

Architectural Coatings



The Company



TEGO is a brand name of Evonik Industries.

As a leading global supplier of specialty chemicals, Evonik provides the ideal environment for R&D projects focused on benefiting our customers with tailor-made solutions.

The TEGO range of additives is as diverse as the variety of challenges routinely faced by the coatings and printing ink industry.

TEGO products are available worldwide through Evonik's subsidiaries and technical service centers. This enables us to provide rapid support and deliveries virtually anywhere in the world.

TEGO – Adding Advantages.

TEGO® Dispers

Wetting and dispersing additives

TEGO® Foamex and Airex

Defoamers and Deaerators

TEGO® Flow and Glide

Surface control additives

TEGO® Rad

Cross-linkable surface control additives for radiation-curing

TEGO® Wet

Substrate wetting additives

TEGO® Phobe

Hydrophobing agents

TEGO® ViscoPlus

Rheological additives

TEGO®, DEGALAN®, DEGAROUTE® and SIPERNAT® are registered trade marks of Evonik Industries AG or one of its subsidiary companies and they are written in capital letters.



The know-how

Evonik's TEGO brand stands for innovative development of new additives.

The elimination of micro- and macro-foam has always been of central importance. Even twenty years ago, the TEGO range included polyether-siloxane copolymers and the emulsions manufactured from them for use as high performance defoamers for waterborne architectural coatings. Consistent development of a specialized class of additives has set the standard in eliminating micro-foam in waterborne coatings. Hydrophobing agents, such as functional siloxanes and silicone resin emulsions, have also played an important role in the protection of architectural coatings.

The focus

Many new TEGO products have been developed specially for use in waterborne architectural coatings. Besides defoaming and water repellency, other focal points are wetting and dispersing additives as well as rheology modifiers. Our focus is on developing complete solutions for waterborne architectural paints, pigment concentrates and floor coatings.

Proximity to customers

A large specialist team deals solely with evaluating and supporting TEGO additives for architectural coatings in close collaboration with a highly trained technical sales staff, the international technical competence centers and, above all, with intensive discussions with our customers.

The future

We think ahead creatively for our customers and offer tailor-made solutions.

The development of intelligent products and future-oriented fields of activity is promoted within Evonik not only through extensive R&D, but also through exploiting the expertise of other business units in the group.



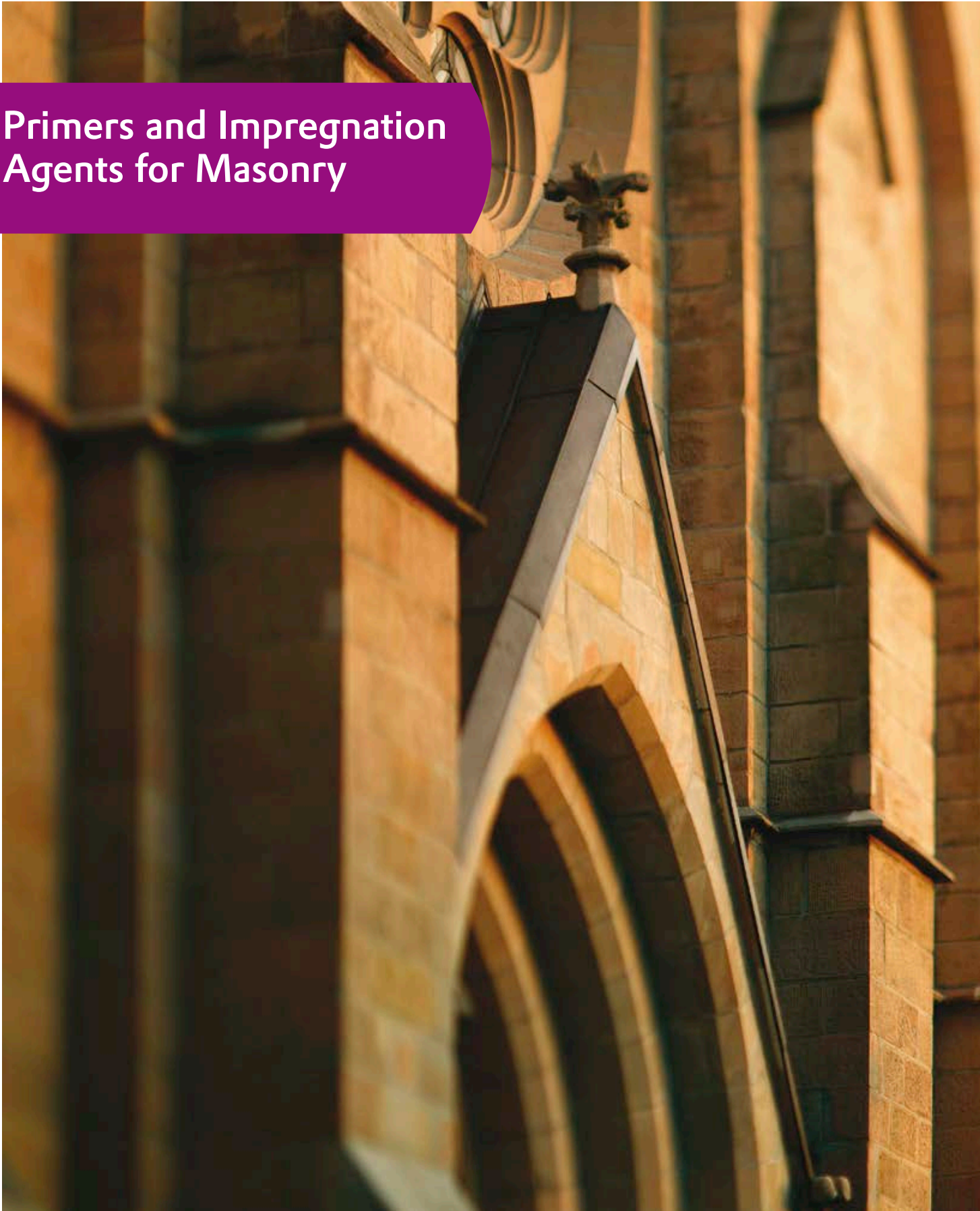


The brochure

Our brochure "Architectural Coatings" is designed to facilitate daily formulation tasks for you and provide a comprehensive overview of our products used in architectural and floor coatings. It contains valuable information and product recommendations evolved from practical experience to help you solve problems quickly. To help you focus on the requirements of interior- and exterior paints, pigment concentrates and floor coatings this brochure is divided into the following sections:

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Primers and Impregnation Agents for Masonry



It is well known that the condition of the substrate determines the quality of a paint finish.

