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With compliments:
谨致友好问候

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Trouble Shooting Guide
应用问题解决指南

for

Solvent Gravure and Flexo Inks / 溶剂型凹印及柔印油墨

UV Flexo Inks / UV 柔印油墨

Offset Inks / 胶印油墨

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Preface
前言

ECKART is a supplier of effect pigments and metallic inks with more than 30 years' experience in formulations. To obtain the best results with our products we share technical product information (TPIs) for every ink that is produced by ECKART with information about

. Field of application (film, foil, surface – reverse print)
. Technical properties (rub resistance, lamination properties)
. Recommended print parameters (Cylinder and Anilox configuration)
. Recommended print viscosity
. Recommended solvents for achieving print viscosity
. and more

Please request the Technical Product Information at our ECKART sales offices to achieve the best brilliant solutions for your prints.

If you are happy with ECKART and like to stay up to date, please follow us on Wechat.

爱卡是全球著名的特殊效果颜料及金属效果印刷油墨生产商，拥有逾 30 年的专业油墨配方经验。为了通过我们的产品获得最佳的应用效果，我们分享旗下每种油墨的技术产品信息 (TPIs)，包括

. 应用领域 (软片底材、薄膜底材、表印 - 里印)
. 技术特性 (耐磨性、复合适应性)
. 建议印刷参数 (滚筒和网纹配置)
. 建议印刷黏度
. 建议溶剂，以实现理想印刷黏度
. 其它

请联系爱卡销售人员并索取爱卡产品的技术产品信息，以在您的印刷品上实现最佳的金属效果。

欢迎扫描下方二维码关注爱卡公众号，获取最新资讯。

Flexible Film

柔性膜

Problem:
· Unsatisfying mirror effect

Possible causes:
· Unsuitable substrate
· Poor surface wetting
· Too high ink film weight (in surface printing)

Solution:
· Use suitable substrate
· Smooth surface is required
· Reduce film weight by using a cylinder / anilox with lower film weight
· Use OPV (over print varnish) for surface printing

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问题:
· 镜面效果不理想

可能原因:
· 底材不合适
· 表面湿润不佳
· 墨层过厚 (表印时)

解决方法:
· 选用合适底材
· 平滑表面
· 使用版辊 / 网纹辊降低墨层厚度
· 表印时使用上光油

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Problem:
· Unsatisfying mirror effect

Possible causes:
· Poor hiding power
· Poor surface wetting

Solution:
· Use suitable substrate
· Smooth surface is required
· Use a cylinder / anilox with suitable engraving (see Technical Product Information) e.g. ULTRASTAR GX 2807

问题:
· 镜面效果不理想

可能原因:
· 遮盖力不足
· 表面湿润不佳

解决方法:
· 选用合适底材
· 平滑表面
· 使用合适的版辊 / 网纹辊 (具体参数参考技术产品信息，如 ULTRASTAR GX 2807)

Solvent Gravure/Flexo Inks 溶剂型凹印及柔印油墨

Reverse and Surface Print on Transparent Film

在透明膜上表印和里印

Line Count:
70 lines / cm (180 lines / inch)

Cell diameter:
165 µm

Channel:
25 µm

Graver Angle:
120°

ECKART's GX- and FX -series are optimized for brilliant solutions on flexible film (e.g. ULTRASTAR GX)

线数:
70 线 / 厘米 (180 线 / 英寸)

网孔直径:
165 µm

通道:
25 µm

凹版角度:
120°

爱卡的 GX 和 FX 系列油墨专为柔性膜优化，如 ULTRASTAR GX

Solvent Gravure/Flexo Inks 溶剂型凹印及柔印油墨

Paper and Board 纸张和卡纸

Problem:
· Unsatisfying mirror effect

Possible causes:
· Unsuitable paper
· No surface preparation

Solution:
· Use primer
· Use high quality substrate e.g. coated paper and cardboards with smooth surface
· Glossy or satin surface paper
· Glossy primers and ink substrates
· Film laminated paper

ECKART's GP- and FP -series is optimized for brilliant solutions on paper and board (e.g. ULTRASTAR GP)

