



DryWired® Textile Shield Dilution and Application Instructions

I: Chemical Materials

Before handling chemical substances, please review the Safety Data Sheets (SDSs) for each material. Hazardous chemicals should only be handled by those who are trained to do so.

<u>Dilution instructions for the following coatings:</u>	<u>Chemical Materials Needed:</u>
DryWired® Textile Shield Premium	-Textile Concentrate/Textile Double Concentrate
DryWired® Textile Shield Standard	-Deionized water (< 6µS, CAS No. 7732-18-5)
DryWired® Textile Shield Basic	-Formic Acid (CAS No. 64-18-6)

Table 1. Chemical substances needed for DryWired Textile Shield dilution

II: Calculations

A. Textile Concentrate

Water-Based Product	Ratio (Concentrate: Deionized Water)
DryWired® Textile Shield Premium	1:6
DryWired® Textile Shield Standard	1:9
DryWired® Textile Shield Basic	1:19

Table 2. Dilution Ratios for DryWired® Textile Shield

Calculating the dilution amounts:

The following dilution to make the textile coating solution is based on volume.

To perform this calculation:

$$\frac{\text{Concentrate Ratio}}{\text{Sum of the Ratios}} \times \text{Total Volume (L)} = \text{Volume of Concentrate (L)}$$

$$\frac{\text{Solvent Ratio}}{\text{Sum of the Ratios}} \times \text{Total Volume (L)} = \text{Volume of Solvent (L)}$$

This example demonstrates calculations to dilute 10L of textile premium, which has a 1:6



dilution ratio. This means for every one (1) liter of concentrate, six (6) liters of solvent are needed.

To calculate concentrate:

$$\frac{1}{7} \times 10 \text{ L} = \text{Volume of Concentrate (L)} = 1.43 \text{ L}$$

To calculate solvent:

$$\frac{6}{7} \times 10 \text{ L} = \text{Volume of Solvent (L)} = 8.57 \text{ L}$$

Therefore, to dilute 10L of textile premium, 1.43 L of textile concentrate and 8.57 L of deionized water are needed.

B. Textile Double Concentrate

Water-Based Product	Ratio (Concentrate: Deionized Water)
DryWired® Textile Shield Premium	1:13
DryWired® Textile Shield Standard	1:19
DryWired® Textile Shield Basic	1:39

Table 3. Dilution Ratios for DryWired® Textile Shield Using Textile Double Concentrate

Calculating the dilution amounts:

The following dilution to make the textile coating solution is based on volume.

To perform this calculation:

$$\frac{\text{Concentrate Ratio}}{\text{Sum of the Ratios}} \times \text{Total Volume (L)} = \text{Volume of Concentrate (L)}$$

$$\frac{\text{Solvent Ratio}}{\text{Sum of the Ratios}} \times \text{Total Volume (L)} = \text{Volume of Solvent (L)}$$

This example demonstrates calculations to dilute 10L of textile premium, which has a 1:13 dilution ratio. This means for every one (1) liter of concentrate, thirteen (13) liters of solvent are needed.

For the concentrate:



$$\frac{1}{14} \times 10 \text{ L} = \text{Volume of Concentrate (L)} = 0.71 \text{ L}$$

$$\frac{13}{14} \times 10 \text{ L} = \text{Volume of Solvent (L)} = 9.29 \text{ L}$$

Therefore, to dilute 10L of textile premium, 0.71 L of textile double concentrate and 9.29 L of deionized water are needed.

C. Preservative – Formic Acid

For each liter of ready-to-use DryWired Textile Shield diluted, 0.50 grams of formic acid is added as a preservative, keeping the pH in the 3.0 – 5.0 range. If, during the quality procedure, pH is not in this range, adding more of the formic acid will have no negative effect on the performance of the applied coating solution.