For this reason, clear primers are applied to smooth out surface irregularities and improve the adhesion of the new coating.

Primers should protect not only against moisture which prevents dissolved salts migrating from the substrate, but also reduce the absorbency of the surface to ensure that a continuous film is formed.

Primers are almost always thinned before use, as lower viscosity and solids content improve penetration. Higher resin solids content, in contrast, reinforces the stabilizing effect but has the disadvantage that the primer dries to a glossy finish which may result in poor intercoat adhesion. Penetration and stabilizing effect must be mutually optimized for each substrate.

Impregnation agents are pure thinned hydrophobing agents and thus significantly more water-repellent than primers. The impregnating agent gives protection and is therefore not over-coated. In contrast to a primer, higher active ingredient content in an impregnation agent will increase penetration and therefore improve protection. Impregnation is not suitable for building materials with limited or no absorbency.

Hydrophobing agents based on silanes and/or silicones have good penetrating power and result in outstanding water resistance. The amount applied for all

applications varies from 50 to 200 g/m² of waterborne or solventborne thinned solution, depending on the porosity of the mineral substrate.

Under the TEGO brand, Evonik offers effective products for water and solventborne primers.

Waterborne primers and impregnating agents

Modern waterborne systems are of high quality and have become increasingly important in recent years. They consist of a mixture of hydrophobing agents and special-purpose styrene-acrylic emulsions, so-called hydrosols. Depending on the absorbency of the substrate, the solids content of the primer is adjusted to between 8 to 15 %.

Alkaline substrates, such as cement plasters or concrete, pose a particular challenge to the coating if refinishing is necessary within a few days of making the substrate since good alkali resistance is required of the primer/impregnating agent. A combination of silanes and functional siloxanes, such as the alkali-resistant and deeply penetrating TEGO® Phobe 6600 and TEGO® Phobe 6510, provides the required property profile.

TEGO® Phobe 6600 is distinguished by a broad range of applications. Besides alkaline substrates, such as cement plasters and mortars, this waterborne product is also effective on neutral substrates including most types of natural stone. TEGO® Phobe 6510, in contrast, is of only limited suitability for neutral substrates but exhibits its particularly good compatibility with binders and is therefore best suited for waterborne water-repellent primers.

Guiding formulation for primers

Waterborne primer for substrates with normal absorbency

Item	Ingredient	Parts by weight
1	MOWILITH® DM 7667 ¹	12.00
2	ACTICIDE® MBS ²	0.20
3	Water	77.80
4	TEGO® Phobe 6600 or TEGO® Phobe 6510	10.00
Total		100.00

Solventborne primer

Item	Ingredient	Parts by weight
1	DEGALAN® P 550	13.00
2	Xylene	10.00
3	White spirit 140/190	72.00
4	TEGO® Phobe 6010	5.00
Total		100.00

¹ Celanese Emulsions GmbH

² Thor GmbH

Impregnations/primers

Application	Product	Comments
Waterborne primers/impregnations	TEGO® Phobe 6600 TEGO® Phobe 6510	alkaline and neutral substrates only alkaline substrates
Solventborne primers/impregnations	TEGO® Phobe 6010	neutral and slightly alkaline substrates

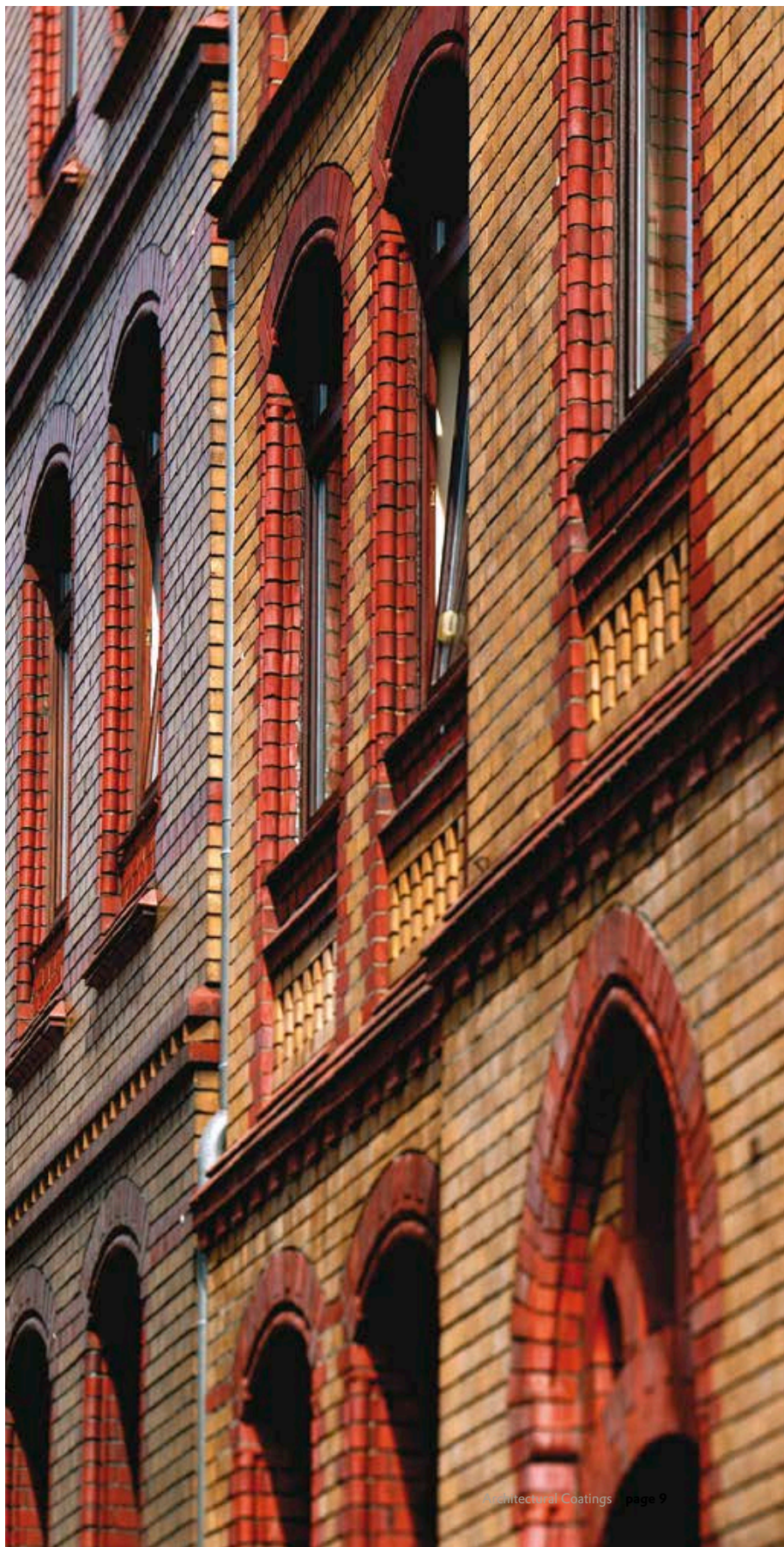


Salt blooming on a facade.