问题:
· 镜面效果不理想

可能原因:
· 纸张不合适
· 表面未处理

解决方法:
· 预底涂
· 使用优质底材，如表面平滑的涂布纸和涂布卡纸
· 亮光或丝光表面的纸张
· 亮光底涂表面的底材
· 复合纸

爱卡的 GP 和 FP 系列油墨专为纸张和卡纸优化，如 ULTRASTAR GP

Solvent Gravure/Flexo Inks 溶剂型凹印及柔印油墨

Paper and Board 纸张和卡纸

Problem:
· Poor hiding power

Possible causes:
· Cylinder specification not suitable
· Applied film weight too low
· Ink dilution or extension too high

Solution:
· Follow recommended cylinder specification
· Adjust ink with recommended solvent level and ink viscosity
· Use anilox with recommended volume below

问题:
· 遮盖力不足

可能原因:
· 版辊参数不合适
· 墨层太薄
· 油墨太稀或冲淡过高

解决方法:
· 使用建议版辊参数
· 按建议调整油墨黏度和溶剂含量
· 按下表调整网纹辊

Print Design 印刷设计	Lines / cm 线 / 厘米	Lines / inch 线 / 英寸	Volume / 墨量 cm^3 / m^2	Volume / 墨量 BCM / in^2
Full Area and Coarse Lines / 满版和粗线条	80 - 120	200 - 300	12 - 15	8.0 - 10.0
Fine Lines / 细线	140 - 170	360 - 440	7 - 10	4.5 - 6.5

Solvent Gravure/Flexo Inks 溶剂型凹印及柔印油墨

Paper and Board 纸张和卡纸

Problem:
· Poor print sharpness
· Poor contour definition

Possible causes:
· Improper doctor blade adjustment

Solution:
· Adjust blade pressure evenly
· Check and adjust blade angle (according to suppliers recommendation and machine settings)
· Change worn doctor blades

问题:
· 印刷锐度不足
· 印刷轮廓不清晰

可能原因:
· 刮墨刀未调整好

解决方法:
· 均匀刮墨刀压力
· 检查并调整刮墨刀角度 (依据供应商建议和印刷机设置)
· 更换刮墨刀

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Problem:
· Poor print sharpness
· Poor contour definition

Possible causes:
· Too low print speed
· Low edge resolution of cylinder gravure

Solution:
· Increase print speed
· Adjust ink viscosity to requirements of machine settings and printing speed
· Check and adjust blade angle
· Change worn doctor blade

问题:
· 印刷清晰度不足
· 印刷轮廓不清晰

可能原因:
· 印刷速度过慢
· 凹版版辊边缘分辨率过低

解决方法:
· 提高印刷速度
· 调整油墨黏度，满足印刷机设置和印刷速度的要求
· 检查并调整刮墨刀角度
· 更换刮墨刀

Solvent Gravure/Flexo Inks 溶剂型凹印及柔印油墨

Paper and Board 纸张和卡纸

Problem:
· Structure / flow lines

Possible causes:
· Too low speed and/or too low viscosity

Solution:
· Increase printing speed
· Increase ink viscosity

Use ECKART Technical Product Information recommendations before adjusting viscosity

问题:
· 印墨不均匀 / 有流痕

可能原因:
· 印刷速度过低和/或油墨黏度过低

解决方法:
· 提高印刷速度
· 调高油墨黏度

调整油墨黏度前请先查询爱卡技术产品信息

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Problem:
· Parts of the printed area looks smeared
· Ink film blurred

Possible causes:
· Ink film not completely dry, when leaving the dryer unit

Solution:
· Use fast drying solvents for dilution (e.g. ethyl aceate)
· Increase dryer temperature
· Reduce printing speed

问题:
· 印刷蹭脏
· 墨层模糊

可能原因:
· 墨层未充分烘干

解决方法:
· 用快干溶剂稀释，如乙酸乙酯
· 提高干燥温度
· 降低印刷速度

Solvent Gravure/Flexo Inks

溶剂型凹印及柔印油墨

Paper and Board

纸张和卡纸

Problem:
- Poor rub resistance

Possible causes:
- Substrate absorbance too high, binder penetration into substrate

Solution:
- Use suitable substrate or apply primer for surface sealing and better gloss
- Apply overprinting varnish

问题:
- 耐磨性不佳

可能原因:
- 底材吸收性过强，吸收连接料

解决方法:
- 使用合适底材或作预底涂，封住表面并使其光滑
- 加印上光油

UV Flexo Inks

UV 固化柔印油墨

Problem:
- Viscosity increase (Identified by opening an original drum)

