Introduction

Promat FENDOLITE® MII is used in the petrochemical industry to protect structural steel for up to 240 minutes hydrocarbon fire protection. The purpose of this document is to identify the application, inspection, maintenance and repair requirements of the spray applied PROMAT® TOPCOAT 200 paint onto the finished Promat FENDOLITE® MII. PROMAT® TOPCOAT 200 (or other Promat approved vapour permeable topcoat paint systems that are used) provides an improved aesthetic finish to the cured Promat FENDOLITE® MII system, enhanced weather resistance, increased protection from wash down, chemical spillage and resistance to fungal and algal growth.

Promat FENDOLITE® MII is only applied by Promat CRA Contractors in accordance with the Promat FENDOLITE® MII and Promat FENDOLITE® TG Energy Industries Application Manual. The Promat CRA Contractor must take all necessary measures to provide a suitable surface for application of the Promat products and must store, mix and apply the products using suitable approved equipment according to Promat's (or other Promat approved topcoat paint manufacturer's) instructions. It is the responsibility of the Promat CRA Contractor to make detailed QA/QC records of all stages of application of the Promat FENDOLITE® MII and PROMAT® TOPCOAT 200 system, including photographic illustration of progress where possible, including daily weather/temperature records, so that any future issues which may arise with the installation of system can be effectively investigated and resolved. Promat can offer on-site technical support during installation of all aspects of the Promat FENDOLITE® MII and PROMAT® TOPCOAT 200 system.

Full technical details for installation of the Promat FENDOLITE® MII system are included in the 'Promat FENDOLITE® MII & FENDOLITE® TG Energy Industries Application Manual'.

General procedure

The steps to follow are:

Step 1 - Removal of the existing top coat (only for refurbishment)
Step 2 - Inspection of Promat FENDOLITE® MII
Step 3 - Cleaning of fungal growth and any other surface contamination
Step 4 - Drying and verification of the moisture content of the Promat FENDOLITE® MII
Step 5 - Final cleaning of the Promat FENDOLITE® MII
Step 6 - Application of 1st coat of PROMAT® Topcoat 200
Step 7 - Application of the 2nd coat of PROMAT® Topcoat 200

Detailed procedure

Storage of PROMAT® TOPCOAT 200

PROMAT® TOPCOAT 200 is a specially designed water-based topcoat of high water vapour permeability suitable for use over Promat FENDOLITE® MII. PROMAT® TOPCOAT 200 has a maximum shelf life of 12 months, stored as directed in original sealed containers. Never use PROMAT®

TOPCOAT 200 that is past its use-by date. Batch numbers are marked on the pails and can be checked with Promat. PROMAT® TOPCOAT 200 must be stored in ambient indoor conditions, protected from frost, excessive heat and strong radiant sunlight. PROMAT® TOPCOAT 200 must never be allowed to freeze or be exposed to very high temperatures. Storage temperatures must be minimum 2 °C and maximum 45 °C. Any PROMAT® TOPCOAT 200 that has been stored outside of these temperatures cannot be used and must be discarded.

Removal of existing topcoat (only for refurbishment)

Remove all existing top coat - aggressive mechanical methods may cause damage to existing Promat FENDOLITE® MII. Careful removal will be required using hand tools such as scrapers and chisels and power tools such as electric chisels. Alternatively a sodablast system or similar approved may be used.

Inspection of Promat FENDOLITE® MII

Inspect the Promat FENDOLITE® MII, all areas should be tap tested, small areas found to be hollow or defective should be removed and made good using Promat FENDOLITE® TG and allowed to cure in accordance with standard rendering procedures prior to further treatment. Leave for a minimum period of 72 hours before overcoating. Large areas of repair should only be repaired with Promat FENDOLITE® TG in accordance with the approved Promat application procedures.

