PANADUR
coating your ideas

Technical Data Sheet

PANADUR FAST

Version: 21.01.2019

PANADUR FAST

PANADUR FAST is a solvent-free coating for in-mold coating (IMC) processes as well as a high-gloss topcoat. IMC processes make it possible to configure the gloss level with the design of the mold surface.

PANADUR FAST is ideal as a long lasting coating for exterior surfaces that are constantly exposed to UV light and/or chemicals. The material is additionally distinguished by its good filling capability, high mechanical resistance and its hardness which can be customised to suit your needs. PANADUR FAST is a standard product from the PANADUR range of polyurea products.

Product Benefits

- Solvent free
- UV resistant
- Light-fast
- High chemical resistance
- High mechanical strength
- Individually customisable hardness
- Short curing time
- Rapid subsequent workability
- No additional UV protective coating necessary

Range of Applications

- Floor coatings
- Wall coatings
- Gelcoat for composite components
- In-mold coatings

Suitable surfaces include a wide range of synthetic materials (GRP, CFRP, viscoelastic, hard, soft and other foam materials, etc.) and fibrous materials and it may also be used as a topcoat for concrete surfaces that have been treated with PANADUR Primer. We would be happy to advise you about the best primer for use on a project-based level.

Technical Data

Processing method	2K systems with variable mixing ratio or by hand with brushes (note the pot life)
Mixing ratio	See label on container
Processing temperature range	10 to 35 °C ambient temperature (non-condensing, relative humidity < 90 %, at least 3 °C above dew point, note dew point chart)
Permissible surface temperature for application	10 to 30 °C (in order to avoid condensation, keep as close to ambient temperature as possible)
Permissible surface temperature during processing	20 to 70 °C (both components alike)
Consumption component mixture	Approx. 1.7 kg/m² (with a film thickness of 1.5 mm, depending on the substrate)

PANADUR GmbH
Tel.: +49 (0) 3941 6240 – 0
Fax.: +49 (0) 3941 6240 – 20
Web: www.panadur.de
E-Mail: info@panadur.de

Minimum film thickness	1500 – 3000 µm (depends on specific use)
Shelf life	At least 6 months (applies to unopened original containers at 5 – 30 °C; protect from lower temperatures, direct sunlight, humidity; store upright and tightly sealed)
Density of PANADUR FAST component (DIN EN ISO 1183-3 at 23 °C, reference data for color white)	Approx. 1.16 g/cm³
Dynamic Viscosity PANADUR FAST component (DIN 53019, measuring system 13, at 20 °C, reference data for color white)	Approx. 1500 mPa·s

Curing Times

	Hardener XP 100 / Hardener XP 110	Hardener 55	Hardener 82	Hardener NN 38
Time frame for handling*	15 min	15 min	15 min	20 min
Dust dry after approx.*	40 min	60 min	50 min	90 min
Completely cured after approx.*	72 h			

*Reference data for color white.

These data are applicable at 23 °C / 50 % relative humidity; lower temperatures lengthen the curing times (the time frame for handling is not lengthened).

Physico-Chemical Properties

Raw material base	Aliphatic amino-funtional aspartic acid ester, cross-linked with polyisocyanate
Color	RAL Classic colors, other colors available upon request
Volume solids content	At least 99 %
Gloss level (DIN EN ISO 2813, 60°)	Matt to high-gloss (depends on the surface of the mold in IMC process; high-gloss when used as a topcoat)
UV stability	Very high gloss level and color stability
Reaction to fire tests: small flame test according to EN 13501-1 (applies to all colors; substrates: metal building materials, mineral building materials, engineered wood with a density > 510 kg/m²) *:	Class E (no flaming droplets)
Max. thermal stress for coating	90 °C
CO_2 diffusion resistance number μ_{CO2} (DIN EN 1062-6) *	Infinite (no measurable CO2 diffusion)
CO_2 diffusion-equivalent air layer thickness $s_{D,CO2}$ (with a 600 µm film thickness) *	>200 m (calculated from µCO2) => impermeable
Water vapour diffusion resistance factor μ_{H2O} (DIN EN ISO 7783-2) *	4.660

