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STAPA® 用于水性涂料的铝浆
Aluminium Pastes for Aqueous Coating Systems
技术资料 / *Technical Information*

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序言

Introduction

环境的持续和效率都是爱卡优先考虑的要素。为此，我们一直不遗余力地开发适用于水性涂料体系的特殊效果颜料。

爱卡所开发的

STAPA® HYDROLAN
STAPA® HYDROLAN S
STAPA® HFG
STAPA® HP Z
STAPA® HYDROMIC
STAPA® HYDROXAL E
HYDRO PELLETS
HYDROSHINE

系列片状颜料铝浆，无论浮型还是非浮型，无论经过何种稳定化处理，都是为了客户的高标准而生。它们不但可在水中分散，还可被配制成针对各种不同应用场合，耐发气并可保存的水性金属涂料。

STAPA® HFG，则是食品级的水性铝浆。该产品不含 PAH，符合欧洲各项关于食品接触的安全规范，也通过了 FDA 认证。

HYDRO PELLETS 是一款适用于水性涂料体系的条状铝颜料。它们无尘，容易处理和添加，并易于分散，可提高涂料生产效率。

新型的 HYDROSHINE 系列，更是划时代的高亮度水性铝浆分散体。该系列以最先进的 PVD (物理真空沉降) 颜料为基材，可产生类似于镜面反射的引人外观，以满足不同设计方案的需求。

Environmental sustainability and efficiency are both of very high priority for ECKART. This is proven by our constant innovations in the field of effect pigments for waterbased coatings systems.

ECKART developed with the products

*STAPA® HYDROLAN
STAPA® HYDROLAN S
STAPA® HFG
STAPA® HP Z
STAPA® HYDROMIC
STAPA® HYDROXAL E
HYDRO PELLETS
HYDROSHINE*

Flake-shaped, “leafing” and “non-leafing” aluminium pigment pastes, that were stabilized in various different processing steps, in order to meet our customers’ highest demands. These pigments are not only water dispersable, but they also allow the formulation of gassing resistant and storable aqueous metallic lacquers based on aluminium pigments for various fields of application.

STAPA® HFG, stands for Hydro Food Grade. The pigments are PAH free and compliant with various European standards regarding food contact. STAPA® HFG has also been approved by the FDA.

Under the product name HYDRO PELLETS, ECKART offers aluminium pellets for water-borne coating systems. The usage of aluminium pellets makes the dispersion process easy, increases manufacturing efficiency and provides easy handling and dust-free dosage.

With the product HYDROSHINE, ECKART offers highly brilliant effect pigment dispersions for waterborne coatings. HYDROSHINE is based on the most advanced PVD aluminium pigments. PVD pigments allow the realization of unique mirror-like effects that offer manifold design options. They are produced in a special PVD (Physical Vapour Deposition) process which guarantees their captivating optical appearance.

操作指南

Direction for processing

水性铝浆的使用方式与传统铝浆大致相同。为了达到理想的分散效果并充分展现包括白度、金属感、遮盖力、着色力、鲜映度 (DOI) 及随角异色性的的各种金属颜料的特性，我们建议以 1:1 或 1:2 的比例把铝浆预先分散在适当的溶剂，即水、乙二醇丁醚、丙二醇甲醚或异丙醇当中。

同时，建议把溶剂逐渐加到铝颜料浆中，并不断搅拌。添加溶剂之后，可以继续搅拌该混合浆，以确保完全分散。此外，如果在使用前先把颜料/溶剂混合浆放置一段时间，可能可以获得更理想的效果。需要注意的是，搅拌叶应尽量靠近调浆桶的底部，以保证颜料浆完全分散。搅拌叶的直径应为调浆桶直径的 1/2 到 3/4。

推荐工序如下：
– 先把铝颜料添加至调浆桶中，然后添加溶剂，必要时添加润湿剂
– 完全搅拌后，检查是否有未分散的颜料存在
– 彻底搅拌后，可添加配方中的其它成分

添加适当的润湿剂或分散剂可获得更理想的分散效果。

铝浆可与多种阴离子、阳离子与非离子乳化剂相容。

When using our aluminium pigment pastes for aqueous systems the same general recommendations apply as for conventional aluminium pastes. To achieve the optimum pigment dispersion and develop the full potential characteristics of the metallic pigment, i.e. – brightness, brilliance, coverage and tinting strength, distinctiveness of image (DOI), flop (two tone) we recommend predispersing the aluminium pigment paste in suitable solvents, i.e. – water, butyl glycol, methoxypropanol, isopropanol in a proportion 1:1 or 1:2.

At the same time it is recommended to gradually add the solvent to the aluminium pigment paste whilst stirring constantly. Upon completion of the solvent addition, the slurry may be stirred more thoroughly to ensure complete dispersion. In addition, some benefits may be observed upon holding the pigment/solvent slurry for a period of time before any further processing is done. Please note the mixing blade should be close to the bottom of the mixing vessel in order to ensure complete dispersion of the pigment paste. The diameter of the mixing blade should be 1/2 to 3/4 the diameter of the mixing vessel.

