

Protective Material PM-3888

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INTRODUCTION

3M™ Protective Material PM-3888 is a hydrocarbon-based product designed to provide excellent and durable dynamic water repellency (DWR) to many synthetic fabrics. It can be used on many fiber types and provides protective performance while maintaining fabric breathability.

PM-3888 offers excellent initial performance as well as excellent durability to repeated home launderings.

Branding: Only if the formulation meets stringent quality performance specifications are you entitled to make use of the Scotchgard™ Brand name, and provided you are an official licensee of 3M.

Environmental: The active ingredient of PM-3888 is not based on fluorocarbon chemistry. Additionally, PM-3888 is not based on blocked isocyanate chemistry and contains no alkyl phenol ethoxylate (AFE) surfactants.

TYPICAL PROPERTIES

Appearance	Milky white to amber dispersion
Typical	Analysis 25% Solids
.....	68% Water
.....	7% Propylene glycol
Charge	Slightly cationic
Density	1 g/ml
pH	3-7
Shelf Life	2 Years after production date

PM-3888 is freeze/thaw stable to -20°C (-4°F). If exposed to freezing temperatures, return to a temperature above 5°C (41°F) before using. Avoid agitation during the thawing process as this can destabilize the dispersion.

FABRIC PREPARATION

Fabrics to be treated with PM-3888 should be clean and as free as possible of residual processing agents. Materials such as sizes, alkalies, printing gums, dyeing auxiliaries, antifoams, wetting agents/surfactants, can all affect the absorbency and penetration of the treating bath into the fabric. The resulting uneven or inconsistent application can cause reduced durability and inferior repellency performance. Fabric pH (5.5 to 6.5) and percent alkalinity (as NaOH, preferably 0.0 to 0.05%) are recommended. In general, good fabric preparation practices should be followed to obtain the most efficient and effective performance from the product.

APPLICATION

PM-3888 is especially suitable to be used alone as a non-fluorochemical based DWR product. Typical application rates of PM-3888 range from 30-80 grams/liter treatment solution. It is suggested that any formulation first be evaluated in the laboratory, both for compatibility and for performance. Factors such as fiber content, yarn type, thread density, fabric basis weight, chemical additives and treating conditions all influence the level of PM-3888 to achieve the desired performance.

Formulations based on PM-3888 are typically applied at the mill by padding, followed by immediate drying/curing on a tenter frame. Padding can be accomplished on typical mill padding equipment (two roll or three roll). Bath temperatures of 15-40°C (60-100°F) are generally suitable. PM-3888 is easily diluted with water. A wet pick up (WPU) of 20-40% is typical for nylon taffeta, while a WPU between 55-70% is typical on other nylon and polyester fabrics. Where mill WPU conditions differ from typical padding WPUs listed, it is necessary to adjust the pad bath concentration of PM-3888 to compensate for the different wet pick-up. For example, a fabric with very low wet pick-up may require a relatively higher pad-bath concentration of PM-3888 in order to deposit the desired amount of product solids on fabric.

Fugitive or non-rewetting agents may be used in order to achieve adequate and uniform wetting of the fabrics to ensure proper penetration into the fabric. Use of such agents, typically applied at 1 g/L, should be screened in the laboratory to ensure the DWR performance is not compromised. Up to 20 g/L isopropyl alcohol has been used in the past to treat “hard to wet” fabrics.



CAUTION! Isopropyl alcohol is considered flammable. Follow all safety procedures. Additionally, some fugitive wetting agents may also have lower flash points. Consult wetting agent (and any other auxiliary) SDS for safe handling practices. Typically, PM-3888 is added after isopropyl alcohol; otherwise, flocculation may occur.

In the event of excessive foaming, a defoamer may be required. A non-silicone type is recommended. Always check defoamer or any other bath auxiliaries for overall compatibility and stability, and their effects on DWR performance. Silicones in particular are a known source of contamination, whether present in the bath or remaining on the fabric from a prior operation such as dyeing.

TYPICAL PAD APPLICATION OF 3M PROTECTIVE CHEMICAL PM-3888

The following formulations are only offered as a guide for the application of PM-3888 based formulations on synthetic fabrics. It is suggested that any formulation first be evaluated in the laboratory for overall compatibility and for product performance.

- A. Polyester Woven fabrics—including Dobby, Pongee constructions.
 - 0-2 ml/l Acetic acid (60%)
 - 30-80 g/l PM-3888

- B. Polyamide Woven fabrics—including Taslan fabrics, Polyamide/Spandex blends.
 - 0-2 ml/l Acetic acid (60%)
 - 30-80 g/l PM-3888

Note: Addition of fugitive wetting agent may be used for “hard to wet” fabric. See prior notes in “Application” section.

DRY AND CURE CONDITIONS

The drying and curing of PM-3888 treatments is generally accomplished in one step, immediately after padding. Drying is typically accomplished in the first zones in a tenter frame oven, with curing occurring in the latter zones. Typical dry/cure conditions on a tenter frame are set at range of 140-180°C, with front and end zones using lower temperatures, and the intermediate zones using higher temperatures. Most mill trials used intermediate zone settings between 160-170°C. Typical dwell times range from 50-90 seconds using conventional tenter frames.

Fabric weight and wet pick-up are key variables in determining tenter frame oven settings and line speeds. Excessive heat exposure to disperse-dyed fabrics may lead to dye sublimation on fabric surface, which will cause reduced colorfastness and crockfastness.

ENVIRONMENTAL HEALTH AND SAFETY

Normal care should be taken to avoid skin contact, eye contact and prolonged breathing of vapors or dusts. Hands should be washed prior to smoking or eating. Before using this product, please read the current PM-3888 Safety Data Sheet (available through your local representative) and be sure to review the precautionary statement on the product package. As noted on the product Safety Data Sheet, undiluted PM-3888, (as supplied in a 25% dispersion), is labelled as a Category 1B Sensitizer, which may cause an allergic reaction.

Patch testing with fabric treated with PM-3888 at a level typically used for finished goods indicated no potential for dermal irritation or allergic contact sensitization. PM-3888 is highly diluted with water during its application process, as pad-bath solutions typically are composed of 3-10% PM-3888 (25%), depending on the fabric wet pick up. For more information, please contact your local representative. Follow all applicable directions for personal protective equipment. When using auxiliary products with PM-3888, be sure to also review the appropriate Safety Data Sheet for each material used.

IMPORTANT NOTICE TO PURCHASER:

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