PANADUR GmbH
Tel.: +49 (0) 3941 6240 – 0
Fax.: +49 (0) 3941 6240 – 20
Web: www.panadur.de
E-Mail: info@panadur.de

H_2O diffusion-equivalent air layer thickness $s_{D,H2O}$ (with a 600 µm film thickness)	7.8 m (calculated from μ_{H2O})
Water penetration test (adapted from DIN EN 12390-8, 72 hours) *	No penetration recorded
Impermeability to chloride ion penetration (adapted from DIN EN 13369; 90 d) *	No measurable increase in chloride ion concentration
Osmosis resistance adapted from the German Committee for Reinforced Concrete Guideline (DAfStb); immersed in water for 11 weeks *	No formation of bubbles, no structural changes to the surface, no reduction in the adhesive strength of the coating (concrete without primer: ≥ 1.6 N/mm² after test (mean value))
Tensile modulus of elasticity E_t (DIN EN ISO 527-3) *	6.51 MPa
Tensile strength at yield σ_{max} (DIN EN ISO 527-3) *	8.81 MPa
Tensile strain at break ε_{max} (DIN EN ISO 527-3) *	107.8 %
Multiaxial puncture test maximum force F_M (DIN ISO 7765-2) *	1385 N
Multiaxial puncture test maximum force deformation s_M (DIN ISO 7765-2) *	15.9 mm
Multiaxial puncture test energy to maximum force W_M (DIN ISO 7765-2) *	10.2 J
Multiaxial puncture test puncture energy W_T (DIN ISO 7765-2) *	11.8 J
Artificial weathering adapted from DIN 50021 / EN ISO 9227 (3 months; Continuous rain (50 g/l NaCl); 45 °C)	No perceptible change in colour, brightness or gloss level (dE, dL, da, db, GE 60°)
Test in boiling deionised chlorinated water (2 mg/l), 6 hours	No perceptible change in colour or brightness (dE, dL, da, db)

* Measurements were taken in a certified testing laboratory with PANADUR Hardener NN 38.

Hardness acc. to Shore (after 72 h)	Hardener XP 100 / Hardener XP 110	Hardener 82	Hardener 55	Hardener NN 38
D (ISO 868 / DIN 53505) *	Approx. 83	Approx. 82	Approx. 78	Approx. 63

*Reference data for color white.

Processing Guidelines

General information:

Before processing starts, all provided documents must be entirely read and understood.

Preliminary tests with original materials under comparable conditions are necessary to ensure material compatibility and adhesion.

It is absolutely necessary to keep detailed process records for every process step and the entire duration of the construction site, especially equipment maintenance logs (material temperatures and pressures, mass output during processing and measuring equipment tracing) and listed data for processing conditions (temperature deviations and air moisture). In addition the correct operation of the 2K system measuring devices are checked regularly and documented in a verifiable manner.

Uses which have not been specifically mentioned in this technical data sheet may only be performed after consultation and written confirmation by PANADUR GmbH.

PANADUR GmbH
Tel.: +49 (0) 3941 6240 – 0
Fax.: +49 (0) 3941 6240 – 20
Web: www.panadur.de
E-Mail: info@panadur.de

Surface preparation:

The following applies in general: See German VOB, Part C, DIN 18363, Section 3.

A careful preparation of the surface is absolutely essential for a durable coating. It is required to use a suitable PANADUR Primer. Its suitability should be verified by preliminary tests.

The substrate (concrete) must be stable and must have a minimum tensile adhesive strength of 1.5 N/mm². The substrate surface must be dry, clean, flat and without ridges, defects, loose material or cement slurry. It must also be free of formwork oils and other materials or substances that may separate or impede adhesion (oil, grease, silicone, release agent residue or other impurities). The residual moisture of concrete must be < 4 % (CM-Methods). Moisture penetration thereafter is not permitted and should be avoided. Verified compliance with this requirement (e.g. in construction records) must be documented.

