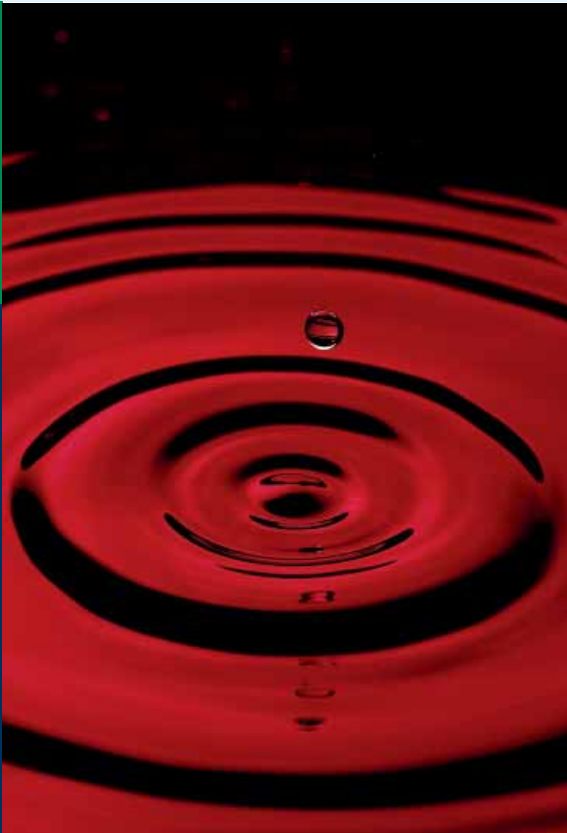


CYTEC



VIAPAL[®]

Unsaturated Polyester Resins

Solutions for Industrial Markets

About Us

From defining more efficient processes for mining customers to developing new additives for polymer-based alternatives to wood and metals, the product lines of Cytec Specialty Chemicals are unified in their dedication to customer-driven innovation.

Working closely with our customers, we develop revolutionary technologies that enable them to improve performance and productivity, enter new markets, and refine new applications. How to improve mine profitability or coatings efficiency in the face of important environmental concerns ?

How to develop polymers that really stand up to UV light ? How to use phosphines to create better, safer biocides and fumigants for agriculture ? Our technology and sales teams work on-site with customers every day to address today's business challenges and troubleshoot tomorrow's.

The applications are diverse, but the commitment is uniform : finding better solutions for customers through continual research, ongoing collaboration and a passion for innovation.

An Expansive Portfolio

Cytec Specialty Chemicals is a complete solution provider for customers requiring high-value surface technologies in industries that include industrial coatings, automotive, architectural, wood and paper, graphics, adhesives and opto-electronics.

We offer our customers advanced and diverse products and technologies for surfaces with an emphasis on environmentally friendly products such as UV/EB curable resins and additives, powder coating resins and additives, as well as waterborne and solvent-borne liquid coating resins and additives.

We are committed to working with our customers to develop environmentally advanced solutions and we are dedicated to open communication concerning the safe handling, distribution, use and disposal of the products we make.

A Focus on Customer Satisfaction

Cytec Specialty Chemicals operates a globally integrated set of order fulfillment IT systems and processes. All Spec Chem personnel in the order fulfill-

ment processes are dedicated to delivering customer satisfaction through reliable and cost-effective supply of products to our customers. Cytec Specialty Chemicals has specialized personnel in Customer Service, Procurement, Manufacturing, Planning and Logistics to achieve this goal. In addition to timely and accurate order fulfillment, there is an equally important focus on maintaining safety and protecting the environment at all steps in the process, from the procurement of raw materials to the delivery of finished goods to the customer's door.

Dedication to Operational Excellence

Cytec's Spec Chem Manufacturing Organization operates globally to provide superior service to our customers in all regions. Our vision of operational excellence brings value to our customers through ongoing, continuous improvement initiatives, including Lean Manufacturing, Six Sigma Principles, and Best Practice Engineering. Our value proposition is driven by excellence in our Safety, Environmental, Quality Systems and Employee Development Programs. We are structured by business technology, which enables our sites to work transparently with R&D, Customer Service and the Business, to share best practices across common processes. We also are able to gain leverage from overall global manufacturing synergies to most efficiently meet customer needs.

Key product lines

- Liquid Coating Resins and Additives
- Mining Chemicals
- Phosphine and Phosphorus Specialties
- Polymer Additives
- Powder Coating Resins and Additives
- RADCURE® UV/EB
- Specialty Additives

| | |
|--|----|
| Base Resins | 04 |
| Standard base resins..... | 04 |
| Base resins with increased chemical resistance..... | 05 |
| Base resins with the highest chemical resistance..... | 06 |
| Epoxy laminating resins..... | 06 |
| Special Resin Types | 07 |
| Resins for hand lay-up and spray-up-technique..... | 07 |
| Resins for hand lay-up and spray-up-technique for the reinforcement of PMMA..... | 08 |
| Resins for hand lay-up and spray-up-technique with increased chemical resistance | 08 |
| Resins, flame retardant or flame retardant adjustable..... | 09 |
| Phenolic laminating resins..... | 11 |
| Resins with light stabilization | 11 |
| Flexible resins | 11 |
| Paste resins | 12 |
| Button resins | 12 |
| Putty resins for the stone industry | 12 |
| Foam resins..... | 13 |
| Cast resin, pure resin..... | 13 |
| Resin for filament winding or centrifugal casting method | 13 |
| Air drying resins | 14 |
| Cast resins, fillable | 14 |
| Solid surface | 15 |
| Injection resins | 15 |
| Pultrusion resins | 16 |
| Gelcoats | 17 |
| Gelcoats for general applications | 17 |
| Gelcoats for sanitary applications..... | 17 |
| Gelcoats and Topcoats for FRP pools | 18 |
| Gelcoats for boat building | 18 |
| Tooling gelcoats..... | 19 |
| Flame retardant gelcoats..... | 19 |
| Topcoat..... | 19 |
| Transparent gelcoats | 20 |
| Additives | 20 |
| Color Pastes | 21 |
| Information on Processing | 22 |
| Index | 23 |

Standard base resins

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|-------------------------|--|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® UP 001/67 | O-phthalic acid resin, moulded parts correspond to type 1110 in accordance with DIN 16946, part 2. | medium reactivity | 850-1150 3) | 15-25 12) | 2 | 90 |
| VIAPAL® UP 002/60 | Orthophthalic acid resin, fast impregnation, short demoulding time, moulded parts correspond to type 1110 according DIN 16946, part 2. | high reactivity | 250-350 3) | 10-16 12) | 2 | 110 |
| VIAPAL UP 004/64 | O-phthalic acid resin, enhanced dimensional stability at elevated temperature; moulded parts correspond to type 1130 according DIN 16946, part 2. | high reactivity | 700-900 3) | 19-35 12) | 2 | 125 |
| VIAPAL UP 221/68-15 | UP resin based on orthophthalic acid, preferably used for the production of gelcoats and because of its high impact strength also for the production of castings, e.g. synthetic marble. | high reactivity | 650-900 3) | 15-20 32) | 3,5 | – |
| VIAPAL UP 303/65 | O-phthalic acid resin, enhanced dimensional stability at elevated temperature and enhanced impact strength; moulded parts correspond to type 1140 according DIN 16946, part 2. The resin has a low peak temperature. | high reactivity | 800-1000 3) | 20-30 12) | 2 | 130 |
| VIAPAL UP 320/70 | UP resin based on orthophthalic acid, low styrene content, very good mechanical properties. | high reactivity | 1750-2350 3) | 20-30 12) | 1,2 | 135 |
| VIAPAL UP 450 E/66 | O-phthalic acid resin with good mechanical and chemical properties and increased storage stability (increased impact resistance). | high reactivity | 960-1090 1) | 8-14 18) | 2 | 102 |
| VIAPAL VUP 4627 E/61 | O-phthalic acid resin with good mechanical and chemical properties and increased storage stability (increased impact resistance). Certificate from Lloyd's Register of Shipping is available. | medium reactivity | 440-530 1) | 25-36 18) | 2,3 | 86 |
| VIAPAL VUP 4779/55 | O-phthalic acid resin. Moulded parts display increased HDT as well as impact resistance and correspond to type 1140 according DIN 16946, part 2. | high reactivity | 170-230 | 8-16 18) | 2,6 | 123 |

