

LIQUID APPLIED MEMBRANES

ILCOTEX M400 RANGE

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The information contained in this document is given in good faith but is for guide purposes only.

ILC is a latex manufacturer and can supply latices and guide formulations to formulating companies for them to produce liquid applied membranes of the type described in this document.

ILC can also offer a toll-making service for making such membranes. Whichever manufacturing route is chosen the formulating company must carry out its own tests to satisfy itself that the membrane is suitable for its intended purpose.

Introduction

ILC`S styrene butadiene latex based formulated liquid applied membranes offer a simple method for many water proofing and vapour proofing applications.

Advantages include:

- ◆ Single pack system
- ◆ Water based compounds that can be applied even to damp backgrounds
- ◆ Non-toxic, non-hazardous, solvent and plasticiser free
- ◆ Quick drying. Typically touch dry in 1 hour
- ◆ Good bond to many substrates
- ◆ Toughness, high flexibility, extensibility and good crack bridging properties
- ◆ Low water vapour permeability
- ◆ Alkali resistant. Can be applied to alkaline surfaces
- ◆ Resistant to silage acids
- ◆ Non staining and stain blocking
- ◆ Available in a range of colours

Applications

Main

- ◆ **Floors.** Under screeds (or above screeds) to provide a damp proof membrane
- ◆ **Basements.** As part of a waterproofing system beneath ground level.
- ◆ **Walls.** Can be used under render or plaster as a water barrier or vapour barrier.
- ◆ **Roofs.** As the main waterproofing coating or as part of a repair system. It is recommended that the membrane is protected from UV.
- ◆ **Tiling.** As secondary protection under tiles in wet areas e.g. bathrooms, food processing areas, balconies, etc.
- ◆ **Water Storage.** The membranes perform well in our tests even when continuously immersed in water.
- ◆ **Silage Storage.** The membrane protects concrete from silage attack.

Other Applications

- ◆ **Marking Paint** e.g. roads, car parks
- ◆ **Gas Barrier** to minimise methane transmission
- ◆ **Stain Block** coating

Appearance

The **ILCOTEX M400** range is available in the following colours:

Black	Light Blue
Grey	Yellow
Light Grey	Pale Yellow
Red	Green
White	Translucent

The colour of the liquid compound will differ slightly from the colour of the dried membrane. The colour shade may vary from batch to batch.

The product, as supplied, is a viscous liquid of similar consistency to thick emulsion paint.

The membrane dries to form a tough semi-gloss finish.

Coverage

A minimum dried coating thickness of 0.60mm is needed to provide a vapour barrier. This should be applied in a minimum of two coats. For the final dried membrane thickness to be 0.60mm a coverage rate of 1.20 Kg/m² is required (this is the total for all coats). This corresponds to approximately 1 litre/m².

Applying ILCOTEX M400

The background surface should be smooth or have a light even texture. Any masonry should be flush pointed and defects in existing surfaces made good.

The surface needs to be clean, sound and free from dust, loose material or free surface water. The membrane should not be applied in wet conditions or where these conditions are likely to occur before the membrane has dried. The membrane should not be applied when the temperature of the background, or the air temperature, is below 7°C.

It is sometimes advantages to pre-wet concrete or masonry backgrounds, so that these are damp but free from any water glistening on the surface, to aid wetting out of the background.

Because of the wide variety of background types and site conditions it is always advisable to ***check adhesion to the background by testing on a sample area before starting any job.***

The membrane may be applied by brush, roller or airless spray. If necessary the compound can be diluted with up to 10% water, however care should be taken to ensure that the correct dry coat thickness is applied.

The thickness of the dried membrane per coat depends on the method of application. For a single dry coat thickness of more than 0.30mm it is recommended that the membrane be applied by airless spray. If airless spray is used single dry coat thickness of up to 1.0mm can be obtained.

Note: A single coat of 0.60mm dry thickness or more will require a greater drying time than for an equivalent multi-coat application.)

If two coats are being applied it is recommended that the coats be applied at right angles to each other.

Before applying the second coat it is necessary to let the first coat become touch dry. The time required to reach this tough dry condition will vary according to site conditions but will typically be in the order of 1 hour. It is preferable if the second coat is applied within 24 hours of applying the first coat. After all coats have been applied the membrane should be left for at least 4 days before attempting any ponding tests. Under unfavourable drying conditions this period may need to be extended.

Whilst most applications to concrete roofs have been successful, blistering (shortly after application of the membrane to the roof) has occasionally occurred. This blistering is caused by the heat from the sun causing a vapour pressure build up below the membrane. The problem is exacerbated if the background concrete is wet. The risk of blistering can be minimised by ensuring a very good bond to the background and avoiding application of the membrane in, or shortly prior to, strong sunlight. Techniques for maximising bond are:

- ◆ Vigorously brushing the first coat into the background concrete using a stiff bristled broom.
- ◆ Prime the roof with a slurry of **ILC screeding latex*** and cement. Allow this slurry to harden for 2 days before applying the membrane.

*Information on **ILC screeding latex** is available on request.

In some situations e.g. at high stress points such as wall/floor junctions it is beneficial to use fabric (scrim) reinforcement. Such reinforcement is available in many types and local availability will often influence choice. Fabric made from polypropylene or polyester is suggested. Fabric made from natural fibres should be avoided.

