



STAPA®

色特丽

色特亮

Siltallic

Siltallux

HYDROMIC N

适用于涂料的金属效果颜料
*Metallic Aluminium Pigments
for Paint and Coating Industry*

为亚洲及中国设计
Designed for Asia and China

溶剂型 - 水性
Solvent borne - Water borne

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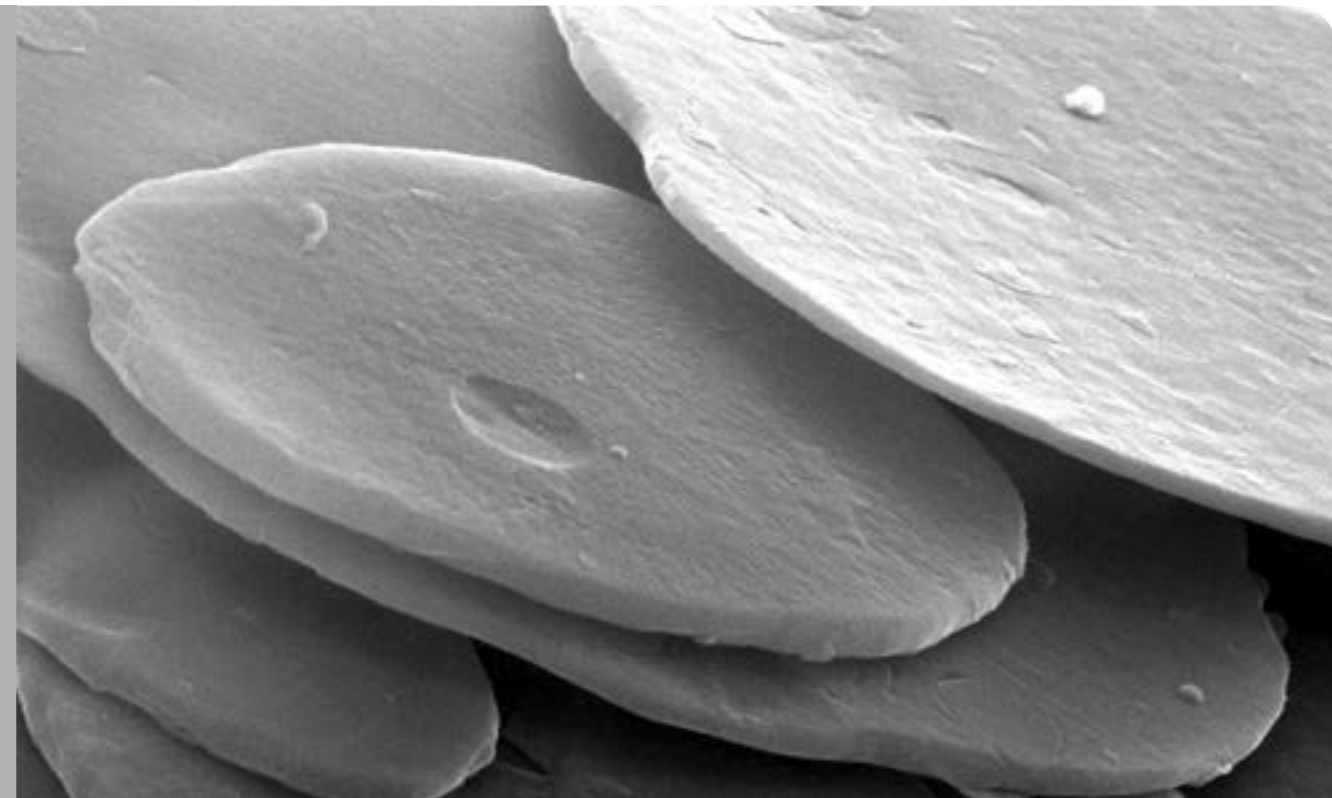
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金属效果颜料 Metallic Effect Pigments

金属效果颜料应用于涂料当中,不但可以获得漂亮的金属外观,还可以达到某些独特的功能。金属效果颜料往往呈片状,颗粒直径比一般彩色颜料的大。普通颜料的直径通常都在可见光的波长范围内,而具有特殊金属效果的片状颜料的直径一般约在 5 – 55 μm 之间。

Metallic effect pigments are used in the paints and coatings industry for both their optical effects as well as for their functionality. Effect pigments are always lamellar (flakes) and their particle diameter is larger than the one of colour pigments. While the particle size of colour pigments is in the wavelength range of visible light, the flake diameter of effect pigments is generally around 5 – 55 μm.