Legend:

B = accelerated, **E** = increased storability,
M = environmental adjustment with reduced level of styrene emission, **T** = thixotropic, **S** = light stability, **G** = granulated form

Viscosity measured at 23°C with cone and plate:

1) = shear rate 25 s⁻¹; **2)** = shear rate 100 s⁻¹;
3) = shear rate 500 s⁻¹; **4)** = shear rate 300 s⁻¹

For curing conditions please see technical instructions:

6) = 1,0 MEKP; **8)** = 1,5 MEKP; **10)** = 2,0 MEKP;
12) = 2,0 MEKP/0,3 Co1; **14)** = 2,0 MEKP/0,5 Co1;
16) = 2,0 MEKP/0,8 Co1; **18)** = 2,0 MEKP/1 Co1;
20) = 2,0 MEKP/2 Co1; **22)** = 2,0 MEKP/3 Co1/0,8 DMA 10;
24) = 2,0 MEKP/3 Co1/1 DMA 10; **26)** = 1 BP 50-P;
28) = 2 BP50-P; **30)** = 5 BP50-P; **32)** = special curing



Base resins with increased chemical resistance

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|--------------------------|--|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® VUP 4649 E/65 | Isophthalic/orthophthalic acid resin, enhanced strain at break, impact strength and dimensional stability at elevated temperature. | medium reactivity | 660 - 820 1) | 13 - 17 18) | 4,2 | 114 |
| VIAPAL® VUP 4666/51 | Isophthalic acid resin, very high dimensional stability at elevated temperature; for manufacture of laminates and profiles preferably used in electric industry. | high reactivity | 650 - 950 1) | 6 - 12 18) | 1,5 | 163 |
| VIAPAL VUP 4714/60 | Isophthalic acid/neopentyle glycol resin, very good penetration curing, high deformation resistance in heat, high chemical suitability, good hot water resistance. | medium reactivity | 600 - 800 1) | 5 - 11 18) | 3,7 | 129 |
| VIAPAL VUP 4739/65 | Isophthalic acid resin, for the manufacture of GR-UP moulded articles, also suitable for formulation of Gelcoats. | medium reactivity | 980 - 1200 1) | 8 - 16 18) | 2,4 | 76 |
| VIAPAL UP 745/56 | Terephthalic acid/neopentyl glycol resin, good resistance to chemicals and very high dimensional stability at elevated temperature. Corresponds to type 1130 in accordance with DIN 16946, part 2. | medium reactivity | 550 - 750 3) | 20 - 30 12) | 2 | 146 |
| VIAPAL UP 746/58 | Isophthalic acid/neopentyl glycol resin, high dimensional stability at elevated temperature, high resistance to chemicals; moulded parts corresponding to type 1140 according DIN 16946, part 2. Approval of German Lloyd. | medium reactivity | 1000 - 1500 3) | 19 - 25 12) | 2 | 120 |
| VIAPAL VUP 4792 E/66 | Isophthalic acid/neopentyle glycol resin, high chemical suitability; fullfills specification of German Lloyd and Lloyds register of shipping. | medium reactivity | 1080 - 1320 1) | 4 - 10 | 4,2 | 99 |

06 | Base Resins (continued)

Base resins with the highest chemical resistance

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|------------------------|---|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® UP 495/48 | Bisphenol A/fumaric acid resin, high deformation resistance in heat, high chemical suitability, particularly high hydrolyse and alkali resistance; for the construction of chemical facilities and non-corrodible components; moulded parts correspond to type 1140, DIN 16946, part 2. | high reactivity | 300 - 510 1) | 5 - 15 22) | 2 | 140 |
| VIAPAL® UP 495 E/48 | The same as VIAPAL UP 495/48 but with increased storability (tropical stabilization). | high reactivity | 300 - 510 1) | 10 - 20 22) | 2 | 140 |
| VIAPAL UP 797/59 | HET acid/neopentyle glycol resin, high deformation resistance in heat, very good chemical resistance, flame resistant according to ASTM E-84-98. Moulded parts correspond to type 1130 according to DIN 16946, part 2. | medium reactivity | 350 - 450 3) | 9 - 15 18) | 2 | 133 |
| VIAPAL VUP 4652/67 | Low viscous vinyl ester resin on epoxy-novolak-base; extraordinary good chemical resistance, enhanced dimensional stability at elevated temperature. Approval of BAM, Berlin, for lining of tanks for storage of aircraft fuel and petrol according to DIN 51600 and DIN 51607. Approval of Lloyd's Register of Shipping. | high reactivity | 240 - 410 1) | 13 - 27 24) | 3 | 146 |

Epoxy laminating resins

Base resins

For information regarding epoxy laminating resins and suitable hardeners please contact Technical Service.



* VIAPAL Unsaturated polyesters

Resins for hand lay-up and spray-up-technique

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|-------------------------------|---|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® UP 242 BT/57 | O-phthalic acid resin, pre-accelerated, thixotropic; moulded parts corresponding to type 1110 according DIN 16946, part 2. Rapid wetting, low tension curing. Approval of German Lloyd. | medium reactivity | thix. | 20 - 30 10) | 2,5 | 95 |
| VIAPAL® UP 303 BMT/55 | O-phthalic acid resin with extremely reduced level of styrene emission. The outstanding feature is its increased impact resistance and deformation resistance in heat moulded parts correspond to type 1140 in accordance with DIN 16946, part 2. The resin has a low maximum temperature. | high reactivity | thix. | 30 - 40 6) | 2 | 120 |
| VIAPAL VUP 4627 ET/60 | O-phthalic acid resin, thixotropic. Moderate low tension curing even in thick layers. The resin has very good mechanical properties in a hardened state. It can be used universally and is used preferably for car bodies, boats and moulded parts especially if increased impact resistance is required. Certificate of Lloyd's Register of Shipping is available. | medium reactivity | thix. | 12 - 20 20) | 2,3 | 86 |
| VIAPAL VUP 4627 BET/56 | Pre-accelerated version of VIAPAL VUP4627ET/60, It contains peroxide indicator. | medium reactivity | thix. | 10 - 20 10) | 2,3 | 86 |
| VIAPAL VUP 4627 BEMT/56 | The same as VIAPAL VUP 4627 BET/56 but with greatly reduced level of styrene emission. | medium reactivity | thix. | 11 - 21 10) | 2,3 | 86 |
| VIAPAL VUP 4627 BEMT/56-30 | The same as Viapal VUP 4627 BEMT/56 but with extended geltime. | medium reactivity | thix. | 25 - 35 10) | 2,3 | 86 |
| VIAPAL VUP 4782 BET/55 | O-phthalic acid resin, pre-accelerated, thixotropic, contains peroxide indicator; very good saturation properties with high thixotrophy strength; with relatively long gel time, good penetration curing, preferably for boat-building. | medium reactivity | thix. | 25 - 35 10) | 2,8 | 90 |
| VIAPAL VUP 4782 BEMT/55 | Low styrene emission version (reduced level of styrene emission) of VIAPAL VUP 4782 BET/55. | medium reactivity | thix. | 25 - 35 10) | 2,8 | 90 |
| VIAPAL VUP 4791 BEMT/55-21 | O-phthalic acid resin pre-accelerated, thixotropic, extremely reduced level of styrene emission. Particularly fast curing, even in thin layers. The resin has very good mechanical properties in a hardened state and can be used universally. | medium reactivity | thix. | 14 - 24 10) | 2,8 | 90 |