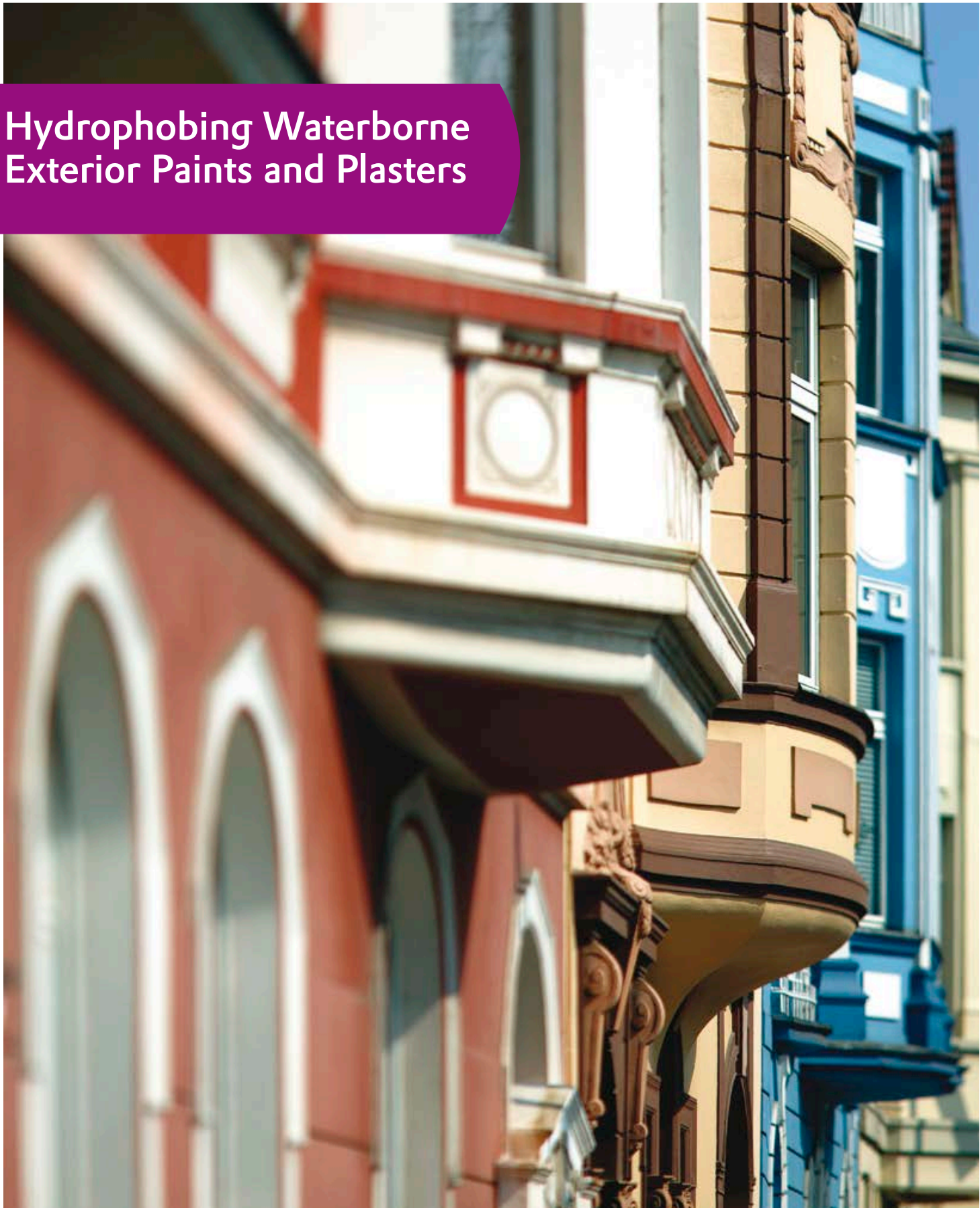
Solventborne primers and impregnating agents

TEGO® Phobe 6010 is recommended for solventborne systems.

This product is generally thinned with solvent to concentrations between 8 and 15 % for use as impregnating agents. White spirits or Mineral Spirits are the most suitable solvents for this purpose. TEGO® Phobe 6010 is most effective with neutral to slightly alkaline substrates. In primers, the combination of TEGO® Phobe 6010 with methacrylic resins like DEGALAN® binders provides an additional strengthening of the substrate.



Hydrophobing Waterborne Exterior Paints and Plasters



An important function of masonry coatings is to protect the fabric of the building. Structures are continuously exposed to weathering effects such as water, UV radiation, air pollution and fouling by micro-organisms. Exterior coatings are classified largely on the basis of the binder they contain.

Emulsion masonry paints and plasters

The overwhelming majority of current masonry coatings are waterborne. Styrene acrylic and pure acrylic emulsions, the most commonly used binders for this purpose, are distinguished by good weathering resistance, low water absorption, good adhesion even on non-mineral substrates, ease of handling and are easily pigmented.

These standard masonry coatings are termed exterior emulsion paints and plasters. To provide protection from water, the coatings are formulated with a PVC (pigment volume concentration) of between 25 % and 45 %. Because of the low PVC and the resultant high binder content, such coatings form a continuous

film. Low PVC emulsion paints reach their limits in the presence of structural defects which can often occur during the life of a building. Coating or roofing defects, absent or defective barrier membranes over foundations can lead to moisture penetrating the masonry. Because of the continuous film of the paint the water vapor from the moisture cannot diffuse through the coating and remains trapped. The resulting water vapor pressure leads initially to blistering and then to cracking and peeling of the paint from the substrate.