Following is a recommended procedure:
– *First add the aluminium pigment to the mixing vessel, then add solvent and if necessary – a wetting agent*
– *After thorough mixing, check for any undispersed pigment*
– *After thorough mixing has been achieved, other formulation components may be added.*

Addition of suitable wetting or dispersing agent can be beneficial.

Aluminium pigment pastes are compatible with a variety of anionic, cationic and nonionic emulsifiers.

说明 Info

右列助剂在不同的树脂体系中已通过测试。
所列并不包括所有适用助剂，但可作为初始试验时的指引。

- Disperbyk 192
- Byk 011
- Byk 347
- Aquatix 8421
- Additol XL 250

The following products have been successfully tested in different binder systems and found to be suitable (This list does not claim to be complete but can be used as a guide for initial tests.):

无论是在溶剂型还是水性涂料体系中，都应该避免使用过高的剪切力而导致过高的机械应力。高剪切力可能导致片状颜料的变形和碎裂。颜料的损坏会直接影响外观特性、发气稳定性和最终产品的储存稳定性。

因此我们建议使用低剪切力的搅拌叶，并根据调浆桶的尺寸来调节搅拌叶的直径（见前述）。建议的搅拌速度为 500–800 rpm。此外，影响铝颜料涂料表现的因素还有 pH 值以及用于调整 pH 值的添加剂。它们都会影响产品的储存期限和发气稳定性。

根据我们的经验，当涂料的 pH 值介于 5–8 时，下列颜料都有令人满意的稳定性。

STAPA® HYDROXAL E,
STAPA® HYDROMIC,
STAPA® HYDROLAN

然而，以上的限制仍取决于所使用的树脂体系。因此无论是在生产还是开发过程中，测试和控制发气都非常重要（详见附录中的测试方法“沸腾试验”和“40°C试验”。

任何情况下，在与颜料预分散浆混合之前，树脂体系都应调节至正确的pH值。当选择适合的添加剂，如氢氧化铵（氨水）、TEA、DMEA、AMP 90、TMEA 等调节 pH 值时，应注意在发气稳定性上，氢氧化铵（氨水）或 TEA 会比 DMEA 或 AMP 90 带来更大的不良影响。

In both solvent and waterborne coating systems, extensive mechanical stress due to high shear forces should be avoided. High shear may result in deforming and/or fracturing of the pigment particles. This damage will reduce the optical properties, gassing stability and overall shelf life of the product.

Low shear mixing blades are recommended, their diameters have to be adjusted to the size of the mixing vessel (see above). Suggested mixing speed for dissolver blades is 500 –800 rpm. Other parameters determining the performance of the aluminium pigmented coating material are the pH-value and the additives for adjustment of the pH-value in the coating material that influence shelf life and gassing stability.

According to our own experience, coatings with a pH-range between 5–8 can be produced with sufficient stability by using

*STAPA® HYDROXAL E,
STAPA® HYDROMIC and
STAPA® HYDROLAN types.*

However these limits are dependent on the binder system used and therefore testing and control of gassing is very important in both development and manufacture (the testing methods “boiling test” and “40°C test” are described in the annex).

In all cases the binder system has to be adjusted to the correct pH-value before blending with the aluminium paste slurry. When choosing suitable additives for the adjustment of the pH-value such as Ammonium Hydroxide, TEA, DMEA, AMP 90, TMEA and others, it should be considered that products like Ammonia or TEA have a more disadvantageous influence on the gassing stability than e.g. DMEA or AMP 90.

STAPA®

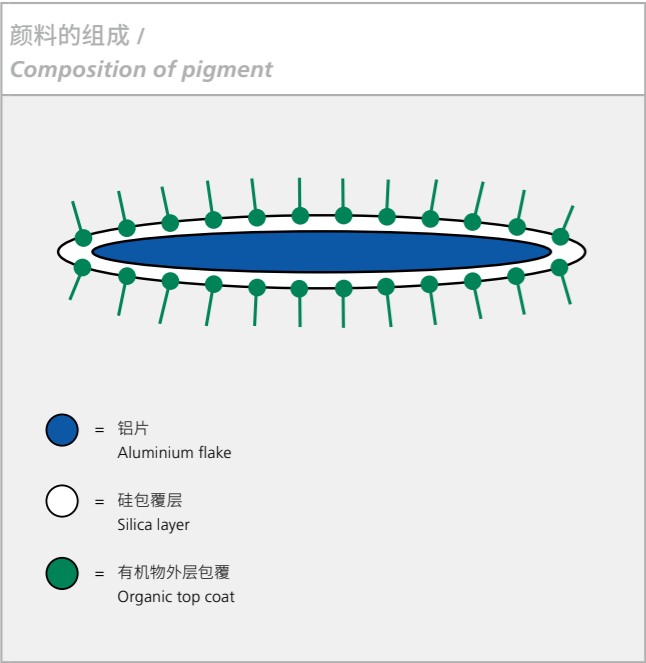
STAPA® HYDROLAN
STAPA® HYDROLAN

耐分解性
这种夹心结构的硅包覆片状铝颜料能有效防止分解。通过搅拌试验 (韦林搅切试验*) 模拟机械应力, 根据 20 °C 时 L 值的变化, 颜料的耐剪切稳定性分为三级 (CIELAB):