08 Special Resin Types (continued)

Resins for hand lay-up and spray-up-technique for the reinforcement of PMMA

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|-----------------------------|---|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® VUP 4627 BEMT/56 | Orthophthalic acid resin, preaccelerated, thixotropic, reduced level of styrene emission. Moderate low tension curing even in thick layers. | medium reactivity | thix. | 11-21 10) | 2,3 | 86 |

Resins for hand lay-up and spray-up-technique with increased chemical resistance

| | | | | | | |
|----------------------------|--|-----------------|-------|----------------|---|-----|
| VIAPAL® VUP 4686 BET/56 | Isophthalic/orthophthalic acid resin, pre-accelerated, thixotropic, contains peroxide indicator, increased elongation at break, impact resistance and HDT. | high reactivity | thix. | 7 - 17 10) | 4 | 114 |
| VIAPAL VUP 4686 BEMT/56 | VIAPAL VUP 4686 BET/56 in environmental adjustment, with extremely reduced level of styrene emission. | high reactivity | thix. | 7 - 17 10) | 4 | 114 |
| VIAPAL VUP 4714 BET/52 | Isophthalic acid/neopentyl glycol resin, pre-accelerated, thixotropic, contains peroxide indicator; increased elongation at break, impact resistance and high HDT. | high reactivity | thix. | 17 - 28 10) | 2 | 129 |



Resins for hand lay-up and spray-up-technique with increased chemical resistance (continued)

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|----------------------------|---|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® VUP 4774 BET/57 | UP resin, pre-accelerated, thixotropic; enhanced strain at break and impact strength, very good resistance against styrene and UP-resin; for barrier laminates of GR-UP moulds in combination with GELCOAT® 935 BE resp. GELCOAT® 936 BE. | high reactivity | thix. | 17 - 27 10) | 4 | 94 |
| VIAPAL® VUP 4805 B/64 | Polyester/polyurethane hybrid resin on neopentyle glycol base, pre-accelerated. Always processed together with a suitable di-isocyanate, e.g. with ADDITOL® VXT 6225/1. Very fast curing, surface cures tack free. Impregnates reinforcing materials very fast and can be loaded with a high proportion of mineral filler for the production of low shrink moulded parts. | high reactivity | 95 - 130 2) | 25 - 35 32) | 3,4 | 121 |
| VIAPAL VUP 4812 B/60 | Polyester/polyurethane hybrid resin on neopentyle glycol base, pre-accelerated. Always processed together with a suitable di-isocyanate, e.g. with ADDITOL VXT 6225/1. Very fast curing, surface cures tack free. Impregnates reinforcing materials very quickly and can be loaded with a high proportion of mineral filler for the production of shrink resistant moulded parts. | high reactivity | 80 - 115 2) | 25 - 35 32) | 4,7 | 107 |
| VIAPAL VUP 4815 BET/57 | Isophthalic acid resin, pre-accelerated, thixotropic. It is preferably used for the production of the buffer layer between gelcoat and the carrier laminate in the production of boats, car bodies and swimming pools. | medium reactivity | thix. | 25 - 33 10) | 2,3 | 106 |
| VIAPAL UP 4838 BT/63 | Vinyl ester resin, based on Bisphenol A; pre-accelerated, thixotropic, supports excellent osmosis resistance as buffer layer resin. | high reactivity | 200 - 280 3) | 30 - 40 8) | 3,5 | HDT: 97 |

Resins, flame retardant or flame retardant adjustable

| | | | | | | |
|-----------------------------|---|-------------------|-----------------|----------------|-----|-----|
| VIAPAL UP 797/59 | HET-acid/neopentyl glycol resin, high dimensional stability at elevated temperature, good resistance to chemicals, fire retardant. Transparent moulded parts correspond to type 1130 according DIN 16946, part 2. | medium reactivity | 350 - 450 3) | 9 - 15 18) | 2 | 133 |
| VIAPAL VUP 4786 BT/81-30 | Polyester/polyurethane-hybrid resin, preaccelerated. Always processed together with a suitable di-isocyanate, e.g. with ADDITOL® VXT 6225/1. Thanks to a considerably low level of styrene emission it has outstanding features of very fast curing, tack free surface and low shrinkage and thus short production time compared to unsaturated polyester resins; does not contain halogen or antimony trioxide. Used for the production of self-extinguishing components that correspond to German DIN 5510 T2 (classification S4-SR2-ST2). Moulded part corresponds further to French standard NF P 92-501 (classification M2) and NF X 70-100 & NF X 70-702 (classification F1). | high reactivity | thix. | 25 - 35 32) | 0,4 | 127 |

10 Special Resin Types (continued)

Resins, flame retardant or flame retardant adjustable (continued)

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|------------------------------|---|-----------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® VUP 4812 BT/81-50 | Polyester/polyurethane-hybrid resin, preaccelerated. Always processed together with a suitable di-isocyanate, e.g. with ADDITOL® VXT 6225/1. Thanks to a considerably low level of styrene emission it has outstanding features of very fast curing, tack free surface and low shrinkage and thus short production time compared to unsaturated polyester resins; does not contain halogen or antimony trioxide. Used for the production of self-extinguishing components that correspond to German DIN 5510 T2 (classification S4-SR2-ST2). Moulded part corresponds further to French standard NF P 92-501 (classification M2) and NF X 70-100 & NF X 70-702 (classification F1). | high reactivity | thix. | 40-50 32) | 0,4 | |
| VIAPAL® UP 4828 MT/82 | UP resin, usable for the production of self-extinguishing components that correspond to Din 5510 part 2 of the classification S4-SR2-ST2. Suitable for injection. | high reactivity | 450-750 3) | 20-30 32) | – | HDT: 75 |
| VIAPAL UP 660 A/73 | HET acid resin, excellent fire retardant properties, suitable for infusion, for manufacture of non-transparent moulded parts, following certificates are available: - underwriter laboratories; UL 94 V0 - DIN 4102: classification B1 - SBI-test according DIN EN 13823: B-s3,d0 - M1 according NF P 92-502. | low reactivity | 520-750 1) | 10-18 | – | 99 |
| VIAPAL UP 403 BMT/55 | O-phthalic acid resin, by addition of a suitable amount of ATH classification S4, St2, SR2 according DIN 5510 can be reached, guide formulation available on request. | high reactivity | thix. | 30-40 6) | 2,0 | 120 |