Although cheap paints with a higher PVC, having a lower binder content, offer a high water vapor permeability, they do not provide the necessary protection against water.



Silicone resin emulsion masonry paints and plasters

Paints with low water uptake and good water vapor diffusion characteristics offer the best protection for facades. Silicone resin paints and plasters have an advantage in this respect over their emulsion counterparts as they meet both criteria. Silicone resin paints and plasters are formulated above the critical PVC, an example being at least 70%. The resultant open micro-porous structure provides excellent permeability to water vapor enabling damp masonry to dry out and eliminating defects such as compromised insulation, attack by mold, and blistering or detachment of the coating. Dry masonry makes a valuable contribution to a pleasant, healthy indoor environment.

The addition of silicone resin emulsions also provides protection against, for example, driving rain. The silicone resin lines the open pores of the coating without closing them. The hydrophobic surface maintains the coating's permeability to water vapor but prevents water penetrating the pores.

Silicone resin architectural paints provide the most effective protection for buildings. The waterborne silicone resin emulsions TEGO® Phobe 1650 is effective in preventing water pick-up by the coating. The use of TEGO® Phobe 1650 also achieves outstanding initial water resistance. The addition of TEGO® Phobe 1401, TEGO® Phobe 1500 N or TEGO® Phobe 1505 achieves an additional water-beading effect. A ratio of 2 parts of silicone resin to 1 of polysiloxanes is recommended.



In accordance with the European Standard, EN 1062-1, masonry coatings are usually classified into three groups by their water absorption, expressed in terms of the w-value (EN 1062-3), and water vapor permeability, in terms of the s_d -value

(EN ISO 7783-2). With silicone resin masonry coatings, the highest performance is achieved with a class 3 w-value (lowest water pick-up) and a class 1 s_d -value (highest water vapor permeability).

Guiding formulation for a silicone resin paint

Item	Ingredient	Parts by weight	Registered trade mark of
1	Water	28.75	
2	WALOCEL® XM 6000 PV	0.30	Dow Wolff Cellulosics GmbH
3	TEGO® Foamex 855	0.20	Evonik Industries AG or one of its subsidiary companies
4	ACTICIDE® MBS	0.15	Thor GmbH
5	CALGON® N neu	0.05	Reckitt Benckiser N.V.
6	TEGO® Dispers 715 W	0.30	Evonik Industries AG or one of its subsidiary companies
7	AMP-90™	0.10	The Dow Chemical Company (Dow) or an affiliated company of Dow
8	KRONOS® 2310	12.50	KRONOS TITAN GmbH
9	SOCAL® P 3	10.00	SOLVAY (Société Anonyme)
10	OMYACARB® 5 GU	15.00	OMYA AG
11	OMYACARB® 2 GU	10.00	OMYA AG
12	Glimmer MICA TG	3.00	Quarzwerke GmbH
13	SIPERNAT® 820 A	2.00	Evonik Industries AG or one of its subsidiary companies
14	TEGO® Phobe 1650	4.00	Evonik Industries AG or one of its subsidiary companies
15	DOWANOL® DPnB	1.00	The Dow Chemical Co.
16	ECRYLIC® KDA 790	12.00	Ecronova Polymer GmbH
17	RHEOLATE® 278	0.65	Elementis Specialties, Inc.
Total		100.00	



Siloxane masonry paints and plasters

Since the late 1990s, masonry paints with a marked water-beading effect have become firmly established. A characteristic feature of such coatings is the very high contact angle (> 140°) of a water droplet on the painted surface. Often, this is associated with the low soiling characteristics and self-cleaning properties of the coating. Experience in various regions of the world shows that environmental factors, such as air pollution, climate or the type and frequency of rain, decisively influence the self-cleaning capability of the coating. The water beading effect of the coating is achieved by using a special hydrophobing

additive, TEGO® Phobe 1500 N or TEGO® Phobe 1505, and a special surface coating texture. This desired micro-structured texture is obtained by using a cristobalite (SIBELITE® M 3000, SCR-SIBELCO) or a special calcium carbonate (CALCIMATT®, Omya AG). It should also be noted that water-soluble materials which have surfactant properties can be washed out of the coating and impair the water-beading effect. Thus, raw material components should be chosen which are as free of surfactants as possible. Like silicone resin coatings, siloxane coatings have a low water pick-up and excellent water vapor permeability.

Guiding formulation for a siloxane paint with water beading effect

Item	Ingredient	Parts by weight	Registered trade mark of
1	Water	22.85	
2	TEGO® Foamex 825	0.20	Evonik Industries AG or one of its subsidiary companies
3	SURFYNOL® 104 E	0.30	AIR PRODUCTS AND CHEMICALS, INC.
4	WALOCCEL® XM 6000 PV	0.40	Dow Wolff Cellulosics GmbH
5	ACTICIDE® MBS	0.10	Thor GmbH
6	KRONOS® 2044	20.00	KRONOS TITAN GmbH
7	SIBELITE® M 3000 or CALCIMATT®	32.00	SCR-SIBELCO naamloze vennootschap OMYA AG
8	Ammonia 25%	0.15	
9	ACRONAL® 290 D	5.00	BASF SE
10	TEGO® Phobe 1500 N	9.00	Evonik Industries AG or one of its subsidiary companies
11	ACRONAL® 290 D	10.00	BASF SE
Total		100.00	

Silicate emulsion masonry paints and plasters

Silicate paints and plasters have a long tradition. The typical mineral character of the coating systems stems from the use of water glass as an inorganic binder. The water glass most frequently used in silicate coatings is potassium silicate but sodium and lithium silicates are also found as binders. Silicate paints can only be applied to mineral substrates since it is only with such substrates that the water glass can silicify to produce a strong bond.

Pure silicate paints have been largely replaced by silicate emulsion paints, in which a styrene acrylic emulsion is used as a co-binder together with water glass.

Silicate coatings dry to a very natural and mineral-like appearance. Consequently, silicate emulsion coatings are now preferred for historical and listed buildings. Such coatings also exhibit the highest water vapor permeability of all masonry paints but carry the risk of very high water absorption. In practice, suitable hydrophobing agents are added to ensure the necessary protection against rain. TEGO® Phobe 1401, TEGO® Phobe 1500 N and TEGO® Phobe 1505 are the recommended products for this application.