- ΔL < 5: 无分解
- ΔL = 5–10: 部分分解
- ΔL > 10: 分解

耐候和防紫外线性能
与普通铝颜料相当。

储存稳定性
新型的硅包覆铝颜料, 在室温下的储存稳定期为 24 个月。



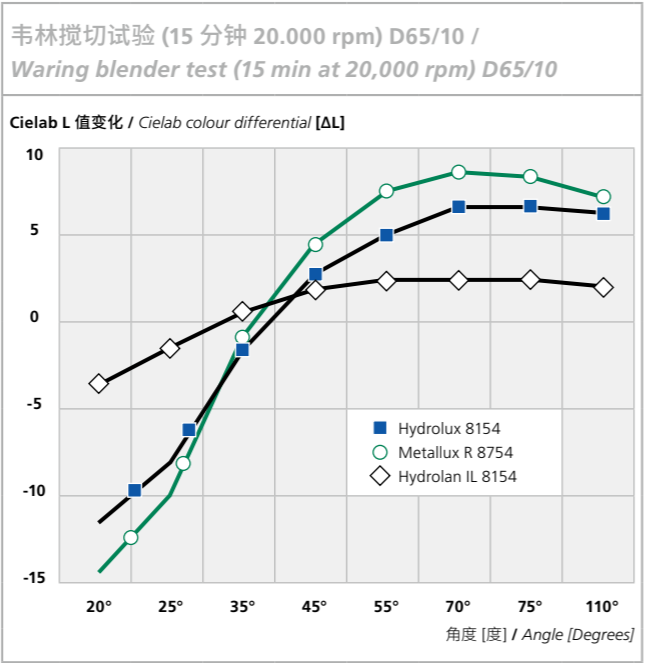
* 韦林搅切试验: 对涂料体系里的特殊效果颜料的耐剪切性能的一种模拟测试。这种测试方式原本由位于美国的汽车整车厂商设立, 可以较快地对比不同铝颜料大体的耐剪切性能。

Degradation resistance
The sandwich type structure of the silica encapsulated aluminium-flakes provides aluminium pigments with a high resistance to degradation. Simulation of the mechanical stress is afforded by means of a “Waring Blender Test”*. The shear stability of the pigments is divided into three levels, depending on the L values at 20°C (CIELAB):

- ΔL < 5: non degrading
- ΔL = 5–10: semi degrading
- ΔL > 10: degrading

Weathering and UV resistance
Comparable to untreated aluminium pigments.

Storage stability
Storage stability (at room temperature) of the silica coated aluminium flake type is 24 months.



* Waring Blender Test: A method to simulate the degradation resistance of effect pigment lacquers. The test, originally developed by an US located OEM manufacturer, allows comparisons of degradation resistance trends within short testing periods.

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STAPA® HYDROLAN
STAPA® HYDROLAN

HYDROLAN 是一种经过硅包覆处理的片状铝颜料, 在水性涂料中具有长久的稳定性。这种新型铝颜料, 通过不含重金属的稳定化工艺, 能够提供可与铬酸稳定处理颜料相媲美的发气稳定性和光学效果。该系列具有高金属感, 于高剪切力下不易分解, 而且在稳定化处理中, 没有使用重金属化合物。

HYDROLAN is a silica encapsulated aluminium flake with long term stability in waterbased coatings. This heavy-metal-free stabilisation technology guarantees gassing stability and optical properties comparable to chromate passivated pigment types. The pigments are organically modified at their surface. They show high brilliance, whilst no degradation under high shear stress is observed. The product is stabilised without using a heavy metal compound.

We offer the following product portfolio:

STAPA® IL HYDROLAN	固体份(颜料)/ Non volatile content (pigment)		挥发份(溶剂)/ Volatile content (solvents)		有机溶剂湿法筛析/Nasssiebung mit organischen Lösemitteln als Spülflüssigkeit/ Screen analysis/Wet sieving with organic solvents as rinsing liquid			粒径分布/ Particle size distribution		
	根据标准/acc. to DIN 55923 ± 2%		根据标准/acc. to DIN 55923 ± 2%		根据标准/acc. to DIN 53196			检验仪器/determined with HELOS**		
	铝 Aluminium %	包覆量 Coating	%		<71 µm 不低于 min. %	<63 µm	<40 µm	D10 约/approx. [µm]	D50	D90
型号/Type										
212	61	4	35		99,5	–	–	30	55	82
214	61	4	35		–	99,9	–	20	36	56
2153	61	4	35		–	–	99,9	15	26	40
2154	56	4	40		–	–	99,9	11	21	35
2156	56	4	40		–	–	99,9	10	20	33
2192	55	5	40		–	–	99,9	8	16	28
2197	57	3	40		–	–	99,9	6	13	26
3580	52	3	45		–	–	99,9	8	14	22
3590	47	3	50		–	–	99,9	7	13	21
1540	61	4	35		–	–	99,8	14	26	45
1560	56	4	40		–	–	99,9	9	17	29
1580	56	4	40		–	–	99,9	6	12	21
161	54	6	40		–	99,9	–	12	28	50
501	53	7	40		–	99,9	–	11	27	49
701	55	5	40		–	99,9	–	7	20	41
801	54	6	40		–	99,9	–	6	18	36
8154	54	6	40		–	–	99,9	10	22	37
9157	53	7	40		–	–	99,9	10	23	39
9160	56	4	40		–	99,9	–	5	14	28
9165	54	6	40		–	99,9	–	5	14	28