Possible causes:
- Ink overstored
- Unsuitable storage conditions (high temperature)

Solution:
- Slight addition of non reactive diluents, e.g. methoxy propanol
- Addition of pure monomer, e.g. HDDA

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Problem:
- Viscosity increase (during printing process)

Possible causes:
The ink is foaming because of:
- Pumping system aerates ink
- Too long pumping pipes
- Inlet pipe too close to outlet pipe
- Chambered anilox system aerates ink
- Inappropriate chamber geometry causes aeration

Solution:
- Reduce printing speed
- System with open doctor blade causes less foaming
- Dilute ink with 3% isopropanol, if no incompatibilities are observed
- Use defoaming agent (up to 5%, but this influences the optical result)

问题:
- 黏度增加 (新开盖状态下)

可能原因:
- 油墨过期
- 储存条件不佳 (温度过高)

解决方法:
- 添加少量非活性稀释剂，如丙二醇甲醚
- 添加醇单体，如 HDDA

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问题:
- 黏度增加 (印刷时)

可能原因:
油墨起泡:
- 泵送系统充进空气
- 泵送管道过长
- 进墨管太靠近出墨管
- 网纹辊腔室充进空气
- 腔室形状不合适导致充进空气

解决方法:
- 降低印刷速度
- 开放式刮墨刀可减少起泡
- 如果相容，添加 3% 异丙醇稀释
- 使用消泡剂 (不超过 5%，且注意会影响金属效果)

UV Flexo Inks

UV 固化柔印油墨

Problem:
· Transfer problem

问题:
· 转移问题

Possible causes:
· Ink aerated, see “viscosity increase during printing”

可能原因:
· 油墨被充进空气，请参考前述 "印刷过程中黏度增加" 问题

Solution:
· Reduce printing speed
· Probably re-design of machine set-up necessary

解决方法:
· 降低印刷速度
· 可能需要重新设计印刷设备的设置

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Problem:
· Loss of brilliance during printing process

问题:
· 印刷过程中金属感下降

Possible causes:
· High shear rate and mechanical wear during long printing process
· Low ink demand (just a little part of the design is metallic)

可能原因:
· 长印刷流程中剪切力过高造成金属颜料被破坏
· 低油墨需求 (仅小区域需要金属效果)

Solution:
· Reduce printing speed
· Avoid long term print process
· Faster refilling cycles with lowest possible filling rate
· Avoid ink tray is running empty while machine run

解决方法:
· 降低印刷速度
· 避免长印刷流程
· 更快的进墨循环，尽量低的进墨率
· 印刷机运行时避免墨盒空置

UV Flexo Inks

UV 固化柔印油墨

Problem:
· Blocking

问题:
· 粘着

Possible causes:
· Insufficient UV curing of ink
· High UV-light reflexion of metallic pigments

可能原因:
· UV 固化不充分
· 金属颜料对 UV 反射过高

Solution:
· Use highest possible lamp power
· Use lamp after metallic colour unit
· If still not sufficient reduce speed
· If still not sufficient reduce applied ink weight (anilox)

解决方法:
· 使用强度尽量高的 UV 固化灯
· 金属油墨单元后做 UV 固化
· 需要时再降低印刷速度
· 需要时再减少油墨用量 (网纹辊)

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Problem:
· Polychromatic effect required (poor tintability)

问题:
· 配色着色力不佳

Possible causes:
· Intereference between leafing pigment technology and colourants

可能原因:
· 浮型颜料和着色剂的互相干扰

Solution:
· Use non-leafing inks
· Use two layer system:
  1st layer is UV ink
  2nd layer is the colour varnish

解决方法:
· 使用非浮型油墨
· 采用双层叠色结构
  第一层为 UV 油墨
  第二层为彩色光油

Problem:
· Poor rub resistance

Possible causes:
· Strong surface orientation of leafing pigments
· Insufficient UV curing of ink

Solution:
· Use OPV (over print varnish)
· Additional wax additive influences the optical effect in a negative way
· Use highest possible lamp power
· Reduce applied ink weight (anilox)