生产工艺 Production Process



许多情况下,金属颜料的各种特性都可由生产工艺决定。目前铜金粉都是在球磨机中(Hametag工艺)干法研磨而成。而鉴于安全原因,现代的铝颜料都采用 Hall 工艺在溶剂中湿法研磨。

先将原料进行熔融喷雾,得到纯度不低于 99.5% (按照EN 576标准)的不规则喷雾粉。然后经注入了润滑剂的球磨机研磨成片状颗粒。

研磨的参数和润滑剂的种类由颜料的最终用途决定。研磨后得到的颜料浆再经筛分、压滤和混合后,对应不同产品规格,得到固体分为 60-70%,溶剂为 30-40% 的标准颜料浆。

In many cases the properties of metallic effect pigments can be deduced directly from the production process. The gold bronze pigments are dry milled in ball mills (Hametag process), but for safety reasons aluminium pigments are produced almost exclusively in a wet milling process adding white spirit (Hall process).

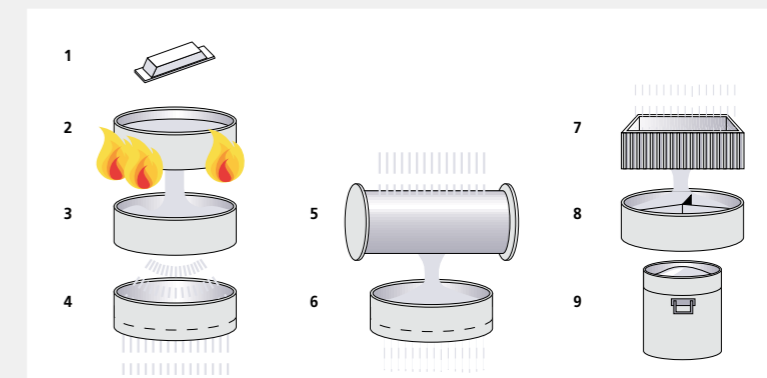
The raw material - atomized, spattered aluminium with a minimum purity of 99.5% according to EN 576 – is milled respectively shaped to flake-like particles in ball mills, filled with grinding aids (lubricant).

The milling parameters and the lubricant are determined by the application for which the pigment is intended. The pigment slurry is screened, pressed on filter presses and adjusted in mixers to a ratio of 60-70% solids and 30-40% solvent depending on the specific grade.

生产流程/Production Process

图 1/ Fig. 1

- 1 铝 / AL min. 99,5 % DIN 1712
- 2 熔融 / Melting
- 3 雾化 / Atomizing
- 4 筛分 / Sieving
- 5 球磨 / Ball mill
- 溶剂 / Mineral spirit
- 润滑剂 / Lubricant
- 6 筛分 / Sieving
- 7 压滤 / Filterpress
- 8 混合 / Mixer
- 9 STAPA® 铝浆 / Aluminium paste





金属效果铝银浆 Aluminium pastes for metallic effects

色特丽和色特亮是全球领先的金属效果颜料生产商爱卡专门为中国和亚洲市场创立的两个铝银浆品牌，产品由爱卡特殊效果颜料(珠海)有限公司在中国生产。

秉承爱卡高品质铝银浆的理念并立足于中国市场的要求，色特丽和色特亮采用和德国相同的设备和技术生产。它们与爱卡其它品牌的金属效果颜料一样可以广泛应用于各种涂料领域，特别推荐用于汽车涂料和工业涂料。

在提供稳定的色特丽和色特亮产品同时，我们也为客户提供创新、专业的技术服务。通过设立在珠海的技术应用实验室，我们可以和客户共同研发涂料新产品，提供及时、灵活、并且以市场为导向的解决方案。

Siltallic® and Siltallux®, are brands of two new series of Aluminium Pastes manufactured by ECKART, the leading international manufacturer of metallic pigments. Produced by ECKART Zhuhai Co., Ltd. South China, Siltallic® and Siltallux® are specifically developed for the China and Asian markets.