Phenolic laminating resins

PHENODUR^{®**}
laminating resins

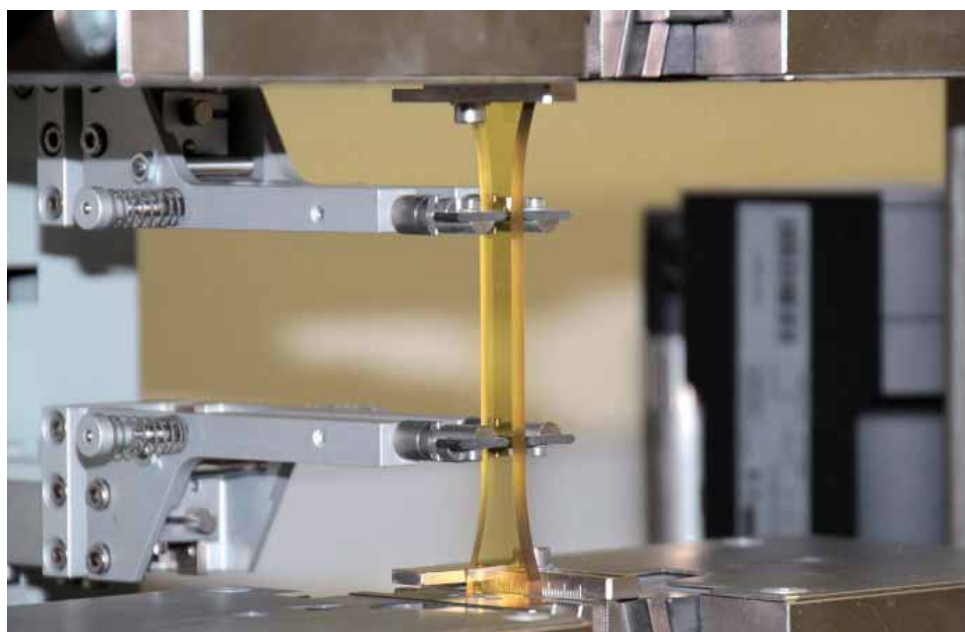
For information regarding PHENODUR laminating resins and appropriate hardeners please contact Technical Service. For example, laminates based on PHENODUR VPW 9340 are able to fulfil the specification of prEN45 545 hazard level 4.

Resins with light stabilization

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|-------------------------------------|--|-----------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL ^{®*} UP 240 S/53 | Orthophthalic acid resin, light stabilized, contains methyl methacrylate; for manufacture of highly transparent flat light-elements at room temperature. | high reactivity | 100 - 150 1) | 15 - 25 18) | 1,6 | 110 |

Flexible resins

| | | | | | | |
|-----------------------------------|--|-------------------|-----------------|----------------|-----|----|
| VIAPAL ^{®*} UP 130/65 | Isophthalic acid resin, high strain at break, high impact strength; for flexibilizing of rigid types of VIAPAL resin. | low reactivity | 550 - 750 3) | 10 - 16 12) | 60 | 50 |
| VIAPAL UP 179 MT/57 | Low styrene emission, thixotropic; tack-free curing, tough-elastic; in combination with polyester surface tissue for seamless linings (e.g. roof top coatings). | medium reactivity | thix. | 25 - 35 32) | 100 | 50 |
| VIAPAL VUP 4808 B/62 | O-phthalic acid resin, very flexible, special accelerator system enabling the production of crystal clear laminated glass and security glass. Interesting architectural effects can be achieved by coloring. | low reactivity | 140 - 210 1) | 45 - 55 10) | – | – |



Paste resins

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|--------------------|--|------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® UP 151 | UP-resin, monomer-free, odourless; very good storage stability, can absorb a high level of pigment; for the production of color pastes. | – | 1400 - 1900 2) | – | – | – |
| VIAPAL® UP 152 | UP-resin, monomer-free, odourless; very good storage stability, can absorb a high level of pigment; for the production of color pastes. Low viscosity. | – | 350 - 600 3) | – | – | – |
| VIAPAL VUP 4787 | UP-resin, monomer-free, odourless; very good storage stability, can absorb a high level of pigment; for the production of color pastes. | – | 550 - 850 1) | 10 - 20 22) | – | – |

Button resins

| | | | | | | |
|--------------------------|--|-------------------|-------------------|----------------|-----|---|
| VIAPAL UP 465 E | Unsaturated polyester resin of very bright bluish color, for production of button sheets. | medium reactivity | 2240 - 2750 1) | 7 - 11 14) | 1,0 | – |
| VIAPAL VUP 4735 E/71 | O-phthalic acid resin, very light, faint blue color ("enhanced"); button sheets can be machined well, even after a longer period of storage. | medium reactivity | 1900 - 2600 1) | 6 - 12 14) | – | – |
| VIAPAL VUP 4763 ET/68 | O-phthalic acid resin, thixotropic, used especially for the production of rods with multi-colored effects in the casting process. The light color in its hardened state is to be emphasised in particular. | medium reactivity | 1200 - 1750 3) | 25 - 35 14) | – | – |



Putty resins for the stone industry

| | | | | | | |
|-------------------------|---|-----------------|-----------------|---------------|-----|-----|
| VIAPAL VUP 4706 B/65 | Orthophthalic acid resin, special accelerator and inhibitor system; after addition of dibenzoyl peroxide, rapid and good curing even in thin layer, bright color in cured state; for manufacture of putties and adhesives for the stone industry. | high reactivity | 690 - 920 1) | 6 - 12 32) | 1,9 | 102 |
| VIAPAL VUP 4788 B/65 | Orthophthalic acid resin, special accelerator and inhibitor system; after addition of dibenzoyl peroxide rapid and good curing even in thin layer, bright color in cured state; for manufacture of putties and adhesives for the stone industry. | high reactivity | 740 - 850 1) | 5 - 6 28) | 2,0 | 102 |

Foam resins

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|---------------------------|--|-----------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® VUP 4688 BT/66 | O-phthalic acid resin, pre-accelerated, together with Luperfoam® 329 (Arkema) for moulded parts in the foam resin process with short cycle times. | high reactivity | thix. | approx. 5 min | – | 102 (base resin) |
| VIAPAL® UP 4836 BT/66 | O-phthalic acid resin, pre-accelerated, together with Luperfoam 329 for moulded parts in the foam resin process for longer process times, preferably for thick-walled moulded parts. | high reactivity | 1200 - 1500 1) | 12-16 min | – | – |
| VIAPAL UP 4856 BT/65 | O-Phthalic acid resin, pre-accelerated, together with Luperfoam 329 for moulded parts in the foam resin process for long process times, preferably for thick-walled moulded parts | high reactivity | 800 - 1100 | 50 - 60 min | na | na |

Cast resin, pure resin

| | | | | | | |
|------------------------|--|-------------------|------------|----------|-----|----|
| VIAPAL UP 223 BS/65 | O-phthalic acid resin, specially pre-accelerated, light stabilized; cast resin for the production of crystal clear components. | medium reactivity | 600-800 3) | 25-35 6) | 2,5 | 80 |
|------------------------|--|-------------------|------------|----------|-----|----|

Resin for filament winding or centrifugal casting method

| | | | | | | |
|-------------------------|---|-------------------|------------|-----------|-----|-----|
| VIAPAL UP 495/48 | Bisphenol A/fumaric acid resin, high HDT, high chemical suitability, particularly high hydrolyse and alkali resistance; for the construction of chemical facilities and non-corrodible components. | high reactivity | 300-510 1) | 5-15 32) | 2 | 140 |
| VIAPAL VUP 4649 E/65 | Isophthalic/orthophthalic acid resin, enhanced strain at break, impact strength and dimensional stability at elevated temperature. | medium reactivity | 660-820 1) | 13-17 18) | 4,2 | 114 |
| VIAPAL VUP 4652/67 | Low viscous vinyl ester resin on epoxy-novolak-base; extraordinary good chemical resistance, enhanced dimensional stability at elevated temperature. Approval of BAM, Berlin, for lining of tanks for storage of aircraft fuel and petrol according to DIN 51600 and DIN 51607. Approval of Lloyd's Register of Shipping. | high reactivity | 240-410 1) | 13-27 24) | 3 | 146 |
| VIAPAL VUP 4714/60 | Isophthalic acid/neopentyle glycol resin, very good curing, high HDT, high chemical suitability, good hot water resistance. | medium reactivity | 600-800 1) | 5-11 18) | 3,7 | 129 |
| VIAPAL VUP 4779/55 | Orthophthalic acid resin, enhanced strain at break; good dimensional stability at elevated temperature; specifically for manufacture of pipes by centrifugal method (HOBAS-System), moulded parts correspond to type 1140 according DIN 16946, part 2. | high reactivity | 170-230 1) | 8-16 18) | 2,6 | 123 |