STAPA® IL HYDROLAN 水性铝浆含有异丙醇 / STAPA® IL HYDROLAN pastes contain isopropanol
更多型号可按需生产 / Further products upon request

* 参阅第18页 / See page 18

STAPA®

STAPA® HYDROLAN S
适用于水性涂料的硅包覆铝颜料
STAPA® HYDROLAN S Series
Silica-Encapsulated Aluminium Pigments for Water-Based Coatings

STAPA® HYDROLAN S 以 SILVERSHINE S 为基础，是一款特意为水性体系开发的银元型产品。该系列颜料颗粒极薄，加以透明均匀的硅包覆，且不含重金属。

STAPA® HYDROLAN S 的定位介于传统银元型和 PVD 颜料之间。由于粒径分布狭窄，可带来镀铬般的明亮效果。另外在性能上，STAPA® HYDROLAN S 具有极强的遮盖力、优异的发气稳定性以及高度的耐剪切能力。

The STAPA® HYDROLAN S series consists of the extremely thin silver-dollar pigments of the SILVERSHINE S series. STAPA® HYDROLAN S was developed especially for water-based coatings systems. A new heavy-metal-free stabilization procedure encapsulated conventional aluminium pigments with a transparent and homogeneous silica layer.

STAPA® HYDROLAN S closes the gap between conventional silver-dollars and PVD pigments: The narrow particle size distribution results in a very bright, chrome-like appearance. From a functional point of view, STAPA® HYDROLAN S convinces with its extremely strong hiding power, an excellent gassing stability and a high shear stability.

STAPA® HYDROLAN S		固体份/ Non volatile content	粒径分布 / Particle size distribution 检验仪器 / determined with HELOS*			溶剂/ Solvent
型号/Grade		%	约 / approx.[µm] D10 D50 D90			
412		50	8	14	22	异丙醇 / Iso-propanol
415		65	10	19	32	异丙醇 / Iso-propanol
418		60	12	22	38	异丙醇 / Iso-propanol
422		60	14	26	45	异丙醇 / Iso-propanol
1100		50	5	9	13	异丙醇 / Iso-propanol
1500		20	8	14	23	异丙醇 / Iso-propanol
2100		60	11	20	32	异丙醇 / Iso-propanol

更多型号可按需生产 / Further products upon request
* 参阅第18页 / See page 18

STAPA®

STAPA® HFG – 水性食品级
适用于和食品直接接触的水性涂料
STAPA® HFG – Hydro Food Grade
Waterborne Coatings for the Direct Contact with Food

STAPA® HFG 是一系列独特的创新型铝颜料，它们经过特殊的包覆和稳定化处理，适用于和食品直接接触的水性涂料。名称的三个字母 HFG 表示水性食品级。

STAPA® HFG 不含 PAH，符合欧洲各项关于食品接触的规范和法例，同时也通过或符合：

- FDA 认证 175.300
- 欧洲玩具标准 EN 71-3 (自 Nov. 2002)

因此，STAPA® HFG 完美适用于玩具、包装、罐听涂料和厨煮用具涂料。该水性涂料方案可带来从柔和，到灰相，再到高闪烁的各种出众外观。

STAPA® HFG is a worldwide unique product innovation for water-borne coatings in the field of applications with direct food contact. HFG means Hydro Food Grade. The aluminium pigments used for this product are specially coated and stabilized.

STAPA® HFG is PAH free and compliant with various European standards regarding food contact. Amongst others, STAPA® HFG is in accordance with:

- FDA approval 175.300
- European standard for toys EN-71-3 (as of Nov. 2002)

For this reason, STAPA® HFG is perfectly suited for applications such as toys, packagings, can coatings or for the coating of cook-ware. This water-based product solution provides the desired expressive optics for your application: from a soft, greyish shade to high-sparkling effects.

STAPA® HFG		固体份(颜料) / Non volatile content (pigment), 根据标准/acc. to DIN 55923 + 2%, in %		有机溶剂湿法筛析/ Screen analysis/Wet sieving with organic solvents as rinsing liquid 根据标准/acc. to DIN 53196		粒径分布 / Particle size distribution 检验仪器 / determined with HELOS* 约/approx.[µm] D10 D50 D90			效果 / Effect
				< 71 µm	< 63 µm				
				不低于 min. %		约 / approx. [µm]			
212	65		99,5		–	30	55	82	高闪烁 / Very sparkling
214	65		–		99,9	23	39	63	闪烁 / Sparkling
501	60		–		99,9	11	27	49	高金属感 / Brilliant
801	60		-		99,9	9	22	41	丝光, 亮 / Silky gloss, bright

更多型号可按需生产 / Further products upon request

STAPA®

STAPA® HP Z

STAPA® HP Z

STAPA® HP Z 系列是爱卡新推出的包覆型铝浆颜料，可用于液体涂料和印刷油墨，并同时适用于水性体系和溶剂型体系。

STAPA® HP Z is a product series of encapsulated Aluminium pigments for the coating and printing industries and can be applied in either water-based or solvent-based formulations.