Calculating the dilution amounts:

Using the above volume as an example, the formic acid to be added is 0.50g/L, therefore for 10L of ready-to-use DryWired Textile Shield Premium:

$$10 \text{ L} \times \frac{0.50 \text{ g}}{\text{L}} = \text{Amount of Formic Acid (g)} = 5.00 \text{ g}$$

Therefore, to preserve 10L of textile premium we will use 5.00g of formic acid.

III: Dilution Procedure

1. **Calculate** the necessary amount of concentrate or double concentrate needed for desired ready-to-use volume.
 2. **Calculate** the necessary amount of deionized water needed for desired ready-to-use volume.
 3. **Calculate** the necessary amount of formic acid needed for desired ready-to-use volume.
 4. **Measure** the calculated amount of concentrate or double concentrate needed for desired ready-to-use volume.
 5. **Measure** the calculated amount of deionized water needed for desired ready-to-use volume.
 6. **Mix** the concentrate into the deionized water.
 7. **Measure** the calculated amount of formic acid needed for desired ready-to-use volume.
 8. **Mix** the formic acid into the solution of concentrate and deionized water.
 9. **Perform** quality procedure.
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IV: Optional Additives

DryWired offers additives to enhance or add features to the textile solution. The DryWired additives should only be added to DryWired Textile Shield ready-to-use formulas. DO NOT add the DryWired additives to the DryWired® Textile Shield Concentrate. The following additives and procedures are described below.

A. DryWired Crosslinking Agent AR

DryWired® Crosslinking Agent AR is a nonionic polyurethane crosslinking agent for DryWired® Textile Shield that increases durability of the textile coating.

When using the DryWired Crosslinking Agent AR, curing should be performed at:
150-160°C for 3 – 4 minutes
170-180°C for 40 – 20 seconds

Crosslinking agent will not cure below 150°C.

B. DryWired Crosslinking Agent RC

DryWired® Crosslinking Agent RC is a hydrophobic crosslinking agent for DryWired® Textile Shield that increases durability of the textile coating.

When using the DryWired Crosslinking Agent RC, curing should be performed at:
150°C for 2 minutes
160°C for 1 minute
170°C for 30 seconds

Crosslinking agent will not cure below 150°C.

C. DryWired Wetting Agent

DryWired® Wetting Agent is available to ease or increase the uptake of the coating solution applied to fabrics. Application amounts vary. Dry time and cure time are not affected by the addition of this additive.

High concentrations of the additives can lead to undesirable effects such as change of handle or change in appearance- we recommend testing different concentrations and application methods for your specific material. Please consult DryWired to develop custom formulations for your specific application.

V: Application

A. Surface Preparation



Fabric must be completely free of all contaminates including detergents and fabric softeners. To rid of contaminants, rinse using hot water. **Fabric must be entirely dry before application.**

B. Application

Application may vary based on stage of application in the manufacturing process. The coating solution can be applied via dip, spray, or padding process. For a padding application, pressure per square inch (psi) is based on the type of fabric that the coating solution is being applied to.

C. Drying

DryWired Textile Shield is a water-based product, therefore the dry time will be similar to that of water for the applied fabric. Heat can decrease the dry time. It is recommended to dry the fabric below 150°C if additives are being used in the formulation. It is recommended to allow water to evaporate so the fabric is *completely* dry before cure step.

D. Curing

At ambient conditions, the coating will cure in a 24-hour period. This curing period can be accelerated with heat. If a DryWired additive is being used, the cure temperature will need to be above 150°C. More information is provided below for specific additives.

E. Storage

The product can be stored for 2 years so long as the product remains unopened, stored between temperatures of 3°C to 30°C. The pH can be used as a quality control procedure to check the solution is still okay to be used. A percent solids measurement without shaking the container can also be used to ensure quality.

F. Consumption

Consumption can vary based on application method and fabric weight. Consumption should be tested by the fabric manufacturer prior to application into a manufacturing process.

For questions, please contact DryWired:

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