- New Promat FENDOLITE® MII: when Promat FENDOLITE® MII is applied with a trowelled surface, it is important that the surface is not over-trowelled as this will locally increase cement content and decrease adhesion of PROMAT® TOPCOAT 200.
- Existing Promat FENDOLITE® MII: the condition of the Promat FENDOLITE® MII should be evaluated, and repaired if necessary, prior to carrying out any remedial work on the topcoat paint. Existing coatings, materials or substances likely to impair adhesion of the new topcoat should be removed. *Refer to Promat Energy Industry Data Sheet EIDS 029 for Promat FENDOLITE® MII repairs and surface preparation. If the Promat FENDOLITE® MII coating has been installed for a number of years, then the polysulphide or silicone mastic seals should be checked - remove and reinstate the mastic seals if necessary. Apply the PROMAT® TOPCOAT 200 into the cut-out grooves and allow to cure for minimum 2 - 6 hours before installing the silicone or polysulphide mastic seals.

Cleaning the surface of Promat FENDOLITE® MII

Surface lying moisture and any other surface contamination should be removed from areas to be coated using scrapers, wire brush or water jetting. In case of refurbishment or a longer time span between application of Promat FENDOLITE® MII and top coat, fungal contamination may occur which has to be cleaned in the same manner.

- Fixed Items: Any fixed item which is not to be included in the coating schedule, including wires, cables, etc., must either be totally removed or in order to allow access, be suspended from the surfaces to be coated. Such items should not be removed without proper authority.

The top coat should be allowed to cure for a minimum period of seven days before replacement of these fixtures.

- Protrusions: Inspect any wall protrusion, ie., vents, pipes, etc., to ensure watertightness. Repair or replace defective materials as necessary and prepare each protrusion as required in order to accept the coating.
- Previous Repairs: Inspect any previous repair materials, patches, etc., any which are loose or suspected to be loose should be removed.
- Cracks/Gaps: Cracks, gaps, holes, etc., in the Promat FENDOLITE® MII should be raked out, suitably prepared, cleaned and made good using an appropriate proprietary polymer modified mortar prior to further treatment. Leave for a minimum period of 72 hours before overcoating.
- Exposed Metal Surfaces: Exposed metal surfaces to be included in the coating schedule should be wire brushed or mechanically abraded to remove rust/scale or oxidation. Return to a clean, bright metal wherever possible.

Drying of the Promat FENDOLITE® MII

Before applying any surface coating over the Promat FENDOLITE® MII it is necessary to allow the Promat FENDOLITE® MII and any repairs to cure and dry for as long as possible, sheltered from rain.

- A rough indication is when the colour has changed to the off-white of the dry/cured material and that there is no “free” water - i.e. rain or condensation on the surface. This indicates that the surface is sufficiently dry, though it does not guarantee, especially where there has been rapid drying conditions, that the Promat FENDOLITE® MII under the outer surface is sufficiently dry.
- Before starting the application of PROMAT® TOPCOAT 200, verify the moisture content using the Protimeter and check that there is no free water or rainfall on the surface.

Verification of the moisture content of Promat FENDOLITE® MII using the Protimeter

Promat recommend the use of the **Protimeter Timbermaster Standard Model BLD5602** in combination with the calibration curve.

NOTE: Determining the moisture content of sprayed cementitious products is difficult. Promat has evaluated the use of moisture meters that provide values for the “through” moisture content of the Promat FENDOLITE® MII rather than common moisture meters which only provide “surface” moisture content readings. Based on this the choice for Protimeter Timbermaster Standard Model BLD5602 was made. A calibration curve was specifically developed for determination of the absolute moisture content of Promat FENDOLITE® MII using the Protimeter Timbermaster Standard Model BLD5602.

Using the Protimeter Timbermaster Standard - Model BLD5602, the reading should be 45% or less (i.e. nominal 8% Promat FENDOLITE® MII moisture content) for successful application of the PROMAT® TOPCOAT 200 on the Promat FENDOLITE® MII.