In accordance with ECKART's philosophy of high quality Aluminium Pastes, Siltallic and Siltallux are developed and manufactured using the same production equipment and expertise taken from our German operations. Siltallic and Siltallux are suitable for a large variety of coating applications, specifically in Automotive and Industrial Coatings.

To support our product offering, ECKART provides innovative and professional technical services to our clients. With technical application laboratory established in Zhuhai, ECKART is suitably positioned to work on joint projects together with our clients providing on-time, flexible, market orientated solutions.

推荐应用 / Application Recommendations

色特丽和色特亮铝浆特别适用于

工业涂料

- 底涂
- 卷钢涂料、罐听涂料

汽车涂料

- 汽车原厂漆
- 汽车修补漆
- 部件漆

金属效果涂料

装饰涂料

- 普通喷漆
- 自助装饰漆等

其它涂料

- 纸张涂布
- 织物涂布
- 塑料涂料

Siltallic and Siltallux Aluminium pastes are ideal to be used in

Industrial coatings

- Primer
- Coil coatings, Can coatings

Automotive coatings

- OEM coatings
- Refinish coatings
- Accessories

Metal effect coatings

Decorative coatings

- Aerosols
- Diy etc.

Miscellaneous coatings

- Paper coatings
- Textile coatings
- Plastic coatings

应用图例 / Application Pictograms

汽车原厂漆和修补漆
Automotive OEM, Refinishing Coatings



罐听涂料
Can Coatings



建筑、墙面和装饰涂料
Architectural, Wall and Decorative Coatings



卷钢、外墙和家具涂料
Coil, Facades and Furniture Coatings



防腐、船舶和保护涂料
Corrosion, Marine and Protective Coatings



塑料、电子消费品和原厂轮毂涂料
Plastic, Consumer Electronic and OEM Trim Coatings



STAPA®

^(ic) Siltallic

^(ux) Siltallux

^(li) 色特丽

^(liang) 色特亮

适用于溶剂型涂料的标准铝浆

Standard aluminium pigments for solvent borne paint applications

色特亮和色特丽是采用德国专业技术在中国生产的高品质铝银浆系列，它们都拥有众多的规格型号，提供各种不同的出色银色效果。如需更多色彩信息，请参考我们另外提供的色卡。

STAPA® SILTALLUX and STAPA® SILTALLIC are the quality brands of China manufacturing site. With German manufacturing methods and expertise we produce high quality grades with distinctive effect results over a wide silver colour range. For more detailed colour/effect information please refer to our fan deck which we can provide additionally.