Guiding formulation for a silicate emulsion paint

Item	Ingredient	Parts by weight	Registered trade mark of
1	Water	23.30	
2	BETOLIN® V 30	0.10	Wöllner GmbH & Co. KG
3	SAPETIN® D 20	0.30	Wöllner GmbH & Co. KG
4	BETOLIN® Q 40	0.30	Wöllner GmbH & Co. KG
5	TEGO® Foamex 855	0.20	Evonik Industries AG or one of its subsidiary companies
6	NATROSOL® 250 HHR	0.30	Hercules Incorporated
7	KRONOS® 2310	10.00	KONOS TITAN GmbH
8	OMYACARB® 5 GU	30.00	OMYA AG
9	PLASTORIT® 000	5.00	NAINTSCH MINERALWERKE GESELLSCHAFT M.B.H.
10	TEGO® Phobe 1401	3.00	Evonik Industries AG or one of its subsidiary companies
11	ACRONAL® S 559	6.00	BASF SE
12	White Spirit 145/200	1.50	
13	BETOLIN® K 28	20.00	Wöllner GmbH & Co. KG
Total		100.00	

Hydrophobing of masonry coatings

Application	Product	Comments
Silicone resin paints and plasters	TEGO® Phobe 1650	extremely low water pick-up
Silicate emulsion paints and plasters	TEGO® Phobe 1401 TEGO® Phobe 1500 N	strong water beading effect very strong water beading effect
Siloxane paint with water beading effect	TEGO® Phobe 1500 N TEGO® Phobe 1505	very strong water beading effect very strong water beading effect
Other emulsion paints and plasters	TEGO® Phobe 1401 TEGO® Phobe 1500 N TEGO® Phobe 1505	strong water beading effect very strong water beading effect very strong water beading effect



Additives for Interior and Exterior Emulsion Paints and Plasters

The TEGO range of products for interior and exterior wall paints encompasses defoamers, dispersing additives and rheological additives.

Defoaming

To develop an optimal effect, defoamers must be present in the system as finely distributed droplets. Too fine a distribution reduces the effectiveness; on the other hand too coarse a distribution produces surface defects such as craters. The most important criteria for the choice of a suitable defoamer are the chemistry of

the binder and the PVC of the formulation. Often, optimal defoaming of a coating can only be obtained with a combination of defoamers. Defoamers used in combinations should be added at different stages in the manufacturing process. The less compatible defoamer should be added to the grind and the compatible type to the let-down.

Defoaming of glossy to semi-gloss coatings, PVC < 40 %

For defoaming high gloss latex coatings and emulsion paints with high binder content, less hydrophobic, highly compatible defoamers are mainly used. For application in glossy to semi-gloss coatings, TEGO® Foamex 825 and TEGO® Foamex 815 N are recommended as highly effective, highly compatible defoamers for use in the let-down. TEGO® Foamex 810 or TEGO® Foamex 8050 are very suitable for use in the grind.

Defoaming PVC < 40 %

	Addition to the grind	Addition to the let-down
Styrene acrylics	TEGO® Foamex 810 TEGO® Foamex 3062 TEGO® Foamex 8050	TEGO® Foamex 825 TEGO® Foamex 815 N TEGO® Foamex 1488
Pure acrylics	TEGO® Foamex 810 TEGO® Foamex 8050	TEGO® Foamex 825 TEGO® Foamex 815 N TEGO® Foamex 1488
Vinyl acetate copolymers	TEGO® Foamex 883 TEGO® Foamex 810 TEGO® Foamex 8050	TEGO® Foamex 825 TEGO® Foamex 1488 TEGO® Foamex 815 N
Hybrid systems	TEGO® Foamex 840 TEGO® Foamex 810	TEGO® Foamex 840 TEGO® Foamex 815 N TEGO® Foamex 825
Bitumen		TEGO® Foamex 1488

Defoaming PVC > 40 %

	Addition to the grind	Addition to the let-down
Styrene acrylics	TEGO® Foamex 3062 TEGO® Foamex 8050 TEGO® Foamex 883	TEGO® Foamex 1488 TEGO® Foamex 825 TEGO® Foamex 855
Pure acrylics	TEGO® Foamex 8050 TEGO® Foamex 3062 TEGO® Foamex 883	TEGO® Foamex 1488 TEGO® Foamex 825 TEGO® Foamex 815 N TEGO® Foamex 855
Vinyl acetate copolymers	TEGO® Foamex 883 TEGO® Foamex 3062 TEGO® Foamex 8050	TEGO® Foamex 855 TEGO® Foamex 1488 TEGO® Foamex 825
Hybrid systems	TEGO® Foamex 840 TEGO® Foamex 810	TEGO® Foamex 825 TEGO® Foamex 815 N TEGO® Foamex 1488



Defoaming of semi-gloss to matt interior and exterior coatings, PVC > 40 %

In highly-filled interior paints with a PVC of 80 % and above, different demands are made on defoamers compared with those in the lower PVC range. The high PVC, as well as the fact that the viscosity of the coating is usually higher, requires stronger, more effective, more hydrophobic defoamers. In styrene acrylate and pure acrylate systems TEGO® Foamex 3062 and TEGO® Foamex 8050 are highly effective as grinding stage defoamers. In coatings based on vinyl acetate copolymers TEGO® Foamex 883 is especially effective and also has excellent long-term properties.

For addition to the let-down or for subsequent defoaming of the coating TEGO® Foamex 825 or TEGO® Foamex 855 can be used.

Wetting and dispersing additives for interior and exterior coatings

Polyacrylates have proven themselves over many years as wetting and dispersing additives for emulsion paints with a high PVC. TEGO® Dispers 715 W is extremely effective in dispersing titanium dioxide

and inorganic fillers, such as calcium carbonates, chalks, talc and clays. TEGO® Dispers 715 W produces excellent wetting of pigments and fillers as well as a reduction in mill-base viscosity. TEGO® Dispers 715 W also improves shelf life. In dispersing inorganic or organic colored pigments in paints with high PVC, TEGO® Dispers 740 W provides good wetting combined with good stabilization.

The combination of TEGO® Dispers 740 W with TEGO® Dispers 715 W results in optimum development of color intensity. The use of TEGO® Dispers 740 W in pigment concentrates signifi-

cantly improves pigment concentrate acceptance by the "white" base paint (see full tone and tinting paints).