STAPA® HP Z	固体份(颜料)/ Non volatile content (pigment)	溶剂类型 Type of Solvents	粒径分布/ Particle size distribution * D50 [µm] 近似值 approx.	颜料类型 Pigment Type
型号 / Type	根据标准/acc. to DIN 55923 ± 2% %			
3405 IL	65	异丙醇 / Iso-propyl Alcohol	34	Silver Dollar / 银元型
2600 IL	60	异丙醇 / Iso-propyl Alcohol	26	Cornflake / 玉米片型
2505 IL	65	异丙醇 / Iso-propyl Alcohol	25	Silver Dollar / 银元型
1805 IL	60	异丙醇 / Iso-propyl Alcohol	18	Silver Dollar / 银元型
1405 IL	60	异丙醇 / Iso-propyl Alcohol	15	Silver Dollar / 银元型
1400 IL	60	异丙醇 / Iso-propyl Alcohol	14	Cornflake / 玉米片型
1205 IL	45	异丙醇 / Iso-propyl Alcohol	12	Silver Dollar / 银元型
1005 IL	45	异丙醇 / Iso-propyl Alcohol	10	Silver Dollar / 银元型

* 参阅第18页 / See page 18

STAPA®

STAPA® HYDROMIC

STAPA® HYDROMIC

STAPA® HYDROMIC 是新推出的水性铝浆系列。它们的稳定化处理通过添加剂完成，不含APEO。此外，该系列不含水，因而适合空运。

STAPA® HYDROMIC - as the most current product development - enriches the portfolio of effect pigments for water-based coatings systems.

The pigments of the STAPA® HYDROMIC product series are additive-stabilized and free of APEO. In addition, they do not contain water and are thus ideally suited for air freight.

STAPA® HYDROMIC	固体份(颜料)/ Non volatile content (pigment)	挥发份(溶剂)/ Volatile content (solvents)	溶剂类型/ Type of sol- vents	有机溶剂湿法筛析/ Screen analysis/Wet sieving with organic solvents as rinsing liquid			粒径分布/ Particle size distribution	比重(典型值)/ Specific gravity (typical value)
	根据标准/acc. to DIN 55923 ± 2%	根据标准/acc. to DIN 55923 ± 2%		根据标准/acc. to DIN 53196			检验仪器/ determined with HELOS**	根据标准/ acc. to DIN 53217
型号/Type	%	%	*	<63 µm µm 不低于min. %	<40 µm	<25	D50 约/approx. [µm]	约/approx. g/cm³
Cornflakes 玉米片型								
161	65	35	TE / BG	–	98,5	–	28	1,5
501	65	35	TE / BG	–	99,0	–	26	1,5
618	65	35	TE / BG	–	–	99,9	14	1,5
801	65	35	TE / BG	–	99,9	–	18	1,5
8154	65	35	TE / BG	–	–	99,9	22	1,5
9160	65	35	TE / BG	–	99,5	–	15	1,5
Silverdollars 银元型								
212				99,8	–	–	53	1,6
214	70	30	TE / BG	–	98,5	–	36	1,6
2153	70	30	TE / BG	–	–	99,5	26	1,6
2154	70	30	TE / BG	–	–	99,5	21	1,6
2156	70	30	TE / BG	–	–	99,5	19	1,6
2192	70	30	TE / BG	–	–	99,0	17	1,6
2197	65	35	TE / BG	–	–	99,5	10	1,5

更多型号可按需生产 / Further products upon request

* BG = 乙二醇丁醚 / Butyl glycol, TE = 200#溶剂汽油 / Mineral Spirit

** 参阅第18页 / See page 18

STAPA® HYDROXAL E / STAPA® HYDROXAL E Seed

STAPA® HYDROXAL E / STAPA® HYDROXAL E Seed

HYDROXAL 全新的 E 和 E Seed 系列不含 APEO, 可满足最新的法规和行业标准要求。

HYDROXAL E 内含杀菌剂, 可防止水性颜料浆受真菌侵袭。

HYDROXAL E Seed 不含杀菌剂, 符合种衣剂的各项法规限值要求。

HYDROXAL DC 和 HYDROXAL M 同样不含 APEO, 特别适合装饰性涂料及印刷油墨使用。

The new E and E Seed series are free of APEO and meet the latest regulatory and technology standards.

HYDROXAL E types contain a biocide to prevent the water-containing pastes from fungal attack.

The two special HYDROXAL E Seed types are free from biocides - following the regulatory limits in the field of seed coatings.

Additionally available are water containing HYDROXAL DC and HYDROXAL M, which are as well APEO free and most suitable for use in decorative paints and for printing purposes.