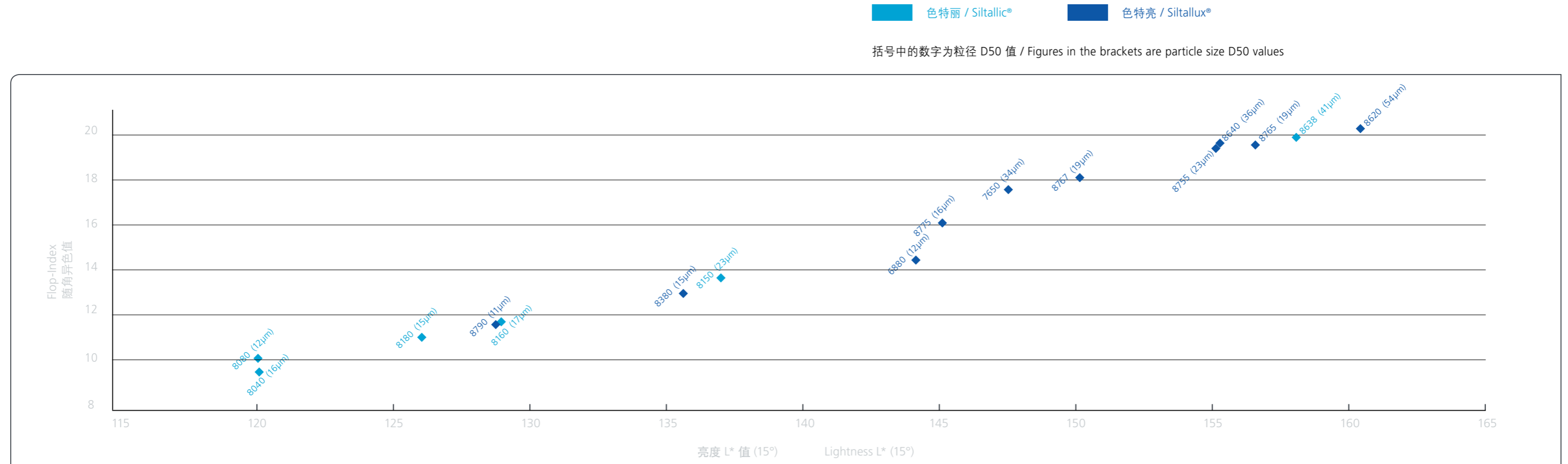
STAPA® SILTALLIC® / SILTALLUX®	颜料含量 Pigment content	溶剂类型 Type of solvents	粒径分布 Particle size distribution 检测仪器 determined with CILAS 1064 D50 近似值 approx. [µm]	特点 Comments	推荐应用 Recommended application
型号 / Type	± 2%				
SILTALLUX® 8620	70	TE/SA	54	极粗银元型, 极强闪烁 / Very coarse Silver dollar, extreme sparkling	
SILTALLUX® 8640	70	TE/SA	36	粗银元型 Coarse Silver dollar	
SILTALLUX® 7650	70	TE/SA	34	粗银元型, 高不透明度 Coarse Silver dollar, good opacity	
SILTALLUX® 8755	70	TE/SA	23	中粗银元型, 强闪烁效果 / Medium coarse Silver dollar, good sparkling, good effect	
SILTALLUX® 8765	70	TE/SA	19	中等银元型, 强效果 Medium Silver dollar, strong effect	
SILTALLUX® 8767	70	TE/SA	19	中等银元型, 强效果高不透明度 / Medium Silver dollar, good effect, good opacity	
SILTALLUX® 8775	70	TE/SA	16	中细银元型, 强效果 Medium fine Silver dollar, good effect	
SILTALLUX® 8380	65	TE/SA	15	中细亮白银元型, 极高不透明度 / Medium-fine whitish Silver dollar, very good opacity	
SILTALLUX® 6880	65	TE/SA	12	细银元型, 极强效果 Fine Silver dollar, very good effect	
SILTALLUX® 8790	65	TE/SA	12	细银元型, 高不透明度, 强效果 / Fine Silver dollar, good opacity, good effect	
SILTALLIC® 8638	70	TE/SA	41	粗玉米片型 Coarse Cornflake	
SILTALLIC® 8150	65	TE/SA	23	中粗玉米片型, 亮白效果 Medium coarse Cornflake, whitish effect	
SILTALLIC® 8160	65	TE/SA	17	中等玉米片型, 高不透明度 Medium cornflake, good opacity	
SILTALLIC® 8040	60	TE/SA	16	中等玉米片型, 突出亮白效果 / Medium Cornflake, pronounced whitish effect	
SILTALLIC® 8180	65	TE/SA	15	中-细玉米片型, 强不透明度 / Medium/ Fine Cornflake with good opacity	
SILTALLIC® 8080	60	TE/SA	12	细玉米片型, 优秀不透明度 Fine Cornflake, very good opacity	