Processing:

It is not allowed to dilute the material with any type of additives, e.g. solvents. It is only permitted to use the PANADUR Hardener component in the exact mixing ratio (see label on container).

The material containers should only be opened right before use. Stir PANADUR FAST intensively shortly before use with appropriate technical equipment until the material is homogeneous and looks unicolored. After material withdrawal a protection against surrounding moisture (nitrogen or argon fumigation) is highly required for the opened containers. After fumigation, close tightly and use the material promptly.

Keep to the exact mixing ratio given on the container label

Processing with technical equipment	Processing by hand	Preparation of molded parts by In-Mold-Coating-processing
PANADUR FAST can be applied with 2K hotspray machineries with separate material feeds to the spray head and to the mixing chamber of the heated hose assembly and adjustable mixing ratio. The appropriate spray parameters must be determined through preliminary tests based on the used system. The components are to be stirred continuously during processing. In order to achieve optimal results it is recommended to process the material on the machinery at 60 - 70 °C component temperature. Use cross-coat application until the desired thickness is attained. Due to the long gel time an application of overspray is not possible.	It is also possible to apply the material manually by brush or roller (note the time frame for handling). After having intensively mixed the PANADUR FAST and PANADUR Hardener component it is recommended to pour the mixture into a new, clean container in order to prevent mixing errors.	Evaluate the suitability of the mold before coating with PANADUR FAST. Depending on the material of the mold, PANADUR Release Agent T1 is recommended. Use the mold release agent according to the directions in the technical data sheet. After application, thoroughly buff out the mold release agent T1 to avoid affecting the part surface. A preliminary test is recommended. Further information may be found in the technical data sheet for PANADUR Release Agent T1.

After application, the coating must not be exposed to moisture for three days in order to achieve the end properties as listed above.

Tool cleaning:

The used 2K hotspray machinery must be thoroughly cleaned immediately after use, and, if necessary, also occasionally, depending on the system type with e.g. Mesamoll. A proper cleaning agent must be chosen based and tested according to the used system. Please also observe the instructions of the equipment manufacturer.

Note: If the curing process has started, it is no longer possible to clean any used tools.

PANADUR GmbH
Tel.: +49 (0) 3941 6240 – 0
Fax.: +49 (0) 3941 6240 – 20
Web: www.panadur.de
E-Mail: info@panadur.de

Cleaning the Coating

Abrasive or aggressive cleaning agents/equipment (e.g. dichloromethane, cellulose thinner, ozone) must not be used.

Cleaning the coating with pressure washers is only permitted with moderate water pressure. The use of any type of grinding brush is not permitted.

Supplemental Products

- PANADUR Primer (substrate dependent)

Storage

Protect from heat (T > 30 °C), frost (T < 7 °C) and humidity. Already opened containers must be protected against surrounding moisture (nitrogen or argon fumigation). After fumigation, immediately close tightly and use the material promptly. Do not expose uncured components to direct sunlight. Store and transport containers upright and tightly closed.

Further information may be found in the corresponding safety data sheets.

Protective Measures

The relevant protective measures are to be observed during processing and application. This is to be determined by risk assessment. Suitable protective clothing including respiratory must be worn during processing.

The instructions and safety advice on the containers should be observed during application. Further details may be found in our corresponding safety data sheets for each component.

Environmental Information

Uncured components are harmful to aquatic organisms and may cause longer-term adverse effects in water.

Do not allow individual components and uncured material mixtures to enter water, sewers or groundwater.

The instructions and safety advice on the containers should be observed during processing. Further details may be found in our corresponding safety data sheets for each component.

PANADUR GmbH
Tel.: +49 (0) 3941 6240 – 0
Fax.: +49 (0) 3941 6240 – 20
Web: www.panadur.de
E-Mail: info@panadur.de