STAPA® HYDROXAL E 不含 APEO / APEO free	固体份(颜料)/ Non volatile content (pigment)	溶剂类型/ Type of solvents			粒径分布/ Particle size distribution		
	根据标准/acc. to DIN 55923 ± 2 %				检验仪器/ determined with HELOS***		
型号/Type	%	*	颗粒形状/ Particle shape	漂浮特性/ Leafing property	D10 约/approx. [µm]	D50	D90
E 211	70	W	银元型/Silverdollar	非浮/Non Leafing	n.s.**	80 (n.s.**)	n.s.**
E 212	70	W	银元型/Silverdollar	非浮/Non Leafing	30	54	83
E 214	80	W	银元型/Silverdollar	非浮/Non Leafing	20	35	54
E 161	65	W	玉米片型/Cornflake	非浮/Non Leafing	13	29	49
E 601	65	W	玉米片型/Cornflake	非浮/Non Leafing	8	23	44
E 801	65	W	玉米片型/Cornflake	非浮/Non Leafing	6	18	35
E 2 n.l.	65	W	玉米片型/Cornflake	非浮/Non Leafing	n.s.**	26	n.s.**
E 4 n.l.	65	W	玉米片型/Cornflake	非浮/Non Leafing	n.s.**	17	n.s.**
种衣剂级不含杀菌剂 / SEED Grades without biocide							
E 4 Seed	65	W	玉米片型/Cornflake	浮型/Leafing	6	20	47
E 8 Seed	65	W	玉米片型/Cornflake	浮型/Leafing	6	15	31

* W = 水 / Water

** 未标明 / not specified

*** 参阅第18页 / See page 18

HYDRO PELLETS

安全环保的条状铝颜料

HYDRO PELLETS

For Safe and Sustainable Silver

创新性的 HYDRO PELLETS 铝颜料可以同时提升生产效率和产品的环保性。该产品不含 VOC, 可安全操作, 易于分散且添加时可自动计量。

HYDRO PELLETS 可用于水性墙面漆和工业漆体系, 不含杀菌剂或甲醛, 依据 GHS, 不属于危险品。

The innovative HYDRO PELLETS silver pigments step up business efficiency and increase sustainability at the same time. Dosed automatically, the VOC free product allows safe handling and disperses easily.

It can be employed in waterborne systems for wall paints and industrial coatings. HYDRO PELLETS does not contain biocides or formaldehyde. As a result, it is classified as not dangerous according to GHS.

HYDRO PELLETS	固体份(颜料) / Non volatile content (pigment),	颗粒形状/ Particle shape	粒径分布 / Particle size distribution
	根据标准/acc. to DIN 55923		检验仪器 / determined with HELOS*
	+ 2 %, in %		约/approx.[µm]
型号/Grade			D50
5000	100	银元型 / Silverdollar	55
3500	100	银元型 / Silverdollar	33
2600	100	玉米花型 / Cornflake	27
1800	100	玉米花型 / Cornflake	19
1700	100	银元型 / Silverdollar	17
1500	100	银元型 / Silverdollar	15
1300	100	银元型 / Silverdollar	13
1200	100	银元型 / Silverdollar	12
1000	100	玉米花型 / Cornflake	10



适用于水性涂料的超亮颜料分散体

Ultra Brilliant Effect Pigment Dispersions for Waterborne Coatings

HYDROSHINE 是最先进 PVD 铝颜料为基础的水性颜料分散体，具有极高的金属感。为了满足客户对于发气稳定性、耐潮湿以及高亮度性能的特定需求，爱卡提供了不同的技术选择。

HYDROSHINE 产品系列包括：

添加剂型：

HYDROSHINE WS 1000 系列
可以不同溶剂版本供应
HYDROSHINE WS 4021
经钝化处理的暗调镀铬效果

无重金属包覆型：

HYDROSHINE WS 3000 系列
高耐化学和耐水解性能，高亮镀铬效果
HYDROSHINE WS 4001
HYDROSHINE WS 系列中最暗的色调，具有高随角异色性和出众的耐化学性

依据所要获得的效果，典型的颜料添加量介于 0.5 % 到 1.5 % 之间 (以颜料固含计)。颜料树脂比应为 1:5 到 1:10。

HYDROSHINE is a highly brilliant effect pigment dispersion for waterborne coatings based on the most advanced PVD aluminium pigments. ECKART offers a choice of different technologies to meet customers' specific demands for gassing stability, humidity resistance and optical performance.

The following HYDROSHINE series are available:

Additive-stabilized pigments:

HYDROSHINE WS 1000 series
Pigments available in different solvents.
HYDROSHINE WS 4021
Passivated pigment for dark, chrome-like effects.

Pigments with heavy-metal-free encapsulation:

HYDROSHINE WS 3000 series
High chemical and hydrolysis resistance. Highly brilliant chrome-like effects.
HYDROSHINE WS 4001
Darkest pigment within the HYDROSHINE WS portfolio, pronounced flop. Outstanding chemical resistance.

Depending on the desired effect the typical pigmentation will vary between 0.5 % and 1.5 % (solid content of aluminium pigment). The pigment to binder ratio should be between 1:5 to 1:10.