TE = Mineral Spirit / 200#溶剂汽油
SA = Solvent Naphtha / 石脑油溶剂



色特丽 / 色特亮铝浆一览

Overview of Siltallic® / Siltallux® aluminium pastes



说明

1. 以上图表同时显示了各规格颜料的粒径、亮度值和随角异色值。
2. 铝颜料的光学特性以其对光线直接反射的随角异色效果来衡量。该种直接反射的亮度值常被称为 L* 值。
3. 通常使用 5 角度或 6 角度分光光度计来测定涂层的光反射性以及色值。
4. 肉眼对颜色的感受很大程度上取决于反射光线和观察角度之间的夹角。
光源固定时，不同的物体放置位置以及不同的观察角度都会带来视觉上不一样的亮度和色泽变化。
5. 以上图表的测量条件为：
 - 测试涂料：丙烯酸聚酯体系、添加 CAB、低固含量、施工粘度约 20%
 - 空气喷涂，未添加除铝颜料外的其它颜料，外罩清漆
 - 使用分光光度计重点测量亮度最高的 15° 的亮度数值
 - 分光光度计可以记录 L* 值
 - 多数分光光度计可同时计算出随角异色值

Explanations

1. In above chart, 3 indicators of different pigments can be easily referred, i.e. Particle Size, Lightness and Flop.
2. The reflection behaviour of Aluminium Pigments is defined by the flop effect because of directed reflection (L* values)
3. Spectral photometer with 5 or 6 observation angles to determine the light reflection and the colour values of paint
4. Colour perception depends on illumination/viewing geometry which leads to light-dark flop and colour flop.
5. Measuring conditions of above diagram:
 - Paint system: Acrylic, PE, CAB low solid system, application viscosity approx 20%
 - Pneumatic application as pure silver colour, with clear coat
 - Measurement with spectral photometer, emphasize on 15° (most lightest angle with highest value)
 - L* values are taken from the spectral photometer values after measuring the effect
 - Most spectral photometers offer direct output of Flop Index

STAPA®

HYDROMIC N

适用于水性涂料的钝化铝浆

Passivated aluminium grades for waterborne paint system

STAPA® HYDROMIC N 是爱卡向涂料行业当今以及未来越来越高的环保要求所提供的解决方案之一。它采用爱卡领先的水性铝颜料技术生产，可有效增强铝颜料在水性体系中的发气稳定性。HYDROMIC N 所添加的溶剂通用于一般工业漆和汽车漆，且不含 APEO 或重金属，在德国和中国都有生产。如需更多信息欢迎随时查询。

STAPA® HYDROMIC N is one of our answers to the paint industry for environmental demands of today and in future. It is one part of ECKART's leading technology expertise on aluminium pigments for waterborne coatings. HYDROMIC N aluminium grades can reduce gassing tendency in water borne coating to a workable limit. It is APEO free and contains no heavy metals. The used solvent is very much universal for the paint industry such as general industry or automotive coating. HYDROMIC N is a global ECKART product manufactured in Germany and also locally at our production site in China. For more application details and guiding formulation please contact our experts.

STAPA®	颜料含量 Pigment content	溶剂类型 Type of solvents	粒径分布 Particle size distribution 检测仪器 determined with CILAS 1064 D50 近似值 approx. [µm]	颗粒形状 Particle shape	推荐应用 Recommended application
型号 / Type	± 2%				
HYDROMIC N 8620	76	BG	54	银元型 Silver dollar	
HYDROMIC N 8640	76	BG	36	银元型 Silver dollar	
HYDROMIC N 8755	76	BG	23	银元型 Silver dollar	
HYDROMIC N 8765	76	BG	19	银元型 Silver dollar	
HYDROMIC N 8775	76	BG	16	银元型 Silver dollar	
HYDROMIC N 8790	72	BG	12	银元型 Silver dollar	
HYDROMIC N 8150	65	BG	23	玉米片型 Cornflake	
HYDROMIC N 8180	65	BG	15	玉米片型 Cornflake	

BG = 乙二醇丁醚 / Butyl glycol



STAPA®

^(ic) Siltallic

^(ux) Siltallux

^(丽) 色特丽

^(亮) 色特亮

适用于溶剂型涂料的标准铝浆 - 低 PAHS 型号
Standard aluminium pigments for solvent borne paint applications - low PAHS grades

爱卡的低 PAHS 颜料可满足不含芳香烃的体系要求。在该系列颜料的生产过程中，不使用任何含芳香烃的成分，所以它们能够满足如玩具涂料等有特殊法规要求的应用场合。

ECKART low PAHS grades fulfill the requirement for aromatic free grades. During the manufacturing process all aromatic components can be kept out in order to fulfill regulatory demands in these specific application fields. (e.g. toys coating)