14 Special Resin Types (continued)

Air drying resins

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|------------------------|---|-----------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® UP 527 E/68 | UP resin, based on fumaric acid, Viapal UP527E/68 is an air-drying unsaturated polyester resin curing paraffin-free. Viapal UP 527 E/68 has only little yellowing tendency. | high reactivity | 630-950 1) | 41 18) | 3,1 | 93 HDT |

Cast resins, fillable

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|----------------------------|--|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® UP 002/60 | O-phthalic acid resin, moulded parts correspond to type 1110 in accordance with DIN 16946, part 2. | high reactivity | 250-350 3) | 10-16 12) | 2 | 110 |
| VIAPAL VUP 4626 BE/67 | O-phthalic acid resin, specially pre-accelerated; cures clear and almost colorless with low build-up of heat; for the production of thick-walled sanitary articles (e.g. baths) with marble or onyx effect. | medium reactivity | 1650-2100 1) | 18-32 6) | 1,9 | 80 |
| VIAPAL VUP 4627 E/61 | O-phthalic acid resin, with good mechanical and chemical properties (increased impact resistance). | medium reactivity | 440-530 1) | 25-36 18) | 2,3 | 86 |
| VIAPAL VUP 4779/55 | P-phthalic acid resin. Moulded parts display increased HDT as well as impact resistance and correspond to type 1140 according DIN 16946, part 2. | high reactivity | 170-240 1) | 30-40 32) | 2,8 | 123 |
| VIAPAL VUP 4805 B/64-15 | Polyester/polyurethane hybrid resin on neopentyle glycol base, pre-accelerated. Always processed together with a suitable di-isocyanate, e.g. with ADDITOL VXT 6225/1. Very fast curing, surface cures tack free. Impregnates reinforcing materials very fast and can be loaded with a high proportion of mineral filler for the production of low shrink moulded parts. | high reactivity | 95-130 2) | 15 32) | 3,4 | 121 |



* VIAPAL Unsaturated polyesters

Solid surface

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|---------------------------|--|-------------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL® VUP 4777 BE/62 | Isophthalic acid/neopentyle glycol resin, pre-accelerated; acryl modified, low tension curing; bright color in cured form, very good war water resistance. In combination with aluminium trihydrate for manufacture of "densified marble" (solid surface). | medium reactivity | 560 - 770 1) | 21 - 35 6) | 2,6 | 91 |
| VIAPAL® UP 4777 B/66 | similar to Viapal VUP 4777 BE/62 but with shorter gelltime and higher solid content | high reactivity | 800 - 1200 | 17 - 21 | 2,6 | 91 |
| VIAPAL VUP 4714/60 | Isophthalic acid/neopentyle glycol resin, very good penetration curing, high deformation resistance in heat, high chemical suitability, good hot water resistance. | medium reactivity | 600 - 800 1) | 5 - 11 18) | 3,7 | 129 |

Injection resins

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|------------------------|---|-----------------|-------------------|----------------|-------------------------|-----------------------------------|
| VIAPAL UP 002/60 | O-phthalic acid resin, short saturation and mould release times; corresponds to type 1110 in accordance with DIN 16946, part 2. | high reactivity | 250 - 350 3) | 10 - 16 12) | 2 | 110 |
| VIAPAL UP 4844 B/61 | Polyester/polyurethane-hybrid resin on neopentyle glycol base, preaccelerated. Always processed together with Additol VXT 6225/1. Very low viscosity, very fast curing after gelification, surface cures tack free. Impregnates reinforcing materials very fast, can be loaded with high proportions of mineral fillers for the production of low shrink moulded parts. | – | 160 3) | 60 32) | 5,1 | 76 HDT |
| VIAPAL VUP 4779/55 | O-phthalic acid resin, increased elongation at break; high HDT, moulded parts correspond to type 1140 according DIN 16946, part 2. | high reactivity | 170 - 230 1) | 8 - 14 32) | 2,5 | 123 |



16 | Special Resin Types (continued)

Pultrusion resins

| Name | Characteristic | Reactivity | Viscosity [mPa s] | Gel time [min] | Elongation at break [%] | Glass transition temperature [°C] |
|-------------------------|---|-------------------|-------------------|-------------------|-------------------------|-----------------------------------|
| VIAPAL® UP 262 S/66 | Isophthalic acid resin, light stabilized; enhanced strain at break; for manufacture of thick-walled laminates by pultrusion and casting method; basic resin for formulation of fast curing elastic putties and adhesives (bonding of natural and artificial stone, GR-UP laminates). | medium reactivity | 850 - 1150 1) | 8 - 16 18) | 4,4 | 65 |
| VIAPAL® UP 745/56 | Terephthalic acid/neopentyl glycol resin, good resistance to chemicals and very high dimensional stability at elevated temperature. Corresponds to type 1130 in accordance with DIN 16946, part 2. | medium reactivity | 550 - 750 3) | 20 - 30 12) | 2 | 146 |
| VIAPAL VUP 4627 E/61 | O-phthalic acid resin with good mechanical and chemical properties and increased storage stability (increased impact resistance). | medium reactivity | 440 - 530 1) | 25 - 36 18) | 2,3 | 86 |
| VIAPAL VUP 4649 E/65 | Isophthalic/orthophthalic acid resin, enhanced strain at break, impact strength and dimensional stability at elevated temperature. | medium reactivity | 660 - 820 1) | 13 - 17 18) | 4,2 | 114 |
| VIAPAL VUP 4652/67 | Low viscous vinyl ester resin on epoxy-novolak-base; extraordinary good chemical resistance, enhanced dimensional stability at elevated temperature. Approval of BAM, Berlin, for lining of tanks for storage of aircraft fuel and petrol according to DIN 51600 and DIN 51607. Approval of Lloyd's Register of Shipping. | high reactivity | 240 - 410 1) | 13 - 27 24) | 3 | 146 |
| VIAPAL VUP 4666/51 | Isophthalic acid resin, very high dimensional stability at elevated temperature; for manufacture of laminates and profiles preferably used in electric industry. | high reactivity | 650 - 950 1) | 6 - 12 18) | 1,5 | 163 |
| VIAPAL VUP 4714/60 | Isophthalic acid/neopentyle glycol resin, very good curing, high deformation resistance in heat, high chemical suitability, good hot water resistance. | medium reactivity | 600 - 800 1) | 5 - 11 18) | 3,7 | 129 |
| VIAPAL VUP 4749/54 | Isophthalic acid type, single component low shrink resin; moulded parts have outstanding features of high surface quality and dimensional stability. | high reactivity | 1270 - 1570 1) | 5 - 15 18) | 2,5 | |
| VIAPAL VUP 4785/70 | O-phthalic acid resin, flame retardant, halogen-free; formulations with ATH produce profiles with excellent flame protection properties. | high reactivity | 400 - 550 1) | 9 - 16 32) | 2,1 | 87 |
| VIAPAL UP 746/58 | Isophthalic acid/neopentyle glycol resin, high deformation resistance in heat, high chemical suitability; moulded parts correspond to type 1140 in accordance with DIN 16946, part 2. Certificate of the Germanic Lloyd available. | medium reactivity | 700 - 900 3) | 1000 - 1500 3) | 2,0 | 120 |
| VIAPAL UP 495/48 | Bisphenol A/fumaric acid resin, high deformation resistance in heat, high chemical suitability, particularly high hydrolyse and alkali resistance; for the construction of chemical facilities and noncorrodible components; moulded parts correspond to type 1140, DIN 16946, part 2. | high reactivity | 300 - 510 1) | 5 - 15 22) | 2,0 | 110 HDT |