HYDROSHINE	颜料含量/ Pigment content %	粒径分布/ Particle Size Distribution D50 约 / approx. [µm]	溶剂/ Solvent	特点/ Properties
型号/Grade				
添加剂稳定型 / Additive-stabilized pigments				
WS 1011	23	12	异丙醇 / Iso-propanol	高金属感 / Highly brilliant
WS 4021	10	10	乙二醇丁醚 / Butyl glycol	暗调镀铬效果 / Dark chrome-like effect
无重金属包覆型 / Heavy-metal-free encapsulation				
WS 3001	10	11	异丙醇 / Iso-propanol	极高化学耐性和发气稳定性 / Very high chemical resistance and gassing stability
WS 3003	10	11	异丙醇 / Iso-propanol	卓越光学效果 / Excellent optical effects
WS 3004	10	11	异丙醇 / Iso-propanol	最高化学耐性，优秀层间结合力 / Highest chemical resitance, very good intercoat adhesion
WS 4001	10	10	丙二醇甲醚 / Methoxy-propanol	极暗调，高化学耐性 / Extremely dark pigment. High chemical resistance
WS 4140	10	14	异丙醇 - 乙二醇丁醚 / Iso-propanol-Butyl glycol	很高金属感及化学耐性 / Very high brilliance and chemical resistant

质量控制 / 测试方式

Quality control / Testing methods

STAPA®/STANDART® 系列金属颜料除了按照产品规格说明书里的各个项目进行常规的产品质量检验外，还要经过全面的光学性能检测。

按照规程，以下检测必须进行：

- 对颜料本身的检测
- 对应用性能的检验

对颜料本身的质量检测包括：

- 筛析（限值以内粒径的筛选）
根据标准 DIN 53196 或 ASTM 11
- 使用激光粒径检测器对粒径分布进行检测
检测方式依据 ISO 13320-1

对于所有浆状颜料的附加检测

- 挥发份或非挥发份的检测
根据标准 DIN 55923

对于水性铝浆的附加检测

- 发气稳定性测试 (暂无国际标准)

对应用上的涂料的光学性能的检测

- （目视检测和/或仪器检测）包括：
- 金属效果（随角异色性）
 - 亮度
 - 金属感
 - 鲜映度 (DOI)
 - 色饱和度
 - 着色力
 - 遮盖力



In addition to determining the quality criteria specified in the data sheets, the quality control applied in connection with the STAPA®/STANDART® metal pigments comprises comprehensive testing of optical aspects.

As a rule, the following tests are carried out:

- Tests on the pigment, and
- tests in the application.

The quality characteristics determined directly on the pigment are as follows:

- Sieve analysis (limit size particle sieving) according to DIN 53196 or ASTM 11
- Particle size distribution according to the laser granulometer method ISO 13320-1

In addition, for all pastes

- Volatile or non-volatile content in accordance with DIN 55923

In addition, for aluminium pastes for aqueous systems

- Gassing stability (not standardized)

The tests for the optical quality characteristics of a paint application (visual and/or instrumental) include the following:

- metallic effect (flop)
- brightness
- brilliance
- distinctiveness of image (DOI)
- color saturation
- tinting strength
- covering capacity

沸腾试验爱卡测试方式

 Boiling test ECKART test methods

沸腾试验简介

该试验是一种检测铝颜料在水中的发气稳定性的测试方法。测试过程为测量 1克 铝（固体份）在液体（主要是水，详见下面试验方法）沸腾温度下，释出 400ml 氢气所需要的时间。

试验方法

附图为试验的原理图，上面列有所需的设备清单。

1. 将 150ml 的去离子水在烧瓶 c 内加热到沸点（保持回流）。
2. 将 1 克铝（如果是铝浆，则须考虑颜料的固体份）分散于乙二醇丁醚内，得到 10 克分散液。
3. 调整水准瓶 g 使滴定管 f 中的液面位于上标 h 位置。
4. 将铝颜料分散液添加至瓶 c 中，然后合紧。记录开始时间。
5. 为避免氢气释放而导致仪器内压力过高，应当通过向下移动水准瓶 g 以调节密封液的液位。当密封液的液位到达下标 i 时，记录结束时间。（我们使用磁性浮阀和独立的时间记录器）
6. 关闭磁性搅拌器 a 和加热器 b 的电源，然后打开滴管 d。

Brief description of the boiling test

This test is a method to measure the gassing stability of aluminium pigments in water. Being measured is the time during which 1 g of aluminium (solid) produces 400 ml hydrogen at the temperature of the boiling liquid (mainly water, see below).

Test method

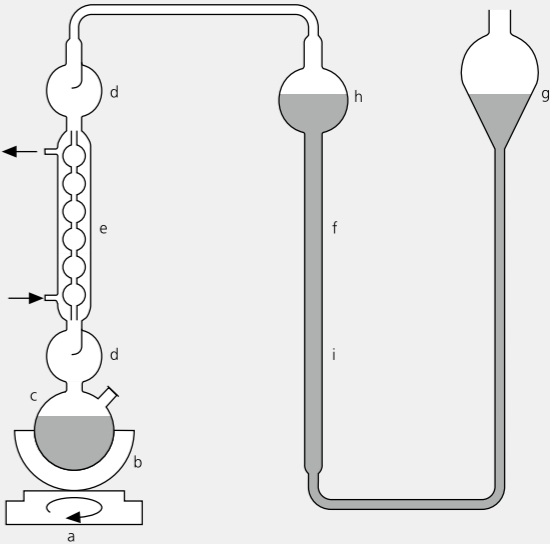
Attached is a schematic drawing of the apparatus with a list of the necessary equipment.