STAPA® SILTALLIC® / SILTALLUX®	颜料含量 Pigment content	溶剂类型 Type of solvents	粒径分布 Particle size distribution 检测仪器 determined with CILAS 1064 D50 近似值 approx. [µm]	颗粒形状 Particle shape	推荐应用 Recommended application
型号 / Type	± 2%				
SILTALLUX® 8641	73	TE	36	银元型 Silver dollar	
SILTALLUX® 8766	73	TE	20	银元型 Silver dollar	
SILTALLUX® 8776	73	TE	16	银元型 Silver dollar	
SILTALLUX® 8791	65	TE	12	银元型 Silver dollar	
SILTALLIC® 8151	65	TE	23	玉米片型 Cornflake	
SILTALLIC® 8181	65	TE	15	玉米片型 Cornflake	

TE = Mineral Spirit / 200#溶剂汽油



质量控制及检验方法

Quality Control and Testing Methods

比色

金属涂料的视觉效果很大程度上取决于观察角度和光线条件。条件发生变化，视觉效果也随之变化。可以使用多角度分光测光仪 (BYK-Gardner BYK-mac) 通过比色来测量金属涂料的效果。对效果的评价需要同时考虑不同方面的测量结果，包括白度 L* 值 vs 色强度值 (Chroma C*) 以及红绿轴值 a* vs 黄蓝轴值 b*。测量通常会通过三个角度进行: 25°、45° 和 75°。结果以色彩模型系统如 CIEL*a*b* 或 L*C*h° 来表示。

Colourimetry

The visual appearance of metallic coatings strongly depends on the viewing angle and the light conditions. A spectrophotometer for metallic colours (e.g. BYK-Gardner BYK-mac) helps to colourimetrically measure a metallic coating. The characterisation requires a simultaneous consideration of different measurements, such as brightness L* vs. colour strength (chroma C*), red green value a* vs. yellow blue value b*. For standard products the angles of 25°, 45° and 75° are measured. Subsequently, the results are presented in a colourimetric system, such as CIEL*a*b* or L*C*h°.

质量标准的保证

为了确保品质，不同规格各个批次的爱卡产品都要经过严格的检查，确保其符合各方面的对应质量标准。所有产品的所有批次都要同时符合应用和环保的要求，各产品本身的一致性都要最大化。

Guarantee of Quality Standard

The quality control of the batches is done by means of differential measurement against the defined corresponding standard. It is a precondition that the samples are simultaneously applied in the same coating system and under constant environmental parameters. In doing so, processing related variations of the sample application are minimized.

基于高度的技术能力和丰富的经验，爱卡依据颜料有效期来设立和持续调整每个产品及其不同批号的效果标准。由此，爱卡可以赋予各产品高度的质量稳定性。

With a very high degree of experience and competence ECKART will set and revise standards of each effect (according to the shelf life cycle) of a batch/quality. With this ECKART maintains constant quality of a each product continuously.

质量控制

对金属效果颜料的质量控制，除了要针对其产品技术数据表列举的各项参数数据外，还应针对其光学特性。对颜料本身和对颜料应用效果的检测要区分开来。

对颜料的检测:

- 依据 DIN 53196 和 ASTM 11 进行筛析
- 依据 ISO 13320-1 进行粒径分布的激光测量
- 依据 DIN 55923 测量挥发份和非挥发份含量

对颜料应用效果的检测:

- 金属效果 (随角异色性)
- 白度
- 鲜映度 (DOI)
- 色饱和度
- 着色力
- 遮盖力
- 光亮度
- 闪烁度

另外，对应水性铝浆还采用内部标准程序测试其发气稳定性。

Quality Control

The quality control of metallic effect pigments comprises tests of optical properties – additionally to the quality criteria mentioned in the technical data sheets. A distinction is drawn between the tests of the pigment and on the application.