问题:
· 耐磨性不佳

可能原因:
· 浮型颜料强大的表面定向力
· UV 固化不充分

解决方法:
· 加印上光油
· 添加蜡，但可能影响金属效果
· 使用强度尽量高的 UV 固化灯
· 减少油墨用量 (网纹辊)

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Problem:
· Poor adhesion on film substrate

Possible causes:
· Insufficient film treatment

Solution:
· Apply Corona treatment (min: 36-38dyn)
· Apply flame-treatment for polyolefine substrates
· Use adhesion promoter (FAP-80)
· Use medium and extend the binder content in the ink formulation

问题:
· 薄膜底材上附着力不佳

可能原因:
· 薄膜处理不足

解决方法:
· 电晕处理 (不低于 36-38 dyn)
· 聚烯烃底材火焰处理
· 使用附着力促进剂 (FAP-80)
· 使用介质并提高油墨配方中的连接料含量

Problem:
· Overprintability

Possible causes:
· Limited surface wettability (leafing pigments)

Solution:
· Use foil printing inks on top of metallic UV inks
· Use varnishes / colour inks with good surface wetting
· Use non-leafing ink

问题:
· 叠印性能不佳

可能原因:
· 浮型颜料表面润湿性能不足

解决方法:
· UV 金属油墨表面印以薄膜用油墨
· 使用表面润湿性能好的光油和彩色油墨
· 使用非浮型油墨

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Problem:
· Ink partly or fully gelled

Possible causes:
· Ink overstored
· Unsuitable storage conditions (high temperature)
· Raw material impurities

Solution:
· Dispose the ink
· Contact supplier for expiration date
· Contact supplier for complaint processing
· Re-use of UV inks is impossible
· Once on press, left-over ink must be disposed of

问题:
· 油墨部分或全部胶化

可能原因:
· 油墨过期
· 储存条件不佳 (温度过高)
· 原料含有不纯物

解决方法:
· 弃置
· 确认有效期
· 质量投诉
· 确认没问题才重新使用该 UV 墨
· 一旦上机，机上残存油墨必须清理

Problem:
· Poor metallic effect

Possible causes:
· Unsuitable substrate
· No surface preparation
· Overstored product
· Low density of ink film

Solution:
· Choose paper / cardboard with smooth surface and low oil absorption (coated or glazed paper)
· Apply a primer for improved ink setting
· Adjust ink supply

问题:
· 金属感不佳

可能原因:
· 底材不合适
· 底材表面未处理
· 油墨过期
· 墨层密度过低

解决方法:
· 选用表面平滑低吸收性的纸张或卡纸，或选用涂布纸或釉面纸
· 底材预底涂
· 调整供墨

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Problem:
· Poor metallic effect

Possible causes:
Ink-water-balance
· Over-emulsification of ink

Solution:
· Reduce fount level (as low as possible)

问题:
· 金属感不佳

可能原因:
· 水墨平衡不佳
油墨过度乳化

解决方法:
· 尽量减少润版液用量

Problem:
· Poor colour strength / hiding power

Possible causes:
· Low density

Solution:
Adjust supply settings to obtain following density values:
· approx. 1.5 for gold inks, using yellow scale
· approx. 1.0 for silver inks leafing types (cyan scale)
· approx. 0.6-0.7 for silver inks non-leafing types (cyan scale)·

问题:
· 色强度 / 遮盖力不足

可能原因:
· 色密度过低

解决方法:
调整供墨以达到以下色密度:
· 金墨约 1.5，黄色分色
· 浮型银墨约 1.0，青色分色
· 非浮型银墨约 0.6-0.7，青色分色

Tarnishing:

Tarnishing means colour change and loss of metallic brilliance of bronze pigments, caused by oxidization (corrosion).

Corrosive media are particularly all alkaline and acid substances coming in contact with the metallic pigment.

Fountain solutions should be carefully selected and the pH adjusted to a value of 5.5 - 6.

Binders and additives migrating from the substrate, laminate or wet glue can also be corrosive, particularly under presence of humidity and high storage temperatures.

