squeegee (into a clean bucket for re-use), then with rags/paper (into bin) 2. Hose out the screens in a contained vessel 3. Capture the liquid waste and allow to settle 4. Strain out solids, dry solids in the sun and dispose of as solid waste. 5. Aqueous waste water should be disposed of in sealed containers via a certified waste disposal entity. **Excess ink and wastes from the screen should be disposed of in accordance with the regulations of local regulatory authorities.**

NOTE: The information and recommendations contained in this Technical Data Sheet, as well as technical advice otherwise given by representatives of our business, whether verbally or in writing, are based on our present knowledge and believed to be accurate. However, no guarantee regarding their accuracy is given as we cannot cover or anticipate every possible application of our products and because manufacturing methods, printing stocks and other materials vary. For the same reason, our products are sold without warranty and on condition that users conduct their own tests to satisfy themselves that they will fully meet their particular requirements. Our policy of continuous product improvement might make some of the information contained in this Technical Data Sheet out of date and users are requested to ensure that they follow current recommendations.

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