Rheology control of interior and exterior coatings

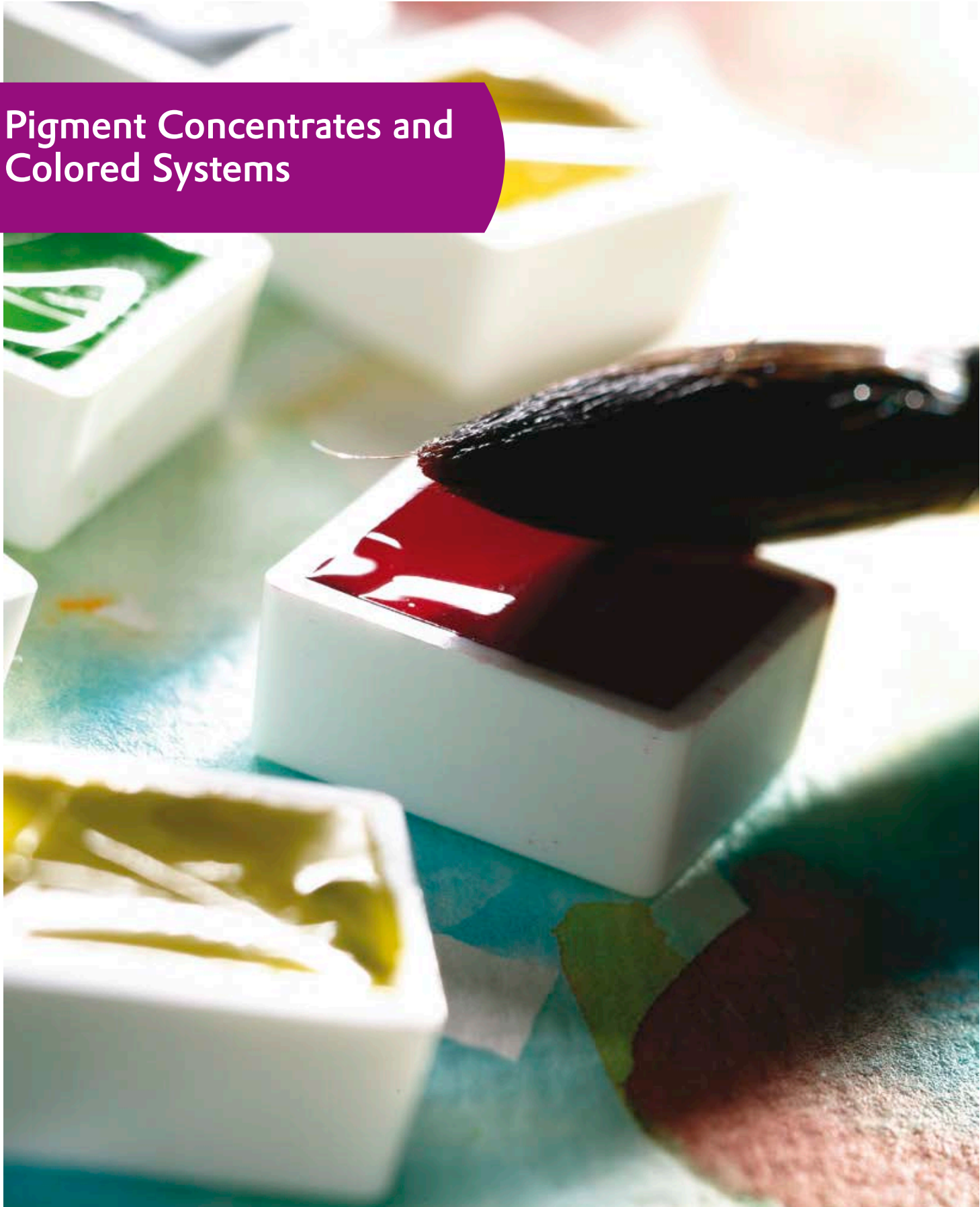
The properties of a coating such as processability, flow, sagging, tendency to spatter and brushability are all functions of the rheology. Moreover, correct rheology has a decisive effect on the tendency of pigments and fillers to settle. The TEGO® ViscoPlus range allows targeted adjustment of the rheology of a coating to suit requirements.

Rheology additives

Rheology profiles	Product
Newtonian	TEGO® ViscoPlus 3000
Newtonian, high-shear	TEGO® ViscoPlus 3010
Pseudoplastic	TEGO® ViscoPlus 3030
Strong pseudoplastic	TEGO® ViscoPlus 3060



Pigment Concentrates and Colored Systems



The majority of architectural coatings are colored. In practice, white base-coatings are tinted prior to application. Manufacturers of paints and plasters use various methods to increase their range of colors.

Full color and tinting paints are emulsion paints with medium-value PVC formed by direct grinding of the pigments. Such coatings can be applied directly or used for tinting white paints and plasters.

Another, increasingly important, method of manufacturing colored emulsion paints is the Full-Mixing System in which highly concentrated, binder-free pastes are made from white and colored pigments and then mixed together depending on the intensity of the color required. Clear bases can also be used instead of white bases. In the Full-Mixing System, high demands are made on universal miscibility both of the pastes with each other and with the different bases. Use of compatibilizers in the base paint improves product consistency and pigment concentrate uptake. TEGO® Dispers 660 C is a suitable compatibilizer for waterborne systems.

Until the 1990s, pigment concentrates were used almost exclusively for industrial



tinting of coatings. This is still the case for large batches. However, a new technology for tinting coatings in their individual containers, using fully automatic tinting machines equipped with different pigment concentrates and various base paints, is now widely established.

The TEGO® Dispers product range of Evonik includes numerous wetting and dispersing additives for manufacturing full color and tinting paints as well as pigment concentrates. These additives enable a wide choice of pigments to be used to manufacture pigment pastes with outstanding stabilization and color intensity development. All dispersants are free of alkylphenol ethoxylates.

Full color and tinting paints

A combination of TEGO® Dispers 715 W and TEGO® Dispers 740 W is recommended for economic manufacture of full color and tinting paints based on inorganic

pigments. For inorganic and organic pigments, TEGO® Dispers 755 W is the first choice as a wetting and dispersing additive.