金墨变色:

金墨变色通常是指铜金颜料的氧化（受腐蚀）而导致的金属感减弱和颜色变化。

所有与金属颜料接触的碱性或酸性物质都是腐蚀性介质。

应仔细选择润版液，并将 pH 值调节至 5.5 - 6。

从底材、复合层或湿胶中迁移的连接料和添加剂也可能具有对铜金颜料的腐蚀性，尤其是在潮湿和高温的储存条件下。

Problem:
· Tarnishing (1)

Possible causes:
· pH-value of fountain solution not appropriate
· Paper too alkaline or acidic

Solution:
· Adjust pH of fountain solution to 5.5 – 6
· Select neutral paper substrates or apply primer as sealer with barrier protection

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Problem:
· Tarnishing (2)

Possible causes:
· High moisture in substrate
· Soaking with wet glue during labelling, particularly caseine-based glues

Solution:
· Avoid moisture exposure
· Test wet glue for compatibility with metallics
· Use less absorbant substrate

问题:
· 变色 (1)

可能原因:
· 润版液的 pH 值不恰当
· 纸张的酸性或碱性过强

解决方法:
· 将润版液的 pH 值调整到 5.5 - 6
· 选用中性纸张或施以预底涂作屏障保护

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问题:
· 变色 (2)

可能原因:
· 底材水分过高
· 贴标签时用湿胶浸泡，特别是基于酪蛋白的胶水

解决方法:
· 避免底材受潮
· 测试湿胶会否影响金属感
· 尽量避免使用吸收性底材

Problem:
· Tarnishing (3)

Possible causes:
· Unsuitable storage conditions of ink
· Shelflife exceeded

Solution:
· Keep product in dry and cool area
· Keep metallic ink in closed container and use it up soon after opening

问题:
· 变色 (3)

可能原因:
· 油墨储存条件不佳
· 超过有效期

解决方法:
· 保证干燥凉爽的储存环境
· 油墨容器必须密闭，一旦打开必须尽快用完

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Problem:
· Tarnishing (4)

If the tarnishing problem with old ink based on bronze pigments persists, or the critical conditions cannot be avoided, we recommend to use non-leafing products for imitation gold shades:

· METALSTAR 06 7006, gold shade

· METALSTAR 06 7000 silver, tinted with suitable colour inks

· METALSTAR SuperEco 10 9007, mineral oil free

问题:
· 变色 (4)

如果铜金油墨的变色问题始终无法解决，或储存和使用条件难以克服，建议使用以下非浮型仿金油墨:

· METALSTAR 06 7006, 金色色相

· METALSTAR 06 7000 silver, 适于调成各种金属彩色

· METALSTAR SuperEco 10 9007, 不含矿物油

Problem:
· Orange peel effect

Possible causes:
Ink-water-balance
· Over-emulsification of ink

Solution:
· Clean plates and ink unit
· Reduce fount level and adjust ink supply accordingly

问题:
· 橘皮

可能原因:
· 水墨平衡不佳
油墨过度乳化

解决方法:
· 清洗印版和油墨单元
· 减少润版液用量并调整供墨

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Problem:
· Poor print sharpness
· Poor contour definition

Possible causes:
· Ink-water-balance: insufficient fount feed
· Too high printing speed (for difficult images)

Solution:
· Adjust fount level
· Adjust printing speed to max. 8,000 - 10,000 sheets / h

问题:
· 印刷锐度不足
· 印刷轮廓不清晰

可能原因:
· 水墨平衡不佳
润版液不足
· 印刷速度过高
图案复杂时

解决方法:
· 调整润版液量
· 控制印刷速度到不高于 8,000 - 10,000 张/小时

Problem:
· Poor transfer
· Ink build-ups on rollers

Possible causes:
· Too much water and ink on rollers, leading to over-emulsification
· Too high ink viscosity
· Too high press speed

Solution:
· Press needs stop, clean and restart with lower supply settings. Adjust density level and fount feed at minimum level required.
Add 1-3 % of a suitable mineral or vegetable oil (as reducer)
· Reduce press speed

问题:
· 油墨转移不佳
· 油墨在墨辊上积聚

可能原因:
· 墨辊上的水和墨过多造成过度乳化
· 油墨黏度过高
· 印刷速度过高

解决方法:
· 停止印刷，清理后设置为低供墨并重启。调整密度水平并尽量减少润版液用量。添加 1-3% 合适的矿物油或植物油作为冲淡剂。
· 降低印刷速度

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Problem:
· Set off (leading to blocking)

Possible causes:
· Too high ink film applied
· Over-emulsification
· Too high stocks
· Insufficient spray powder in stock