Tests of the pigment:

- Screen analysis (near-mesh sieving) according to DIN 53196 respectively ASTM 11
- Particle size distribution by laser granulometry according to ISO 13320-1
- Volatile and non-volatile content on the basis of DIN 55923

Tests on the application:

- Metallic effect (flop)
- Brightness
- Distinctiveness of image (DOI)
- Colour saturation
- Tinting strength
- Hiding power
- Measuring of gloss
- Measuring of effect (sparkle)

Aluminium pigment pastes for water-based coating systems are additionally tested on gassing stability according to internal standardized testing procedure.



粒径分布的激光测定

Determination of the Particle Size Distribution by Laser Granulometer

粒径分布 PSD (典型值) 的测定方法根据 ISO 13320-1 标准, 采用激光粒度测定仪测定。

测定结果很大程度上取决于颜料分散的状况。因此, 使用高相容的溶剂并让颜料恰当分散十分关键。为保证分散效果, 应密切关注输入的超声波能量以及颜料和溶剂的比例。如果输入不适当的超声波能量, 颜料可能会因剪切过高而破碎, 也可能会因剪切过低而结聚, 最终造成粒径分布得不到准确测定。

爱卡所使用的详细检验方法 (测试指南) 可来函索取。

The measuring of the particle size distribution PSD (typical value) follows the method of the laser granulometry according to ISO 13320-1.

The measurement is highly dependent on the accuracy of the dispersion of pigment. The usage of a high compatible solvent to disperse and to maintain dispersibility is essential. To achieve good dispersion the energy input and pigment/solvent ration is of high significance. Inappropriate energy intake can either damage pigment (too high shearing) or keep flocculates (too low shearing) and eventually misleads the result of PSD.

A detailed description of the testing method (test instruction) of ECKART can be obtained upon request.

筛网标准对照表

Comparative table of sieving standards

筛网孔径 $\mu\text{m} = w/\text{Mesh aperture in } \mu\text{m} = w$

德国/ Germany	美国/ USA			英国/ Great Britain		法国/ France	荷兰/ Netherlands	
DIN 4188	ASTM E 11	ASTM E 11		BS 410		AFNOR X11-501	NENORM	ISO R-565
w	w	mesh no	Tyler mesh inch	w	mesh	w	w	w
36	-	-	-	-	-	-	38	-
-	38	400	400	38	400	-	-	-
40	-	-	-	-	-	40	45	-
45	45	325	325	45	350	-	-	45
50	-	-	-	-	-	50	53	-
-	53	270	-	53	300	-	-	-
56	-	-	-	-	-	-	63	-
63	63	230	250	63	240	63	-	63
71	-	-	-	-	-	-	75	-
-	75	200	200	75	200	-	-	-
80	-	-	-	-	-	80	-	-
90	90	170	170	90	170	-	90	90
100	-	-	-	-	-	100	-	-
112	106	140	150	106	150	-	106	-
125	125	120	120	125	120	125	125	125
140	-	-	-	-	-	-	-	-
-	150	100	100	150	100	-	150	-
160	-	-	-	-	-	160	-	-
180	180	80	80	180	85	-	180	180
200	-	-	-	-	-	200	-	-
224	212	70	70	212	72	-	212	-
250	250	60	60	250	60	250	250	250
280	-	-	-	-	-	-	-	-
-	300	50	48	300	52	-	300	-
315	-	-	-	-	-	315	-	-
355	355	45	42	355	44	-	355	355
400	-	-	-	-	-	400	-	-
450	425	40	35	425	36	-	425	-
500	500	35	32	500	30	500	500	500
560	-	-	-	-	-	-	-	-
-	600	30	28	600	25	-	600	-
630	-	-	-	-	-	630	-	-
710	710	25	24	710	22	-	710	710
800	-	-	-	-	-	800	-	-
-	850	20	20	850	18	-	850	-
900	-	-	-	-	-	-	-	-
1000	1000	18	16	1000	16	1000	1000	1000
-	1180	16	14	-	-	-	-	-
-	-	-	-	-	-	-	1200	-
-	-	-	-	-	-	1250	-	-
1400	1400	14	12	1400	12	-	1400	1400
-	-	-	-	-	-	1600	-	-
-	1700	12	10	1700	10	-	-	-
2000	2000	10	9	2000	8	-	-	2000



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谨致友好问候
With compliments

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