

Crodaquat™ DGR

Tough on stains, reveal fabrics freshness

Crodaquat DGR is a high performance, proprietary blend designed to remove tough stains on fabrics. Crodaquat DGR provides formulators with a single surfactant system that can be used in a wide range of formulations that target removal of tough stains. The particularly low interfacial tensions provided by Crodaquat DGR helps penetrate various stains on fabrics facilitating rapid cleaning.

Benefits

- Effective on a wide variety of stains
- Ultra-low interfacial tension reduction
- High performance from 25°C to 60°C
- Stable and effective up to pH 14
- Good compatibility with common builders
- Great for low and non- VOC formulations
- Easy to handle, high activity liquid
- Well suited to high active concentrates
- Performs well at high dilution rates
- Effective in machine or hand wash

Applications

- Pre-treatment stain removal sprays
- Stain removal pens
- Laundry detergents
- Ultra concentrated detergents
- Down jacket detergents

Compatibility

Crodaquat DGR is compatible with:

- Alkali chelating agents
- Acid d-limonene
- Electrolyte common solvents

Crodaquat DGR is designed to be the only surfactant needed in a formulation. While compatible with nonionic and cationic surfactants, no other surfactants are required.

Effective Across multiple stains

The effectiveness of Crodaquat DGR in stain removal was tested on 100% cotton swatches treated with various stains, including coffee, red wine, chili oil, vinaigrette, blood, and lipstick.

Each cotton swatch was soiled with 3 drops of the respective stain, followed by 3 drops (approximately 0.1g) of fabric stain removal pen solution containing Crodaquat DGR. After applying

the solution, the swatches were thoroughly cleaned using a wet wipe. The swatches were then air-dried before inspection. The stain removal performance was assessed visually through photograph taken after the swatches had dried.

Upon visual inspection, various stains on the cotton swatch were effectively removed by fabric stain removal pen containing Crodaquat DGR, as shown in Image 1.

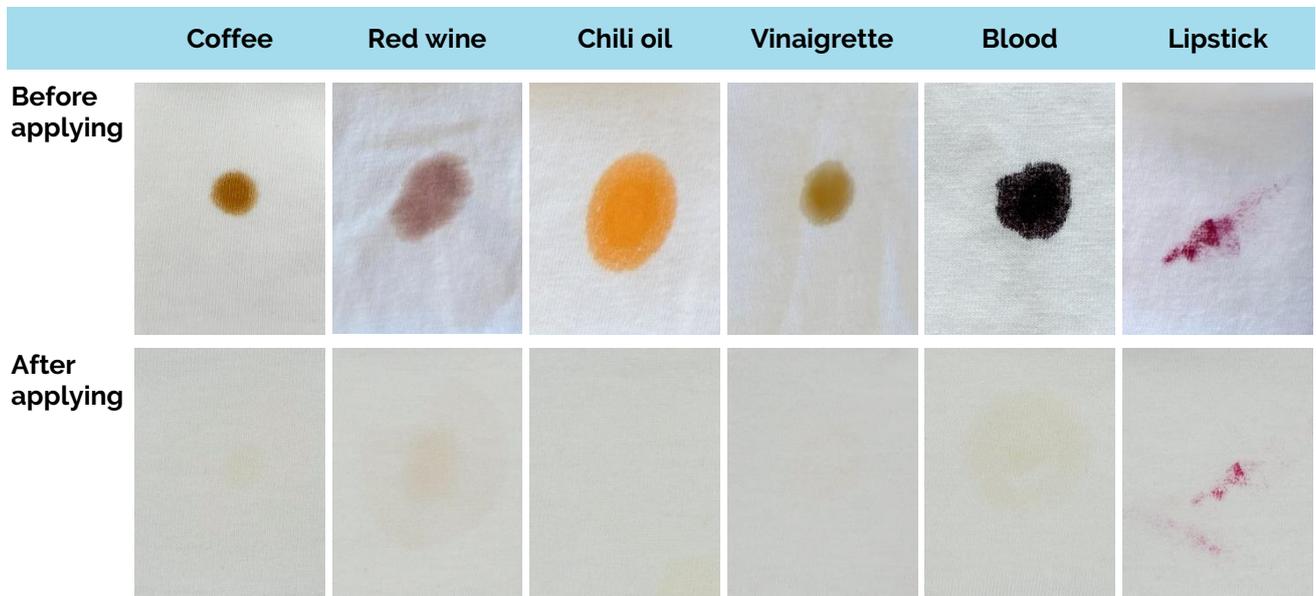


Image 1: Stain removal effect after applying fabric stain removal pen containing Crodaquat DGR

Proven stain removal efficiency

The colour intensity of the air-dried cotton swatches was measured using a spectrophotometer to evaluate the effectiveness of stain removal.



Image 2: HunterLab spectrophotometer to measure stain colour intensity

Whiteness retention is used as an indicator of stain removal performance, measuring how much of the fabric's original brightness is restored after treatment. A higher whiteness retention percentage indicates high stain removal efficacy, demonstrating the product's ability to effectively restore fabric cleanliness to its original state (L= 96.7).