Waterborne pigment pastes

The wetting of organic and inorganic pigments requires different dispersing additives. For concentrates manufactured with organic pigments, TEGO® Dispers 650 is recommended. Inorganic pigment concentrates are manufactured with TEGO® Dispers 653. TEGO® Dispers 755 W or TEGO® Dispers 740 W are recommended if a universal dispersion additive which can be used with all organic and inorganic pigments is needed.

Universal pigment concentrates

Universal concentrates are increasingly being used. In addition to tinting waterborne paints and plasters these can also be used for tinting solventborne systems such as alkyd paints. This places particularly

high demands on dispersing additives as, in addition to good affinity for the pigment surface, they must also be widely compatible with common water- and solventborne coating systems. The TEGO® Dispers 65X series offers an extensive product range for manufacturing universal concentrates.

TEGO® Dispers 650 is distinguished by excellent development of color intensity and stabilization of organic pigments. For inorganic, but also for organic pigments, TEGO® Dispers 653 is recommended. For reducing the viscosity of highly-pigmented inorganic pigment concentrates TEGO® Dispers 652 is an effective co-disperser along with TEGO® Dispers 653.

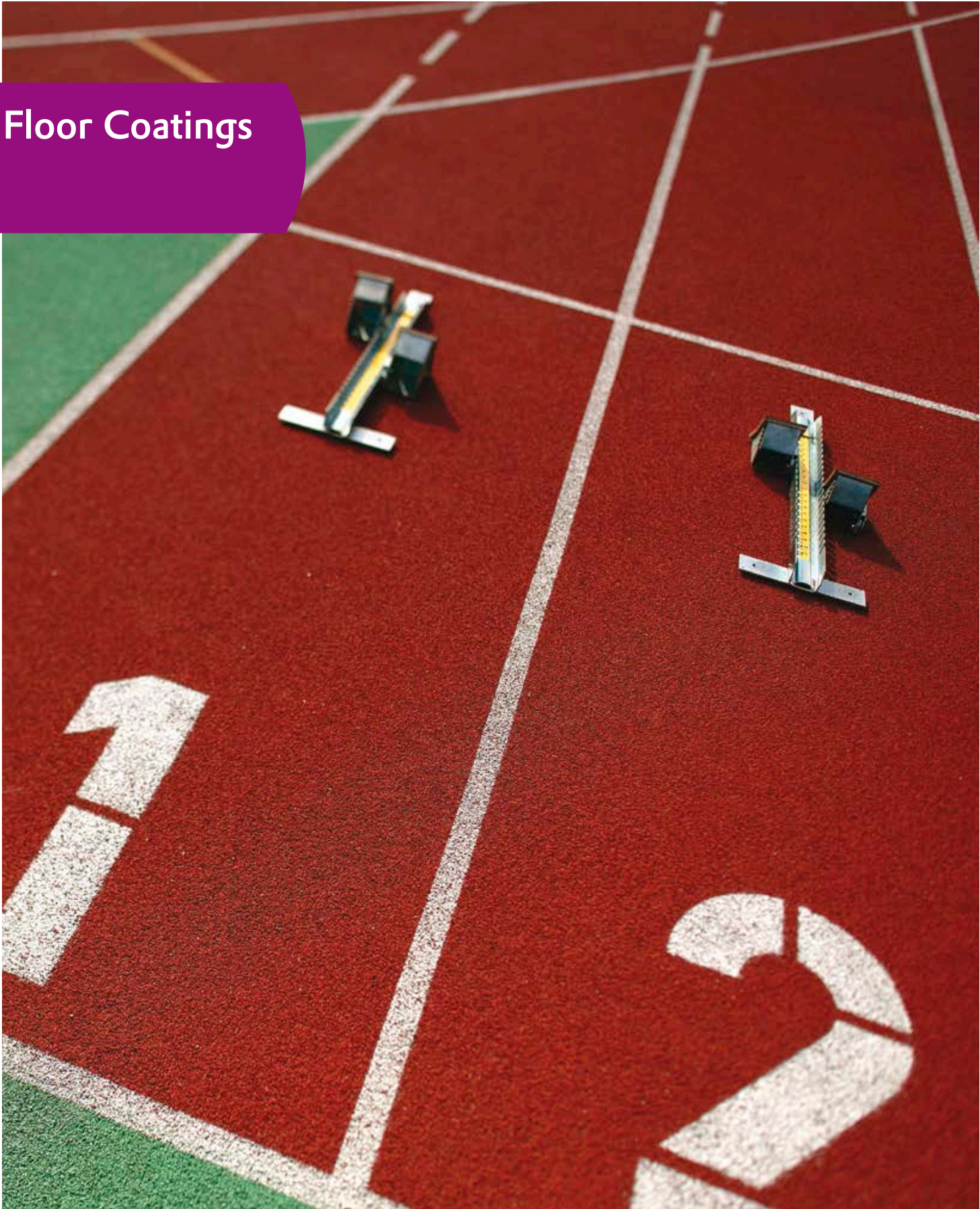
Numerous guiding formulations for various pigment concentrates can be found at www.tego.de.

Dispersing

Application	Inorganic pigments	Organic pigments
Direct grind (full color and tinting paints)	TEGO® Dispers 715 W TEGO® Dispers 740 W* TEGO® Dispers 755 W	TEGO® Dispers 755 W
Waterborne pigment concentrates	TEGO® Dispers 653 TEGO® Dispers 755 W TEGO® Dispers 740 W	TEGO® Dispers 650 TEGO® Dispers 755 W TEGO® Dispers 740 W
Universal pigment concentrates	TEGO® Dispers 653 TEGO® Dispers 652**	TEGO® Dispers 650

* in combination with TEGO® Dispers 715 W
** in combination with TEGO® Dispers 653

Floor Coatings



There are a number of reasons for using floor coatings. These can include protection of the substrate from mechanical, chemical or water damage. Additionally, the coating can impart additional properties, such as elasticity, conductivity or functional or decorative characteristics to the substrate.

Typical applications of floor coatings are industrial buildings, streets, multi-story car parks, balconies, supermarkets, etc. Consequently, they are subject to heavy use and must be particularly resistant to the effects of traffic, both vehicular and pedestrian, and to aggressive substances.

Therefore, most floor coatings are applied as high-build coatings with a thickness between 1 mm and 5 mm.



Floor and concrete coatings are based mainly on two-pack epoxy- and polyurethane-resins or methacrylates. The usual systems consist of liquid resins and curing agents and are therefore almost exclusively solvent-free.