* VIAPAL Unsaturated polyesters

Gelcoats for general applications

| Name | Characteristic | Non volatile content | Gel time [min] | Elongation at break of pure resins [%] | Application |
|----------------------------|---|----------------------|----------------|--|-------------|
| VIAPAL® Gelcoat 920 B | Highly thixotropic, specially pre-accelerated UP-resin based on isophthalic acid; brush grade; for clear, resilient gelcoats with good resistance to seawater. | 63 - 67 | 11 - 17 10) | 4,5 | brush |
| VIAPAL® Gelcoat 921 B | Gelcoat 920 B adjusted to spraying consistency. | 54 - 58 | 13 - 21 10) | 4,5 | spray |
| VIAPAL Gelcoat VUP 4750 BE | Highly thixotropic, specially pre-accelerated UP-resin based on isophthalic acid; brush grade; to be used only after coloration with VIAPAL color pastes. Excellent processing properties: rapid deaeration, fast curing, high color stability. | 65,5 - 69,5 | 13 - 18 10) | 3,5 | brush |
| VIAPAL Gelcoat VUP 4751 BE | Gelcoat VUP 4750 BE adjusted to spraying consistency. | 57 - 61 | 7 - 12 10) | 3,5 | spray |
| VIAPAL Gelcoat VUP 4820 B | Highly thixotropic, specially pre-accelerated UP-resin based on isophthalic acid; brush grade; particularly high elongation at break. | 66,5 - 70,5 | 7 - 11 10) | 8,3 | brush |



Gelcoats for sanitary applications

| | | | | | |
|-----------------------------|---|-------------|----------------|-----|-------|
| VIAPAL Gelcoat VUP 4647 BES | Highly thixotropic, specially pre-accelerated, light stabilized UP-resin based on isophthalic acid/neopentyl glycol; spray grade for gelcoats on synthetic marble/onyx tiles and sanitary ware; extraordinary bright color and very high resistance to cold/warm water with elevated thermal stress conditions. | 52,5 - 56,5 | 6 - 12 10) | 1,5 | spray |
| VIAPAL Gelcoat VUP 4780 BE | Highly thixotropic, specially pre-accelerated, UP-resin based on isophthalic acid/neopentyl glycol; brush grade; to be used after coloration with VIAPAL color pastes. Excellent processing properties; rapid de-aeration, fast curing, high color stability. | 67 - 71 | 8 - 18 10) | 4,2 | brush |
| VIAPAL Gelcoat VUP 4781 BE | Gelcoat VUP 4780 BE adjusted to spraying consistency. | 59 - 63 | 10 - 15 10) | 4,2 | spray |
| VIAPAL Gelcoat VUP 4835 B | Gelcoat, based on isophthalic acid/neopentyl glycol resin, preaccelerated; very thixotropic, also colored (with Viapal color pastes) available, excellent processing properties: very good deaeration, fast curing after gelification, excellent thermo shock behaviour. | 59 - 63 | 9 - 17 | 3,6 | spray |
| VIAPAL Gelcoat VUP 4794 BS | Isophthalic acid/neopentyl glycol resin, acryl modified, pre-accelerated, very thixotropic, light stabilized. As non colored gelcoat on polymer marble and polymer concrete articles. Optimally clear film, good surface hardness, very low yellowing tendency, very good warm-water and chemical resistance, suitable for outside use. | 52 - 56 | 13 - 17 10) | 1,5 | spray |

Gelcoats and Topcoats for FRP pools

| Name | Characteristic | Non volatile content | Gel time [min] | Elongation at break of pure resins [%] | Application |
|------------------------------------|---|----------------------|----------------|--|-------------|
| VIAPAL® Gelcoat UP 4833 BE/5115** | Isophthalic acid/neopentyle glycol resin, pre-accelerated; very thixotropic, Excellent processing properties: very good de-aeration, fast penetration curing, particularly high color stability, suitable for swimming pools. Only colored available, current color shade on request. This color 5115 (light blue) is used only as an example. | 62 – 66 | 14 – 20 10) | 4,2 | spray |
| VIAPAL® Gelcoat UP 4841 BES/5262** | Newest generation gelcoat for pool manufacturing. Based on Isophthalic acid/neopentyle glycol resin, pre-accelerated, very thixotropic. Excellent processing properties: very good de-aeration, fast penetration curing, particularly high color and gloss stability. Only colored available, current color shades on request. This color 5262 (light blue) is used only as an example. | 58 - 62 | 12 - 20 10) | 4,2 | spray |
| VIAPAL Gelcoat UP 4839 BS** | Clear gelcoat, Isophthalic acid/neopentyle glycol resin, acryl modified, preaccelerated, thixotropic, light stabilized. Optimally clear film, good surface hardness, very low yellowing tendency, very good warm water and chemical resistance, suitable for pool production. | 46 - 50 | 13 - 17 10) | 2 | spray |
| VIAPAL Topcoat UP 4845 BES/5262** | Topcoat, based on isophthalic acid/neopentyle glycol resin, preaccelerated, very thixotropic, light blue color, for tack free curing topcoats with high chemical suitability. | 64 - 68 | 14 - 20 | 4,2 | brush |

Gelcoats for boat building

| | | | | | |
|------------------------------------|--|-----------|--------------|-----|-------|
| VIAPAL Gelcoat VUP 4750 BE** | Highly thixotropic, specially pre-accelerated UP-resin based on isophthalic acid; brush grade; to be used only after coloration with VIAPAL color pastes. Excellent processing properties: rapid deaeration, fast curing, high color stability. | 65,5-69,5 | 13-18 10) | 3,5 | brush |
| VIAPAL Gelcoat VUP 4751 BE** | Gelcoat VUP 4750 BE adjusted to spraying consistency. | 57-61 | 7-12 10) | 3,5 | spray |
| VIAPAL Gelcoat VUP 4780 BE** | Highly thixotropic, specially pre-accelerated, UP-resin based on isophthalic acid/neopentyl glycol; brush grade; to be used after coloration with VIAPAL color pastes. Excellent processing properties; rapid deaeration, fast curing, high color stability. | 67-71 | 8-18 10) | 4,2 | brush |
| VIAPAL Gelcoat VUP 4781 BE** | Gelcoat VUP 4780 BE adjusted to spraying consistency. | 59-63 | 10-15 10) | 4,2 | spray |
| VIAPAL Gelcoat VUP 4846 BES/5011** | Dark blue marine gelcoat, based on isophthalic acid/neopentyle glycol resin, preaccelerated; very thixotropic, outstanding resistance against bleaching, especially developed for marine market, certificate of Lloyds Register of Shipping available. | 59-63 | 14-19 | – | spray |
| VIAPAL Gelcoat GC 4861 BS/9010* | White marine gelcoat, based on special resin developed for marine application, preaccelerated; thixotropic, outstanding resistance against yellowing, especially developed for marine market | 63 - 67 | 10 - 15 | 4,2 | spray |

* VIAPAL Unsaturated polyesters

** for best osmosis resistance the use of at least 1 laminate layer barrier coat resin VIAPAL UP 4838 BT/63 directly behind the gelcoat is recommended.