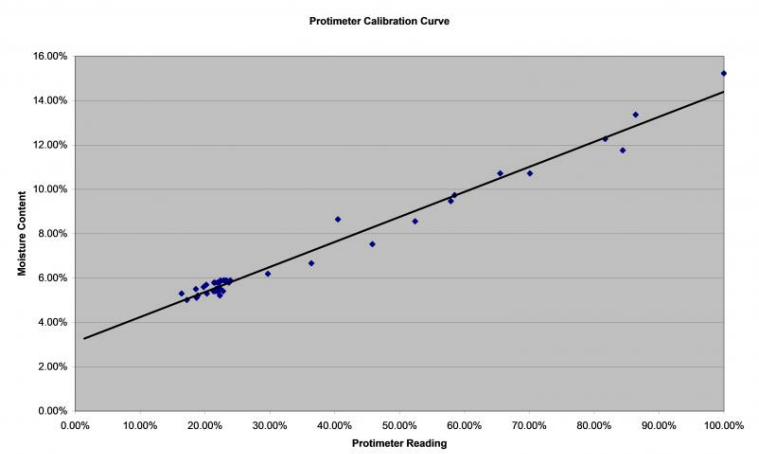


Figure 1: Protimeter calibration curve

At least 5 days after application, the moisture level of the Promat FENDOLITE® MII should be measured using the Protimeter Timbermaster Standard Model BLD5602 moisture meter as follows:

1. Switch on the Protimeter Timbermaster meter and set the scale to option "A" (the default setting).
2. Push the two probes into the Promat FENDOLITE® MII up to the body of the machine and hold in place until the display equalises, this may take between 30-40 seconds.
3. Take readings from each face at 1m intervals per section to get an average moisture figure. If any single figure is considerably greater than the others then the reading may be ignored and another reading taken.
4. Once the average Protimeter Timbermaster meter reading is below 45% then the Promat FENDOLITE® MII may be painted provided that all the other climatic conditions are achieved.

Final Cleaning of the Promat FENDOLITE® MII

Immediately prior to application of the top coat system, ensure that all surfaces are free from visible dampness and that surface lying dust, dirt and other forms of contamination are removed using brushes, scrapers or air lines as appropriate.

NOTE: Exercise suitable precautions when using high pressure equipment. Care needs to be taken by the operative to limit damage to the sound Promat FENDOLITE® MII by the use of high pressure equipment. Power washing uses high pressure and low volumes of water and can be used successfully without overwetting the Promat FENDOLITE® MII.

In case of refurbishment: Special care to fungal contamination, visible growths and vegetation

- Known Fungal Contamination: On areas of known fungal growth, it is often necessary to power wash and/or mechanically clean by scraping or by using a stiff wire brush after removing the existing coating.

- Known Growth - General Surfaces: Visible growths or vegetation should be removed prior to treating with concentrate Sika Biowash, by brush, at a maximum spread rate of 10m² per litre (equivalent to a minimum quantity of 0.1 litres per m²). Allow to dry onto absorbent surfaces and leave to react but thoroughly rinse from non-absorbent surfaces before continuing with the application.

Application conditions

- In addition to the verification of the moisture content of the Promat FENDOLITE® MII, there must be no “free” water (dew, condensation or rain water) on the surface of Promat FENDOLITE® MII at time of application of the PROMAT® Topcoat 200.
- The temperature of the surface must be at least 2 °C above dew point temperature. The Promat FENDOLITE® MII and air temperature must be 5 °C and rising during application, maximum temperature 40 °C.
- PROMAT® TOPCOAT 200 must be thoroughly and slowly stirred using a clean power stirrer, ensuring that the pail is thoroughly mixed to ensure that any settled solids are thoroughly mixed into the paint. PROMAT® TOPCOAT 200 must never be thinned or diluted.
- PROMAT® TOPCOAT 200 is preferably applied using airless spray equipment, such as Graco, to allow the paint to be applied easily with even coverage. PROMAT® TOPCOAT 200 can also be applied using a lambswool roller or brush for small areas.
- PROMAT® TOPCOAT 200 should be spray applied in two coats of 150 – 200 microns WFT per coat, with each coat built-up in a number of passes. Allow the first coat to dry for 2 – 6 hours before applying the second coat. Do not apply more than 2 x 200 micron WFT coats, this may affect the paint breathability.
- Both the un-painted Promat FENDOLITE® MII and the PROMAT® TOPCOAT 200-painted Promat FENDOLITE® MII must be protected from adverse weather for a minimum of 24 hours prior to and after application of the PROMAT® Topcoat 200.