Measurement on how similar the treated fabric is to its original state:

$$\text{Whiteness retention (\%)} = \frac{L_{\text{treated}}}{L_{\text{original}}} \times 100$$

L_{treated} = L value of cotton swatch after fabric stain remover treatment

L_{original} = L value of cotton swatch in original state

As shown in Figure 1, the fabric stain removal pen containing Crodaquat DGR exhibited strong stain removal performance across all tested stains, achieving whiteness retention values exceeding 93%. Stain removal of vinaigrette and chili oil stains demonstrated the highest removal efficacy, with whiteness retention of 98.5% and 97.5%, respectively, indicating superior restoration of the fabric's original brightness.

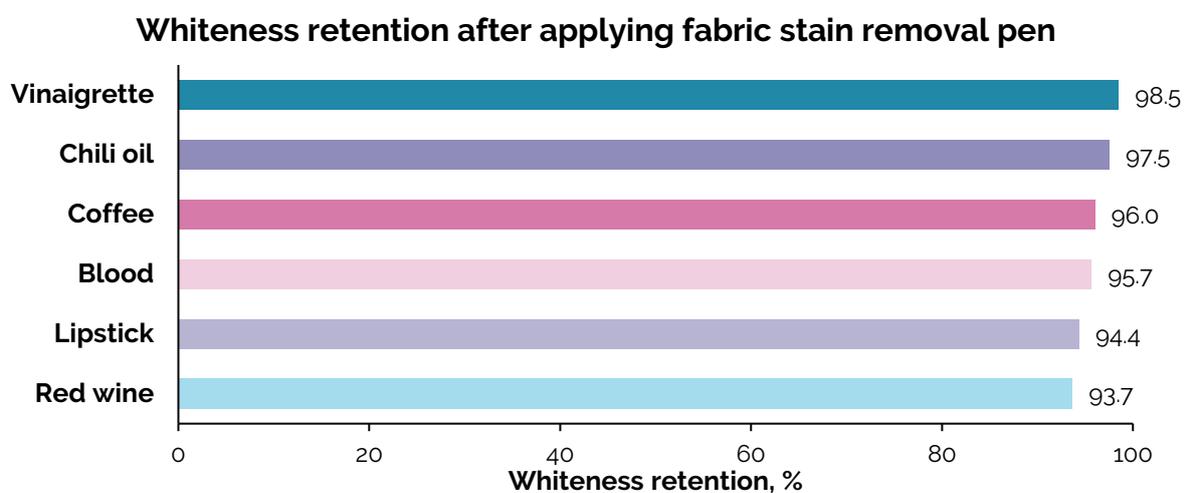


Figure 1: Whiteness retention of swatch after applying fabric stain removal pen with Crodaquat DGR

Handling, safety & availability

Crodaquat DGR is an easy-to-handle liquid at room temperature and should only require warming when it has been cooled below 13°C (see in Figure 2). The product is water soluble but does require agitation to fully solubilise.

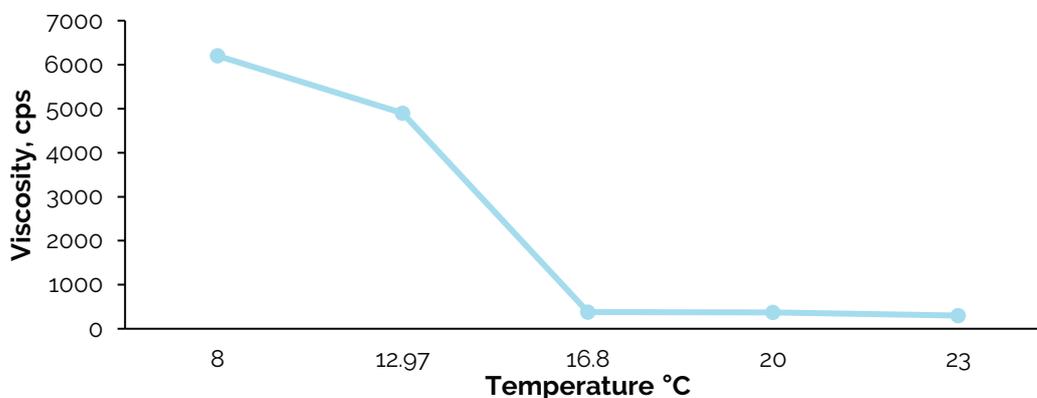


Figure 2: Viscosity curve of Crodaquat DGR

Crodaquat DGR is moderately irritating to skin. Please review our product MSDS for safety and handling procedures.

Crodaquat DGR is a proprietary blend of materials. All components in the product are present on the TSCA, EINECS and DSL chemical inventories.

Formulating

Crodaquat DGR has good compatibility with common builders, well suited to high active concentrates. It performs well at high dilution rates. Recommended usage of Crodaquat DGR in stain removal pen application typically starts from 25%, while liquid laundry detergents range from 1% - 4%, depending on the desired stain removal effect on the fabric.

Formulation examples

- Portable fabric SpotAway – HC/LF/78
- Stain & lint guard liquid detergent – HC/LF/67

Non-warranty

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