Introduction

The following general application procedure is applicable to storage spheres supported on steel or concrete legs coated in Promat FENDOLITE® MII where an additional layer of Promat FENDOLITE® MII is required.

Unless directed to the contrary in this proposal Promat FENDOLITE® MII shall be mixed and applied in accordance with the current Promat FENDOLITE® MII & FENDOLITE® TG Energy Industries Application Manual.

Prior to carrying out any work the condition of the steel substrate and the existing Promat FENDOLITE® MII should be inspected, including the bonding of the existing Promat FENDOLITE® MII to the steel substrate. If necessary, repair shall be done.

During the Promat FENDOLITE® MII application process the spherical vessel should be loaded to its maximum limit on-line or loaded with an inert substance (water). The load should not be removed until at least 5 days after the final Promat FENDOLITE® MII application.

Inspection of existing Promat FENDOLITE® MII surface

All existing Promat FENDOLITE® MII surfaces to be protected shall be in good condition be free from release agents, oil, grease, dirt, dust, grime or any other contaminants. If there is any doubt as to the condition of the Promat FENDOLITE® MII then please consult Promat for further advice. If the Promat FENDOLITE® MII has been painted then the paint should be removed using a sodablast system or similar approved.

Installation of mesh retention system

Since welding is unlikely to be permitted on the sphere, the mesh retention system outlined below does not rely on welded fixings. The proposed system is based on the concept of a monolithic reinforcement of sufficient tensile strength to support the Promat FENDOLITE® MII with a safety factor. Promat FENDOLITE® MII bonds well to a variety of substrates but for calculation purposes, it has been assumed that Promat FENDOLITE® MII is not bonding to the sphere. The tensile strength of the Promat FENDOLITE® MII has also been ignored.

Mesh type

Promat propose the use of galvanised welded wire mesh of Promat's 100mm x 100mm, 2mm thick galvanised welded wire mesh.

Mesh fixings

To follow the concept of a monolithic mesh reinforcement system, it is important that joins between the mesh sections are sufficiently strong to enable the overall tensile strength to be maintained at a high level, (not less than 50% of tensile strength of the mesh). Galvanised steel hog rings or galvanised wire ties are suitable, providing sufficient rings or ties are used to comply with the above strength concept.

Support rings

These are proposed to aid installation of mesh on spheres. These may be constructed from a single galvanised wire or woven wire rope to provide sufficient strength to support the weight of mesh plus any applied tensioning forces. For sphere diameters up to 12m, a tensile strength of the wire of at least 2 tonnes is usually sufficient.

Installation of mesh

- Prepare two floating support rings of nominal 0.3D circumference and two floating support rings of nominal 0.5D circumference.
- Place one 0.5D ring on top of the sphere and attach at least four equally spaced drop wires to secure the bottom 0.5D floating ring in place.
- Place one 0.3D ring on top of the sphere and attach at least four equally spaced drop wires to secure the bottom 0.3D floating ring in place.
- Attach 4 lengths of mesh to top 0.3D ring at equally spaced intervals; overlapping the floating ring by at least 2 mesh apertures and secure with galvanised hog rings or wire ties and secure to bottom 0.3D ring ensuring a minimum overlap of two mesh apertures with hog rings/wire ties tensioning as required.
- Attach a length of mesh to the 0.5D ring such that it overlaps by a minimum of two mesh apertures (200 mm) at the equator one of the previously applied lengths of mesh and attach to the bottom 0.5D ring, tensioning the mesh as required. Join the mesh to the previous layer along its length with suitable fixings. The mesh fixings on the top section of the sphere are particularly important as they provide support for the lower section.
- Repeat the procedure alternating mesh strips between the 0.3D ring and 0.5D ring, thus building a complete and balanced coverage of the surface of the sphere. The mesh will require cutting to pass around support legs or other protrusions. Any uncovered areas above or below the top and bottom rings also needs covering with mesh (if not already covered by surplus mesh as above). Since pipework, etc., will vary from sphere to sphere, they must be considered separately.

NOTES:

- *All overlaps of mesh (side and end), must be a minimum of two mesh apertures and must be secured with hog rings or soft fully galvanised wire of minimum tensile strength 350 N/mm² at 152mm intervals on floating rings and 76mm centres on a staggered pitch along the length of a join.*
- *No more than three layers of mesh must overlap at any one point. To achieve this, some cutting of the mesh will be necessary.*

Refer to the following EIDS for more information on the application of an additional protection layer to storage legs:

- Additional layer on legs coated in Promat FENDOLITE® MII (EIDS 047)

Application of Promat FENDOLITE® MII Biscuits

Install biscuits of Promat FENDOLITE® MII between the existing Promat FENDOLITE® MII and the mesh to ensure that the mesh reinforcement lies substantially within the mid-third of the new Promat FENDOLITE® MII.

Application of subsequent coat(s) of Promat FENDOLITE® MII

Mix and spray apply Promat FENDOLITE® MII in the normal manner to the specified thickness on the sphere. Application may commence at the base of the sphere and proceed upwards or may commence at the top of the sphere and proceed downwards, but it application commences from the top of the sphere, **it is essential that any day joints are cut back to create a positive rake of not less than 30°**. Where possible, the Promat FENDOLITE® MII should be applied as a single coat to the required thickness. It may be applied in more than one pass, however (i.e. a pass of material may be left for up to two hours to stiffen before application of another pass). If the material is allowed to set, the next layer is defined as another coat. The final coat shall be at least 8mm thick to avoid cracking.

Promat FENDOLITE® MII **must not be trowelled flush with the reinforcing mesh** as this can create a plane of weakness. The suggested finishing technique is to level the surface with a steel float to close down the surface.

Water shedding and sealing of Promat FENDOLITE® MII / steel junctions

Top surfaces shall be sloped to shed water. All terminations of Promat FENDOLITE® MII against steel must be sloped to shed water. Promat FENDOLITE® MII / steel junctions shall be sealed by cutting a 'U' into the material and applying a polysulphide or silicone based mastic sealer.

NOTE: Promat recommend that the mastic seal is not applied until after final surface treatment.

Final surface treatment

Promat propose that on curing and drying of the Promat FENDOLITE® MII, the surface is treated with a Promat approved topcoat paint system. The selected topcoat system must be applied strictly in accordance with the manufacturer's recommendations. It is necessary to maintain the correct environment conditions as stipulated in our current Promat FENDOLITE® MII & Promat FENDOLITE® TG Energy Industries Application Manual immediately before, during and after the particular application. Refer to Energy Industries Data Sheet EIDS 033 - Sikalastic (Decothane) Application Procedure.

NOTE: Ideally, all repair work should be carried out prior to application of the final surface treatment (refer to the current Promat FENDOLITE® MII & FENDOLITE® TG Application Manual).

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.