1. 150 ml of dem. water is heated to boiling point (under reflux) in flask c.
2. 1 g of aluminium as powder or paste (if using an aluminium-paste the non volatile content is to be considered) is dispersed in butyl glycol to get 10 g dispersion.
3. Adjust the level of the sealing liquid in burette f with the leveling bottle g to the upper mark h.
4. Add the aluminium dispersion to flask c and reclose tightly. Note time.
5. To avoid an over pressure in the apparatus by the hydrogen evolution, the level of the sealing liquid in g and f should be adjusted by moving the leveling bottle g down. When the level of the equalized sealing liquid reaches the lower mark i; note time again. (We are using a magnetic float valve and a time recorder to be time-independent).
6. Switch off magnetic mixer a and heater b and open drip tube d.

沸腾试验，爱卡检测方法

Boiling test ECKART test methods

- | | |
|---------------------------|-------------------------------------------------------|
| a) 磁性搅拌器 | a) magnetic mixer |
| b) 加热器 | b) heater |
| c) 250 ml 烧瓶（两个收缩瓶颈） | c) 250 ml flask (two necked) |
| d) 滴管 | d) drip tube |
| e) 回流冷凝器 | e) refluxer |
| f) 400 ml 带有密封液体的滴定管（有色水） | f) 400 ml burette with sealing liquid (colored water) |
| g) 平液水准瓶 | g) leveling bottle |
| h) 上标 | h) upper mark |
| i) 下标 | i) lower mark |



使用激光粒径测定仪测定粒径分布

Determination of particle size distribution with laser granulometer

粒径分布（典型值）的测定方式依据 ISO 13320-1。

测量的结果除了与仪器的硬件（制造商和类型）和软件（计算机程序、设备等）有关外，还和下列因素密切相关：

- 分散方法
- 分散设备
- 分散介质
- 分散能量
- 分散时间

检测时的标准分散方法利用超声波进行。可以在内置的超声波槽内，或者更好是在外置的超声波槽中制备颜料。

超声波频率越高，或在分散容器中的能量越大，颜料就越显“细”。这是因为更多的超细颗粒被分散开来。当超声波能量极高时，原来的颜料颗粒会碎裂，形成超细的颗粒。

分散时间的影响可由 D50 这一中央值反映出来。分散时间越长，该值越低，即颜料的外观越细。

与分散能量和分散时间相比，分散介质的作用较小一些；常用于质量控制（QC）的介质是异丙醇。若使用其它溶剂，应事先检查一下装置的材质是否适应。

爱卡使用的详细检验方法（测试指南）可来函索取。

The measurement of the particle size distribution (typical value), is standardised according to ISO 13320-1.

Besides hardware (equipment manufacturer and type) and software (computer program and plotting device), the results of the laser granulometer are highly dependent on the following parameters:

- way of dispersion
- dispersing devise
- dispersing medium
- dispersion energy
- dispersion time

The standard dispersion method applied to the specimen is by ultrasound. One can either use the built-in ultrasonic bath or preferably the specimen can be prepared in an external ultrasonic dispersion bath.

The higher the ultrasound frequency or the greater the energy concentration in the dispersing vessel, the “finer” the specimen will appear; this is because more super fine particles have been dispersed. In cases of an extremely high energy concentration, super fine particles will be generated by mechanically breaking off from the original pigment.

The effect of the dispersion time is shown by the median value (D 50) falling as the dispersion time rises, i. e. once more the appearance of the specimen is “finer”.

Compared to the dispersion energy and time, the dispersion medium plays a relatively minor role; the medium generally used for QC purposes is isopropanol. The material properties of the device should be checked before using other solvents.

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

发气敏感度测试

Gassing sensibility test

1. 仪器

- 1.1 300 ml 洗气瓶
- 1.2 两腔计泡器
- 1.3 玻璃塞

2. 程序

- 2.1 向洗气瓶内注入 300ml 含有铝片颜料的涂料样品。
- 2.2 将计泡器安装到洗气瓶上。
- 2.3 通过侧颈向计泡器的下腔注入 25ml 水。
- 2.4 将装配好的仪器置于40℃的水内，静置30分钟以达到温度均匀。
- 2.5 建立恒温后，拧紧螺丝帽。

3. 评定

- 3.1 从下腔置换的水量等于产生的气体（氢气）量。
- 3.2 30 天内产生的气体最多不能超过 25ml。

1. Apparatus

- 1.1 300 ml gas washing bottle
- 1.2 Bubble counter with two chambers
- 1.3 Ground stopper

2. Procedure

- 2.1 A 300 ml sample of the enamel containing aluminium flakes is filled into the gas washing bottle.
- 2.2 The bubble counter is attached to the gas washing bottle.
- 2.3 The lower chamber of the bubble counter is filled with 25 ml water through the side neck.
- 2.4 The assembled apparatus is placed in a 40 °C bath and allowed to reach equilibrium for 30 minutes.
- 2.5 When a constant temperature is established, the screw cap has to be securely tightened.

3. Evaluation

- 3.1 The volume of water displaced from the lower chamber equals the volume of gas (hydrogen) generated.
- 3.2 25 ml of generated gas in 30 days is the maximum acceptable level.