Because of their mechanical and chemical resistance, epoxy resins are preferred for indoor industrial floors. In contrast, polyurethane resin coatings can be used for both interior and exterior applications. Because of their higher flexibility they

can also be used for sports surfaces or in applications where the demands on mechanical hardness are lower.

Cold plastics (e.g. DEGAROUTE[®], also an Evonik product) are methacrylate-based reactive resins used mainly for road markings. These cold curing plastic binders are particularly suitable for textured road markings such as center markings, bicycle paths and for pedestrian areas. These products must be applied air-free. TEGO[®] Airex products, such as TEGO[®] Airex 944 or TEGO[®] Airex 990 are highly suitable for this.

Optimum choice and incorporation of deaerators for floor coatings

Floor coatings with surface defects such as entrapped air and pinholes are not only unacceptable as far as appearance is concerned; the surface defects also offer good sites for chemical attack and mechanical stress. Thus, deaerators are probably the most important additives for floor coatings. Deaerators must be highly effective since floor coatings are highly loaded, high-viscosity systems. Because of the short reaction or curing time of such coatings, deaerators must act quickly. The fundamental property necessary for a deaerator to be effective is that it must exhibit a partial incompatibility in the coating system. For this reason an optimum distribution of the deaerator is necessary and it must be mixed in at high-shear. Ideally, the deaerator is added during mixing of the resin and filler so that the resin components are deaerated at an early stage. This also ensures that the deaerator is well dispersed. Surface defects such as craters and fish-eyes are often evidence of inadequate mixing in of the deaerator.

For solvent-free floor coatings, Evonik offers a special range of effective deaerators under the TEGO name. Generally, it is recommended that all deaerators should be incorporated in the grind. TEGO[®] Airex 900 and TEGO[®] Foamex N should be mixed in at particularly high-shear. TEGO[®] Airex 940 is a product which is simple to incorporate without high shear but deaerates very efficiently. It is also recommended for post-deaeration of ready-made coatings.

Solvent-free epoxy and polyurethane coatings

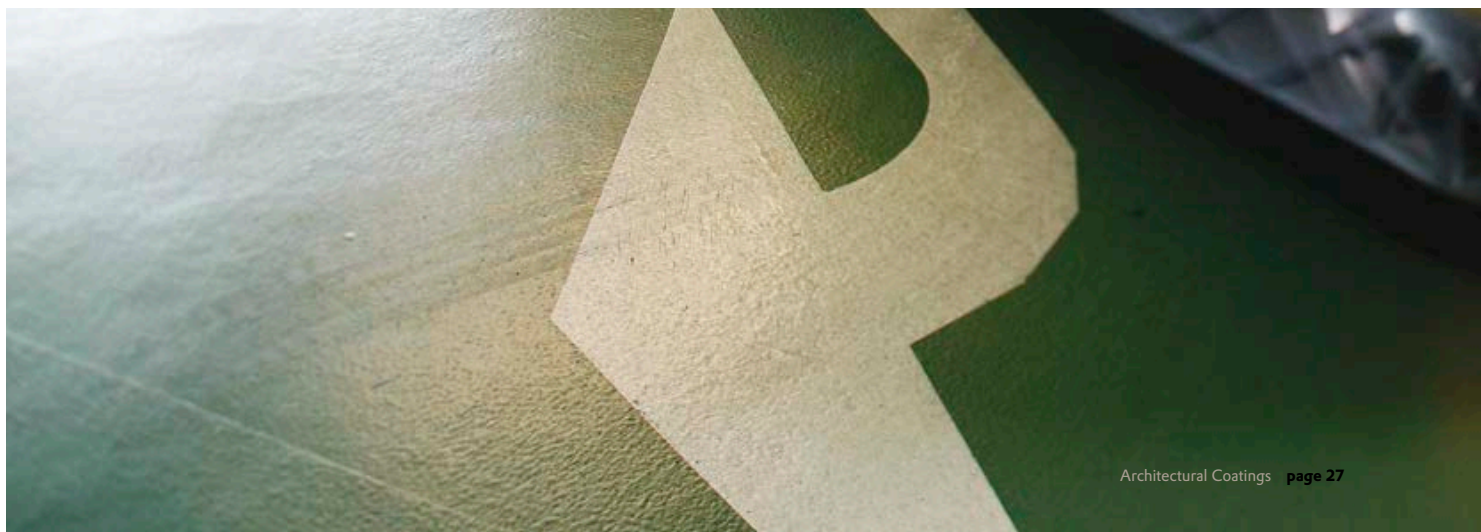
TEGO® Airex 922 and TEGO® Airex 944 are particularly effective products and are used successfully in many types of coatings, particularly those based on epoxy resins but also in polyurethane systems. If incompatibilities occur the combination with TEGO® Glide B 1484 in a ratio of 3:2 is recommended. TEGO® Glide B 1484, used on its own, exhibits good deaeration and promotes the flow properties of the epoxy coating. Floor coatings based on polyurethane resins are most effectively deaerated with TEGO® Airex 944 or a combination of TEGO® Airex 944 with TEGO® Airex 920 in a ratio of 7:3.

Waterborne epoxy and polyurethane coatings

Waterborne systems based on epoxies or polyurethanes have now achieved a significant market share in the floor coatings sector. TEGO® Airex 901 W and TEGO® Foamex 8050 are recommended as effective deaerators. TEGO® Airex 902 W and TEGO® Foamex 815 N are suitable where better compatibility is required.

Deaeration of floor coatings

Application	High pigment content	Clear and low pigment content
2-pack epoxy, solvent-free	TEGO® Airex 922 TEGO® Airex 900 TEGO® Glide B 1484 TEGO® Foamex N	TEGO® Airex 922 TEGO® Airex 947 TEGO® Glide B 1484
2-pack PU, solvent-free	TEGO® Airex 944 TEGO® Airex 947 TEGO® Airex 940	TEGO® Airex 947 TEGO® Airex 940
2-pack epoxy, waterborne	TEGO® Airex 902 W TEGO® Airex 901 W TEGO® Foamex 8050 TEGO® Foamex 810	TEGO® Airex 902 W TEGO® Foamex 815 N TEGO® Foamex 810
2-pack PU, waterborne	TEGO® Airex 902 W TEGO® Airex 901 W TEGO® Foamex 840 TEGO® Foamex 8050	TEGO® Airex 902 W TEGO® Foamex 815 N TEGO® Foamex 810



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