

MAPEGROUT WT-S

Ultra-high performance, cementitious grout, with extremely good flow properties, high early and final compressive strength, high fatigue resistance, for anchoring and grouting onshore wind turbines

WHERE TO USE

- Baseplate grouting of onshore wind turbines where high fatigue resistance is required.
- Anchoring bolts of wind turbines.

Some application examples

- Void filling where a high modulus of elasticity, high thickness – up to 600 mm, and high compressive strength are required.
- Anchoring works in adverse weather conditions and at temperatures down to +2°C and up to 35°C.

TECHNICAL CHARACTERISTICS

Mapegrout WT-S is a pre-blended powder grout composed of high-strength cement, selected aggregates, and special admixtures.

When mixed with water, **Mapegrout WT-S** creates a highly fluid mortar that can easily flow into complex spaces without requiring vibration and without segregating.

A relative low heat development, enables **Mapegrout WT-S** to cast thickness range up to 600 mm.

Mapegrout WT-S exhibits positive expansion after casting.

Thanks to excellent early and final mechanical strength, **Mapegrout WT-S**, ensures exceptional durability and reliability, enabling long-term, maintenance-free operation of the wind turbine.

Mapegrout WT-S has an excellent fatigue resistance.

Mapegrout WT-S is CE marked in accordance with EN 1504-6 for anchoring works and complies with the "DafStb-Richtlinie – Herstellung und Verwendung von zementgebundenem Vergussbeton und Vergussmörtel."

Mapegrout WT-S has been tested using the CDF procedure to ensure resistance to frost and de-icing salts. External test institute reports confirm its high fatigue resistance, long workability time, and high modulus of elasticity.

RECOMMENDATIONS

- Do not add sand, cement or admixtures to **Mapegrout WT-S**.
- Do not use **Mapegrout WT-S** if the bag is damaged or has been opened previously.

APPLICATION PROCEDURE

TECHNICAL INFORMATION FOR THE APPLICATION

Composition of the mix:

From 2°C to 25°C:

100 kg of **Mapegrout WT-S**
7.6-8.0 l of water
(1.9 l – 2.0 l of water for 25 kg bags)
(38 l – 40 l of water for 500 kg bags)

From 26°C to 35°C:

100 kg of **Mapegrout WT-S**
8.0-8.4 l of water
(2.0 l – 2.1 l of water for 25 kg bags)
(40 l – 42 l of water for 500 kg bags)

Application thickness:

20 to 600 mm

Application temperature range:

environment and substrate temperature from +2°C to +35°C

Pot life of mix:

approx. 2 hours (at +20°C)

Environment of use (climatic and geographical conditions):

the product can be used in the environmental conditions pursuant to the following exposure classes (EN 206- table F.1)
X0
XC1, XC2, XC3, XC4
XD1, XD2, XD3
XS1, XS2, XS3
XF1, XF2, XF3, XF4^(*)
XA1

(*) **Mapegrout WT-S** was tested in accordance with the EN 12390-9 standard and compared with reference concrete formulated to meet the requirements of class XF4 as per EN 206-1.

Preparation of the substrate

Remove the dust, cement laitance, loose material and any formwork release agents from the concrete foundation with a high-pressure water jet.

Saturate the foundation surface and the sides of the cavity to be filled with water. Make sure that there is no liquid water on the surface before pouring: wait until any excess water has evaporated off, and if necessary, use compressed air to help remove the ponding water.

Preparation of the mortar

Add most of the water to the pan mixer, then slowly add **Mapegrout WT-S** while mixing for 3–4 minutes until a homogeneous mixture is obtained. Add the remaining water and continue mixing for at least 2 minutes until the desired consistency is obtained.

Instructions for preparing mortar samples for lab testing are available in the TECHNICAL DATA table.

Application of the mortar

Before pouring or pumping the mortar, ensure that the formwork is properly positioned and sealed to prevent any leaks during application.

The formwork should not absorb water from **Mapegrout WT-S**; to prevent this, it is advisable to treat the formwork with a form-release compound.

Pour or pump **Mapegrout WT-S** from only one side in a continuous flow to help expel air. Fill the formwork completely, ensuring that the mortar makes full contact with the baseplate of the wind turbine.

Vibration of the mortar is not necessary.

For additional information on the tools to be used for mixing and pumping operations, please contact Mapei Technical Service.

The product is not compatible with continuous rendering machines.