By choosing a suitable reinforcement it is possible to achieve good control of the coating thickness i.e. by choosing a fabric approximately 0.50mm thick and ensuring that the mesh is completely filled and covered, the minimum coating thickness of 0.60mm will be automatically achieved.

The incorporation of fabric usually increases the tensile strength but decreases the extensibility.

The fabric is rolled into the wet first coat and then coated with additional membrane after allowing the first coat to dry to a tacky condition.

Adhesion of materials onto the dried membrane

General

Many wet applied cementitious materials bond well to the dried **ILCOTEX M400**, particularly if they contain polymers. When applying polymer free materials such as screed, render or plaster the highest adhesion results are obtained if the material is applied as soon as the **ILCOTEX M400** is tough dry. Alternatively the surface of the undried **ILCOTEX M400** can be blinded with clean sharp sand to provide some mechanical key to the subsequent coating.

Bonding agents and BS8204. Part3

In order to be classified as a bonding agent, regarding clause 5.1.2 of BS8204 Part 3 1993 “Code of Practice for Polymer Modified Wearing Surfaces”, it is necessary for the slant shear strength to be above 20 N/mm² after 28 days and for the pull-off strength to be above 2 N/mm² after 14 days. Test results on **ILCOTEX M400** are 33 N/mm² for slant shear (1 hour drying time for final coat of **ILCOTEX M400**, before compacting the mortar onto it.), and 1.3 – 2.1 N/mm² for the pull-off strength. The values achieved depend to a large extent on the strength and adsorption characteristics of the background concrete. By priming the background with a slurry of **ILC screeding latex** and cement bond strength above 2.0N/mm² are more readily achievable.

Ceramic Tile Adhesives

Most single pack ceramic tile adhesives bond well to the dried **ILCOTEX M400** coating, even after a drying period of several months. However the longer the drying period the more opportunity there is for surface contamination. Tile adhesives that have been designed to comply with the draft European Standard for tile adhesives can be expected to have a bond strength (pull-off) to the **ILCOTEX M400** of at least 0.5N/mm².

Floor Screed and Renders

A floor screed/render modified with **ILC screeding latex** bonds well to the dried film of **ILCOTEX M400** e.g. after allowing the **ILCOTEX M400** to dry for 8 days, applying the floor screed and allowing to cure for 9 days, a pull-off value of 2N/mm² was achieved.

When using unmodified floor screeds/renders, enhanced bond values can be obtained by coating the dried **ILCOTEX M400** with a primer system.

Gypsum Plasters

The membrane complies with the bond strength requirements of BS5270 Part 1 1989 regarding bonding agents for use with gypsum building plasters.

Flooring Adhesives

Most flooring adhesives bond well to the membrane. When bonding flooring materials such as PVC sheet over the membrane two points should be considered.

- It is advisable to use adhesive/floor-covering combinations that are low in plasticiser content.
- The concrete below the membrane should be sufficiently dry, before the membrane is applied, to pass a humidity box test of the type specified in BS8203 Part 2, but with a maximum relative humidity limit of 90%

Other properties of the ILCOTEX M400 membrane

1. Typical mechanical properties on film aged at 23°C/50% RH:

Tensile strength at break = 4 N/mm²

Elongation at break = 350%

(Test speed at 500mm/min)

2. Film hardness

Shore A hardness value of 70 was measured.

3. Barrier properties:

The following data were obtained from measurements of 0.6mm thick films (dried and conditioned in air for 7 days at about 23°C and 50% RH).

a. Resistance to water penetration (positive head pressure)

A 0.6mm thick dry film of the membrane, supported on a porous tile biscuit, prevented water at 0.2N/mm² pressure from penetrating into the tile during the 24 hrs test period. This pressure is equivalent to a 20 metre head of water.

When using the membrane on the interior of basements, the membrane should be overcoated with render, in order to prevent any hydrostatic pressure causing localised bond failure of the membrane to the background.

b. Water vapour permeability (BS 3177)

Water vapour permeability is <4g/m²/24 hours at 25C/75% RH (using Payne cups, 0.6mm dry film thickness)

c. Methane permeability (RAPRA test)

A value of 79 mL/m²/day under a partial pressure differential of 1 bar was achieved (a comparison of the membrane data to that of low density polyethylene film of a similar thickness indicated that the membrane is 10 times more resistance to the transmission of methane).

4. Chemical resistance – general guide only

Chemical	Good	Medium	Poor
Alkalies and salt solution	O		
Silage	O		
Dilute acid (except oxidising acids eg nitric acid)	O		
Cooking oil		O	
Transformer oil		O	
Oxidising agents			O
Organic solvents (eg petrol, toluene)			O

5. Low temperature flexibility

The membrane passes the severe mandrel test (BS 3900 Part E) at temperature down to 0°C.

6. Artificial aging

Test carried out in a Marr Weatherometer (BS 3900 Part F3) after 2000hrs showed surface cracks which penetrated only 10% of the 0.6mm coating thickness.

No defects after 500hrs in a Xenotest 150 machine.

Storage

ILCOTEX M400 should be stored in sealed container between +5°C and +35°C and protected from frost and direct sunlight.

Footnotes

- See individual Technical Data Sheets on each of the **ILCOTEX M400** colours for information on Solids Content, pH, Viscosity, Specific Gravity and minimum Film Forming Temperature information.
- See Material Safety Data Sheets for each **ILCOTEX M400** colour.