Tooling gelcoats

| Name | Characteristic | Non volatile content | Gel time [min] | Elongation at break of pure resins [%] | Application |
|------------------------|---|----------------------|----------------|--|-------------|
| VIAPAL® Gelcoat 935 BE | Highly thixotropic, Co-pre-accelerated UP-resin, brush-grade; for resilient gelcoats with high resistance to aromatic solvents (styrene) particularly as gelcoat for glass-fiber reinforced UP moulds. Used together with buffer resin VUP 4774 BET/57. The gelcoat is also colored available: Gelcoat 935 BE/9127 (black) and Viapal GC 935 BE/6101 (green). | 64 – 68 | 18 – 25 10) | 4 | brush |
| VIAPAL® Gelcoat 936 BE | VIAPAL gelcoat 935 BE formulated for spraying. The gelcoat is also colored available: Gelcoat 936 BE/9127 (black) and Gelcoat 936 BE/6101 (green). | 51,5 – 55,5 | 16 – 23 10) | 4 | spray |

Flame retardant gelcoats

| | | | | | |
|--------------------------------|--|-----------|-------------|-----|-------|
| VIAPAL Gelcoat VUP 4634 BE | Highly thixotropic, Co-pre-accelerated UP-resin based on isophthalic acid; brush grade; for gelcoats with fire retardant properties; only in combination with fire retardant of VIAPAL gelcoats. | 71,5-75,5 | 6-16 10) | 4,5 | brush |
| VIAPAL Gelcoat VUP 4742 B | Highly thixotropic, Co-pre-accelerated UP-resin based on isophthalic acid; spray grade; halogen and antimony trioxide-free; for moulded parts with fire retardant properties; only in combination with fire retardant VIAPAL laminating resins. Moulded parts based on VUP 4742 B/9018 and Viapal VUP 4786 BT/81-30 correspond to French standard NF P 92-501 classification M2. | 61-65 | 7-17 10) | 2,7 | spray |
| VIAPAL Gelcoat VUP 4853 B/1015 | Flame retardant gelcoat based on Isophthalic acid resin, preaccelerated, very thixotropic, does not contain halogen or antimony trioxide; for moulded parts which requires flame retardant properties, color shade is RAL 1015 light ivory. | 66-70 | 9-15 | – | brush |

Topcoat

| | | | | | |
|-----------------------|--|-----------|--------------|-----|-------|
| VIAPAL Topcoat 960 BE | Highly thixotropic, Co-pre-accelerated UP-resin based on isophthalic acid/neopentyl glycol; for tack-free curing topcoats with high chemical resistance. | 61,5-65,5 | 12-18 10) | 4,2 | brush |
|-----------------------|--|-----------|--------------|-----|-------|



Transparent gelcoats

| Name | Characteristic | Non volatile content | Gel time [min] | Elongation at break of pure resins [%] | Application |
|--------------------------------|--|----------------------|-----------------|--|-------------|
| VIAPAL® Gelcoat 920 B | Clear gelcoat based on isophthalic acid resin, preaccelerated, thixotropic; for moulded parts with good sea water resistance. | 63 - 67 | 11 - 17 (10) | 4,5 | brush |
| VIAPAL® Gelcoat 921 B | Gelcoat 920 B adjusted to spraying consistency. | 54 - 58 | 13 - 21 (10) | 4,5 | spray |
| VIAPAL Gelcoat VUP 4647 BES | Clear gelcoat based on isophthalic acid/neopentyle glycol resin, specially preaccelerated, thixotropic, light stabilized; for the production of sanitary and other parts, suitable for indoor use. | 52,5 - 56,5 | 6 - 12 (10) | 1,8 | spray |
| VIAPAL Gelcoat VUP 4794 BS | Clear gelcoat based on isophthalic acid/neopentyle glycol resin, acryl modified, preaccelerated, thixotropic, light stabilized. Suitable for production of polymer marble and polymer concrete articles. Optimally clear film, good surface hardness, very low yellowing tendency, very good warm water and chemical resistance, suitable for outside use. | 52 - 56 | 13 - 17 (10) | 1,5 | spray |
| VIAPAL Gelcoat UP 4839 BS | Clear gelcoat based on isophthalic acid/neopentyle glycol resin, acryl modified, preaccelerated, thixotropic, light stabilized. Suitable for production of polymer marble and polymer concrete articles. Optimally clear film, good surface hardness, very low yellowing tendency, very good warm water and chemical resistance, suitable for pool production or other outside use, increased HDT. | 46 - 50 | 13 - 17 (10) | 2 | spray |

Additives

| Name | Characteristic |
|---------------------------------|--|
| ADDITOL®** VXT 6228 Additive | Very viscous solution of thermoplastics in styrene; Low shrink additive for reducing the shrinkage of UP resins. In combination with very reactive Viapal types for the production of moulded parts in the hot-press (SMC/BMC) and pultrusion process as well as for polymer concrete. Addition quantity approx. 20 - 30 % (max. 40 %) referring to resin. |
| ADDITOL®** VXT 6225/1 | Reacting agent for polyester polyurethane hybrid systems. |
| ADDITOL VXL 5918 | 10 % inhibitor solution for prolonging the gel time of UP resin formulation. |
| Accelerator Co1 | 1% cobalt solution in xylo. |
| Accelerator Co4 | 5% cobalt solution in xylo. |
| VIAPAL ZUP 4617/50 Additive | Wetting agent and emulsifying additive, reduces the separation between UP resin and the low-shrink component. Reduces the viscosity of filled systems and enhances the flow properties. Improves color homogeneity in low shrink adjustments for pultrusion applications. Addition quantity approx. 1 % referring to resin. |
| Paraffin solution 24/3% | 3% solution of paraffin in aromatic mixture. |
| Color-brightener C2/100 | Clearing additive for UP resins, dispersion of pigments and optical color-brightener in the plasticizer. |
| Trennmittel E | Release agent, as sealant of micro pores, only in combination with release agent "Trennmittel PVA". |
| Trennmittel PVA | Release agent for moulds composed of glass fibre reinforced plastics, sealed wood or melamine press boards. |

* VIAPAL Unsaturated polyesters

** ADDITOL additives

Color Pastes

VIAPAL® color pastes

Inorganic and/or organic pigments in a monomer-free UP-resin, excellent light and weather fastness.

Following RAL color pastes are available short term:

| | | |
|-------------|-------------|-------------|
| FP 1001 | FP 5004 | FP 7015 |
| FP 1002 | FP 5005 | FP 7016 |
| FP 1003 | FP 5010 | FP 7021 |
| FP 1004 | FP 5012 | FP 7022 |
| FP 1006 OEP | FP 5013 | FP 7023 |
| FP 1007 | FP 5014 | FP 7024 |
| FP 1012 | FP 5015 | FP 7030 |
| FP 1013 | FP 5017 | FP 7031 |
| FP 1014 | FP 5018 | FP 7032 |
| FP 1015 | FP 5021 | FP 7033 |
| FP 1016 | FP 5023 | FP 7035 |
| FP 1018 | FP 5024 | FP 7036 |
| FP 1020 | | FP 7037 |
| FP 1021 | FP 6001 | FP 7038 |
| FP 1023 | FP 6002 | FP 7040 |
| FP 1024 | FP 6005 | FP 7042 |
| FP 1028 | FP 6009 | FP 7043 |
| | FP 6010 | |
| FP 2002 | FP 6011 | FP 8001 |
| FP 2003 | FP 6014 OEP | FP 8003 |
| FP 2004 | FP 6017 | FP 8007 |
| FP 2011 | FP 6018 | FP 8008 |
| | FP 6019 | FP 8014 |
| FP 3000 | FP 6021 | FP 8016 |
| FP 3001 | FP 6022 | FP 8017 |
| FP 3002 | FP 6025 | FP 8023 |
| FP 3003 | FP 6026 | |
| FP 3004 | FP 6027 | |
| FP 3005 | FP 6029 | |
| FP 3009 | | FP 9001 |
| FP 3020 | | FP 9003 |
| | FP 7000 | FP 9010 OEP |
| FP 4004 | FP 7001 | |
| FP 4005 | FP 7004 | FP 9011 |
| | FP 7005 | |
| FP 5002 | FP 7011 | FP 9016 |
| FP 5003 | FP 7012 | FP 9018 |
| | FP 7013 | |

Other shades on request.