PRECAUTIONS TO BE TAKEN DURING AND AFTER APPLICATION

- Use only **Mapegrout WT-S** bags that have been stored on their original pallets to prepare the mortar.
- After pouring, **Mapegrout WT-S** must be cured with great care. Surfaces exposed to the open air should be protected to prevent rapid water evaporation, as this can lead to surface cracks from plastic shrinkage, especially in hot and/or windy conditions.
- Spray water on surfaces exposed to the open air during the first 24 hours of curing, or apply an appropriate anti-evaporation product to the surface.

CLEANING

Remove mortar from tools with water before it hardens. Once hardened, cleaning becomes significantly more difficult and must be done mechanically.

CONSUMPTION

Approx. 2.2 kg/dm³.

PACKAGING

25 kg bags, and 500 kg big bags.

STORAGE

Mapegrout WT-S can be stored for maximum 12 months in its original packaging.

Store the product in a dry, covered place at a temperature between +5°C and +35°C in its original, well-sealed packaging.

SAFETY INSTRUCTIONS FOR PREPARATION AND APPLICATION

Instructions for the safe use of our products can be found on the latest version of the Safety Data Sheet, available from our website www.mapei.com.

PRODUCT FOR PROFESSIONAL USE.

PRODUCT IDENTITY

Type according to EN 1504-1:	CC
Consistency:	powder
Colour:	grey
Maximum size of aggregate:	3.2 mm
Ion-chloride content according to EN 1015-17 (minimum requirement according to EN 1504 $\leq 0.05\%$):	$\leq 0.05\%$

TECHNICAL INFORMATION FOR PRODUCT PREPARATION

Composition of the mix:	100 parts by weight of Mapegrout WT-S with 7.8 % water.
Preparation of the mix:	Mix the product in compliance with the standard EN 196-1

CHARACTERISTICS OF FRESH MIX (at +20°C - 50% R.H.)

Colour of mix:	grey
Slump flow (ASTM C 1437):	Initial: > 300 mm
Flow channel (EN 13395-2):	Initial: > 660 mm
Segregation:	no
Density of the mix:	2400 kg/m ³

FINAL PERFORMANCE

According to curing defined in test methods

Performance characteristics	Test method	Product performance		
Compressive strength:	EN 12190	5°C	20°C	35°C *
1 day		> 10 MPa	> 80 MPa	> 95 MPa
3 days		> 85 MPa	> 100 MPa	> 115 MPa
7 days		> 95 MPa	> 110 MPa	> 125 MPa
28 days		> 110 MPa	> 130 MPa	> 135 MPa
Compressive strength (150x300 mm cylinders):	EN 12390-3	5°C	20°C	35°C *
28 days		> 105 MPa	> 125 MPa	> 130 MPa
Compressive strength (150 mm cubes):	EN 12390-3			
1 day		> 85 MPa		
28 days		> 135 MPa		
Concrete Strength Class:	-	C100/115		
Flexural strength: 28 days	EN 196-1	17 MPa		
Adhesion to concrete by pull-off:	EN 1542	> 2.0 MPa		
Capillary absorption:	EN 13057	0.01 kg/m ² ·h ^{0.5}		
Expansion:	EN 445	≥ 0.1%		

PRODUCT CHARACTERISTICS FOR CE MARKING ACCORDING TO EN 1504-6

Performance characteristics	Test method	Requirements EN 1504-6	Product performance
Pull-out strength of steel rebar – displacement at load of 75 kN:	EN 1881	≤ 0.6 mm	0.3 mm

Reaction to fire:	EN 13501-1	Euroclass	A1, A1 _{FL}
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NOTES:

Specimens preparation: pour the mortar into the moulds filling them without compacting.

** Tests at 35°C have been carried out using 8.2% of water.*

WARNING

Although the technical details and recommendations contained in this product data sheet correspond to the best of our knowledge and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical application; for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application. In every case, the user alone is fully responsible for any consequences deriving from the use of the product.

The values declared in the TECHNICAL DATA table (typical values) were obtained in compliance with test methods and curing cycles defined in the technical standards referenced therein. Therefore, please note that the use of test procedures or methods other than those indicated in the table could lead to different values and that, in such cases, any liability of our company is excluded.

Please refer to the current version of the technical data sheet, available from our website

www.mapei.com.

LEGAL NOTICE

The contents of this Technical Data Sheet ("TDS") may be copied into another project-related document, but the resulting document shall not supplement or replace requirements per the TDS in force at the time of the MAPEI product installation. The most up-to-date TDS can be downloaded from our website www.mapei.com.

ANY ALTERATION TO THE WORDING OR REQUIREMENTS CONTAINED OR DERIVED FROM THIS TDS EXCLUDES THE RESPONSIBILITY OF MAPEI.

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