Application of 1st coat of PROMAT® Topcoat 200

Brush, roller or airless spray apply a single coat of PROMAT® Topcoat 200 to a nominal wet film thickness of 150-200 microns. Care should be taken to ensure that a wet film thickness greater than 200 microns is not applied as this will lower the breathability rate of the PROMAT® Topcoat 200, which in turn can lead to blistering of the paint. Thickness measurements must be taken and recorded.

NOTE: It is essential to check the Wet Film Thickness of the PROMAT® TOPCOAT 200 during spray application using a WFT gauge. Dry film thickness checks cannot be carried out using conventional DFT equipment due to the thickness of the Promat FENDOLITE® MII.

Application of 2nd coat of PROMAT® Topcoat 200

Once the initial coat of PROMAT® Topcoat 200 has fully dried, apply a second coat of PROMAT® Topcoat 200 to a nominal wet film thickness of 150 – 200 microns. The top coated areas should be

fully protected from the elements until the PROMAT® Topcoat 200 has fully dried and cured (minimum 24 hours).

Inspection and maintenance

Maintenance revolves around inspection of the PROMAT® TOPCOAT 200 and the condition of the Promat FENDOLITE® MII beneath, with timely recognition and repair of any surface damage to the coatings. The intrinsic properties of the various components are essentially fixed and deterioration of the Promat FENDOLITE® MII cannot be reversed. Deterioration can occur as a result of topcoat damage or deterioration caused by environmental exposure, weathering, accidental damage or modifications of the structure and plant. The frequency, extent and method of inspecting the passive fire protection system will vary with geographic location. Harsh climatic conditions will require that the PROMAT® TOPCOAT 200 and Promat FENDOLITE® MII are inspected on a more regular basis. Inspection intervals of maximum 1 year (annually) are typical, but must always be considered on a case-by-case basis. It is recommended to schedule such inspection and repair works before the onset of winter weather. Particular attention should be paid to the specific effects of local work activities and the level of environmental exposure. Any holes or breaks in the topcoat paint must be repaired immediately. Failure to maintain the topcoat paint in good condition will result in rapid deterioration of the topcoat paint system which could result in weathering and deterioration of the Promat FENDOLITE® MII passive fire protection system.

Repair of PROMAT® TOPCOAT 200

In the event of damage or deterioration of the applied PROMAT® TOPCOAT 200, repairs can be quickly and easily made by removing any loose or damaged paint, ensuring that there is no loose material on the Promat FENDOLITE® MII surface (clean the area and surrounding paint area as necessary) and brush or roller-apply the PROMAT® TOPCOAT 200 paint onto the affected area, overlapping onto the surrounding paint. Ensure that 150 – 200 microns WFT per coat is applied in 2 coats, allow first coat to dry for 2 – 6 hours before applying the second coat. Inspect the applied PROMAT® TOPCOAT 200 regularly to check the condition of the paint for signs of weathering or damage and repair as necessary. Inspection should be carried out at least annually, but should be considered on a case-by-case basis depending on exposure.

The information given in this Application Procedure is based on practical experience, independent and other tests and represents, in Promat's opinion, the best technical advice available. Since the products are applied under circumstances beyond our control, Promat can accept no direct or consequential liability, whether in contract or in tort, for the interpretation of such recommendations and reserves the right to modify the recommendations as necessary. Should it be unclear as to the meaning of any of the instructions given above, or if further information is required, please consult Promat.