Solution:
· Adjust density level and fount feed at minimum level required
· Clear stock or reduce height of pile

问题:
· 粘背、粘页

可能原因:
· 墨层过厚
· 油墨过度乳化
· 印成品堆叠过厚
· 印成品喷粉不足

解决方法:
· 调整密度水平并尽量减少润版液用量
· 整理印成品或减少其堆叠

Problem:
· Misting
(ink spray mist around inking rollers)

Possible causes:
· Too much ink on rollers
· Too high print speed
· Too low viscosity

Solution:
· Reduce ink feed and fount feed at minimum level required
· Reduce print speed

问题:
· 雾散
(油墨在墨辊之间形成微滴散落)

可能原因:
· 墨辊上油墨过多
· 印刷速度过快
· 油墨黏度过低

解决方法:
· 减少供墨量，尽量减少润版液用量
· 降低印刷速度

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Problem:
· Slow drying

Possible causes:
· Too high ink film applied
· Too much water in ink
· Substrate absorbance too low
· pH of paper is too low

Solution:
· Reduce ink feed and fount feed
· Change substrate

问题:
· 干燥过慢

可能原因:
· 墨层过厚
· 油墨含水量过高
· 底材吸收性过低
· 底材 pH 值过低

解决方法:
· 减少供墨量和润版液用量
· 换用其它底材

Problem:
- Chalking / poor rub resistance (not to mix-up with poor drying)
- Pigment is easily removeable by rubbing or wiping-off

Possible causes:
- Substrate absorbance too high
- Too much binder penetration into substrate

Solution:
- Use less porous / absorbent substrate
- Or apply primer for surface sealing

问题:
- 墨迹粉化 / 耐磨性不佳 (要和干燥不足区分)
- 摩擦后颜料容易脱落

可能原因:
- 底材吸收性过强
- 过多粘合剂渗入底材

解决方法:
- 避免多孔性底材，使用低吸收性底材
- 或预底涂

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Problem:
- Excessive plate wear

Possible causes:
- Printing plate not hardened
- pH-value of fountain solution not appropriate, causing corrosion of metallic pigment
- Abrasive fillers in paper

Solution:
- Baking / hardening the printing plate (particularly CTP plates)
- Adjusting pH of fountain solution to 5.5 - 6
- Use non-abrasive substrates

问题:
- 印版过度磨损

可能原因:
- 印版硬度不足
- 润版液 pH 值不合适，腐蚀金属颜料
- 纸张含研磨性填料

解决方法:
- 采用烘烤等方法提高印版硬度，尤其是 CTP 制版
- 将润版液 pH 值调整到 5.5 - 6
- 使用非研磨性底材

Problem:
- Trapping (1) (poor ink acceptance on metallic layer for wet-on-wet)

Possible causes:
- Too high tack of succeeding colours
- Short distance between printing units

Solution:
- Reducing tack of succeeding colour inks
- Press set-up: if possible set metallic ink in first unit and on-top printing colour at end of press

Consult ECKART technical service for customized “high-tack”- ink

问题:
- 陷印 (1) (湿墨叠印时金属墨层之上的墨层上墨性不佳)

可能原因:
- 下层墨层粘性过高
- 印刷单元距离过近

解决方法:
- 减弱下层墨层的粘性
- 印刷机设置:
  如果可能，金属油墨设于首个单元，其上的彩色油墨设于最末

欢迎咨询爱卡技术服务部以获取关于高粘性油墨的定制资讯

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Problem:
- Trapping (2) (poor ink acceptance on metallic layer for wet-on-wet)

Possible causes:
- Too high tack of succeeding colours
- Short distance between printing units

Solution:
- Recommendation for silver tones and tinted silver shades: METALSTAR 06 7000 n.l. non-leafing ink (mineral oil free version available)
- Recommendation for gold: Print gold ink offline or at reduced speed

问题:
- 陷印 (2) (湿墨叠印时金属墨层之上的墨层上墨性不佳)

可能原因:
- 下层墨层粘性过高
- 印刷单元距离过近

解决方法:
- 推荐银墨，并适于调色 METALSTAR 06 7000 n.l. 非浮型银墨 (另有不含矿物油版本)
- 金墨印刷建议 离线印刷金色，或降低印刷速度

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