22 Information on Processing

In general, the gel time is greatly influenced by the ambient temperature (Figure 1).

For this reason particular care must be taken to ensure a constant room temperature during processing.

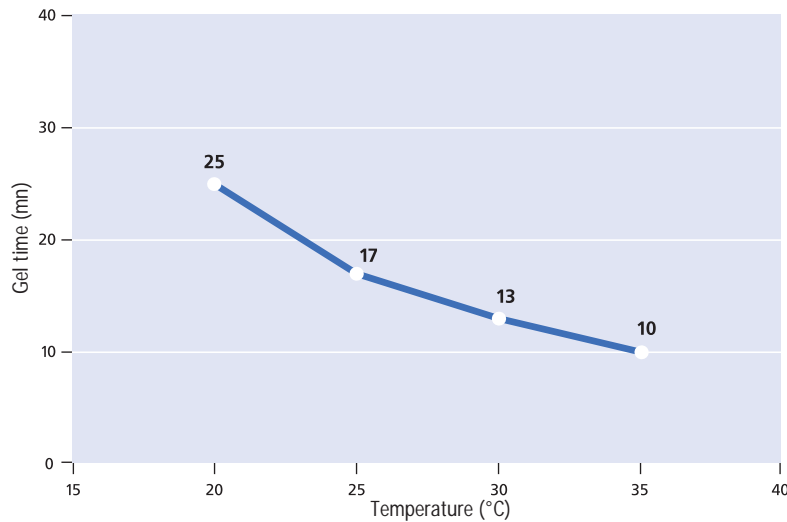


Fig. 1: The gel time is dependent on the ambient temperature.
Example: Measured on VUP 4782 BEMT/55, cured with 2% methyl ethyl ketone peroxide.

If it is not possible to heat the processing areas sufficiently in the winter or to cool them sufficiently in the summer, the gel time

can be influenced accordingly by selecting suitable peroxides (Figure 2).

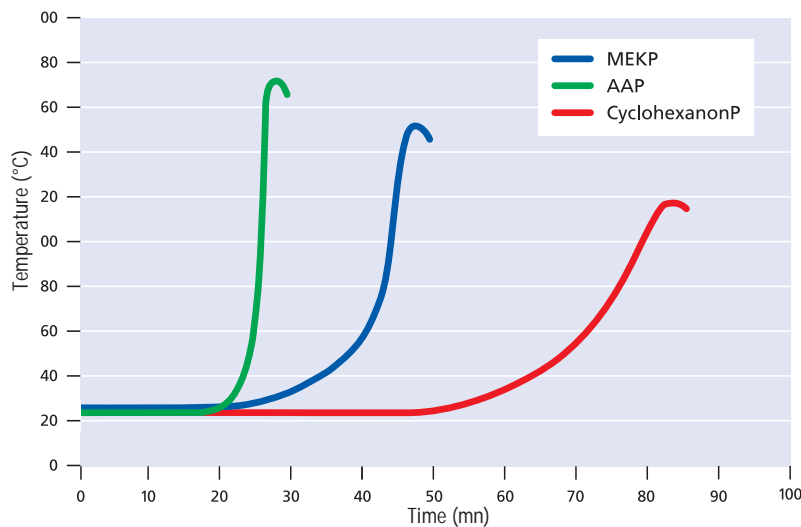


Fig. 2: The gel time is dependent on the type of peroxide.
Example: Measured von VUP 4627 E/61, cured with 2% peroxide.

| VIAPAL® type | Page |
|-----------------|---------------|
| 001/67 | 4 |
| 002/60 | 4, 14, 15 |
| 004/64 | 4 |
| 130/65 | 11 |
| 151 | 12 |
| 152 | 12 |
| 179 MT/57 | 11 |
| 221/68-15 | 4 |
| 223 BS/65 | 13 |
| 240 S/53 | 11 |
| 242 BT/57 | 7 |
| 262 S/66 | 16 |
| 303/65 | 4 |
| 303 BMT/55 | 7 |
| 320/70 | 4 |
| 403 BMT/55 | 10 |
| 450 E/66 | 4 |
| 4617/50 | 20 |
| 4626 BE/67 | 14 |
| 4627 BEMT/56 | 7, 8 |
| 4627 BEMT/56-30 | 7 |
| 4627 BET/56 | 7 |
| 4627 E/61 | 4, 14, 16 |
| 4627 ET/60 | 7 |
| 4634 BE | 19 |
| 4647 BES | 17, 20 |
| 4649 E/65 | 5, 13, 16 |
| 465 E | 12 |
| 4652/67 | 6, 13, 16 |
| 4666/51 | 5, 16 |
| 4686 BEMT/56 | 8 |
| 4686 BET/56 | 8 |
| 4688 BT/66 | 13 |
| 4706 B/65 | 12 |
| 4714/60 | 5, 13, 15, 16 |
| 4714 BET/52 | 8 |
| 4735 E/71 | 12 |
| 4739/65 | 5 |
| 4742 B | 19 |
| 4749/54 | 16 |
| 4750 BE | 17, 18 |
| 4751 BE | 17, 18 |
| 4763 ET/68 | 12 |
| 4774 BET/57 | 9 |
| 4777 BE/62 | 15 |
| 4777 BE/66 | 15 |
| 4779/55 | 13, 14, 15 |
| 4779/B66 | 15 |
| 4780 BE | 17, 18 |
| 4781 BE | 17, 18 |
| 4782 BEMT/55 | 7 |

| VIAPAL® type | Page |
|-------------------------------|-----------|
| 4782 BET/55 | 7 |
| 4785/70 | 16 |
| 4786 BT/81-30 | 9 |
| 4787 | 12 |
| 4788 B/65 | 12 |
| 4791 BEMT/55-21 | 7 |
| 4792 E/66 | 5 |
| 4794 BS | 17, 20 |
| 4805 B/64 | 9 |
| 4805 B/64-15 | 14 |
| 4808 B/62 | 11 |
| 4812 B/60 | 9 |
| 4812 BT/81-50 | 10 |
| 4815 BET/57 | 9 |
| 4820 B | 17 |
| 4828 MT/82 | 10 |
| 4833 BE/5115 | 18 |
| 4835 B | 17 |
| 4836 BT/66 | 13 |
| 4838 BT/63 | 9 |
| 4839 BS | 18, 20 |
| 4841 BES/5262 | 18 |
| 4844 B/61 | 15 |
| 4845 BES/5262 | 18 |
| 4846 BES/5011 | 18 |
| 4853 B/1015 | 19 |
| 4856 BT/65 | 13 |
| 4861 BS/9010 | 18 |
| 495/48 | 6, 13, 16 |
| 495 E/48 | 6 |
| 527 E/68 | 14 |
| 5918 | 20 |
| 6225/1 | 20 |
| 6228 | 20 |
| 660 A/73 | 10 |
| 745/56 | 5, 16 |
| 746/58 | 5, 16 |
| 797/59 | 6, 9 |
| 920 B | 17, 20 |
| 921 B | 17, 20 |
| 935 BE | 19 |
| 936 BE | 19 |
| 960 BE | 19 |
| Accelerator Co1 | 20 |
| Accelerator Co4 | 20 |
| C2/100 | 20 |
| Color pastes | 21 |
| Paraffin solution | 20 |
| Release agent Trennmittel E | 20 |
| Release agent Trennmittel PVA | 20 |

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