



**Tradename:** ProCutiGen® Thermal Shield

**Code:** 20828

**CAS #:** 69430-36-0

**Test Request Form #:** 3299

**Lot #:** NC170406-F

**Test Performed:**  
Hirox 3D Imaging

## Background

Everyday stressors come in all forms whether environmental, chemical, or thermal. Rather than focusing on repairing broken bonds that occur during physical and thermal stress, **ProCutiGen® Thermal Shield** consists of bivalent cationic peptides that create a *de novo* cuticle on the hair to prevent damage from happening in the first place.

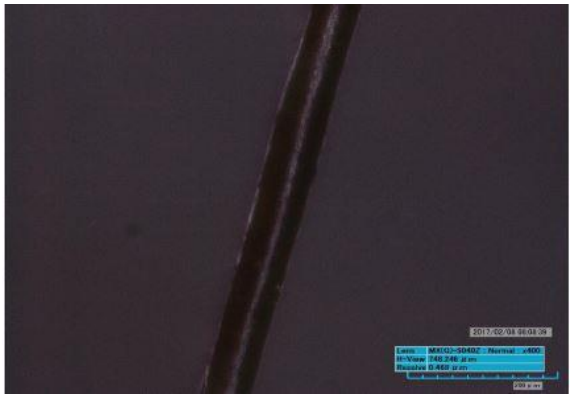
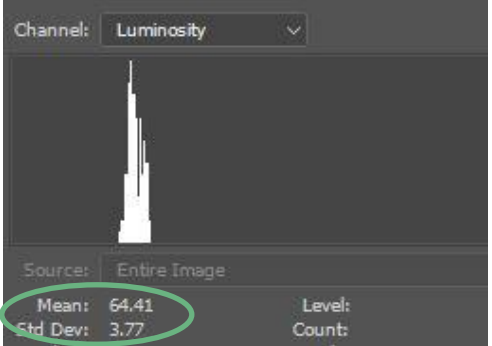
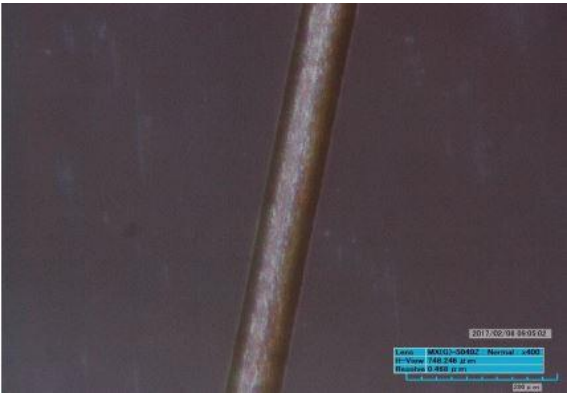
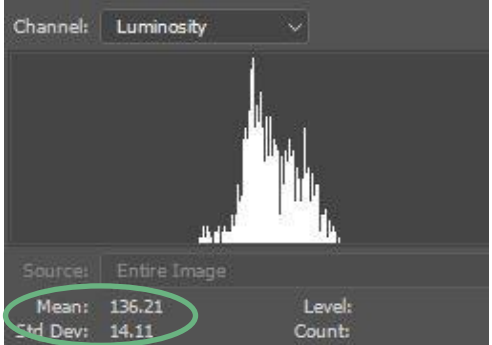
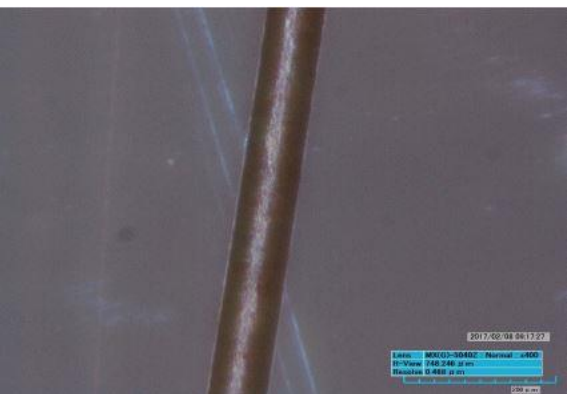
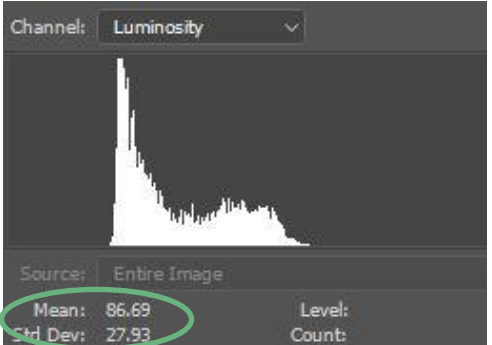
This study was conducted to determine if **ProCutiGen® Thermal Shield** is capable of protecting the hair when thermal styling stress is applied.

## Methods & Materials

This study was conducted by salon professionals using Sensationnel Bare & Natural Brazilian 100% Virgin Remi Unprocessed Human Hair (Hair Zone Moonachie, NJ). One swatch, left unaltered, was analyzed as the control. Two test swatches were treated and submitted for testing. One swatch was treated by spritzing with water, blown dry for two minutes, and flat ironed at 450°F, 5 run throughs. The other test swatch was treated, spritzed with a 2.0% **ProCutiGen® Thermal Shield** solution and water, blown dry for two minutes, and flat ironed at 450°F, 5 run throughs. The swatch treatment was designed to mimic everyday effects of styling the hair. It is important to note no additives or fixatives were used in the test solution. This was done intentionally in order to visually see clear results.

Manufacturing Solutions Center (MSC) located in Conover, North Carolina was asked to perform Hirox 3D Imaging on the five hair swatches provided by Active Concepts, LLC. MSC utilized a KH-7700 Hirox 3D Imaging Microscope to perform the test. The lens used was MX(G)-5040Z with magnification ranging from 50x-300x.

## Results

Swatch Description	HIROX Image	Histogram Quantification
Untreated Virgin Hair		 <p>Channel: Luminosity</p> <p>Source: Entire Image</p> <p>Mean: 64.41</p> <p>Std Dev: 3.77</p> <p>Level: _____</p> <p>Count: _____</p>
Water + Blown Dry & Flat Ironed		 <p>Channel: Luminosity</p> <p>Source: Entire Image</p> <p>Mean: 136.21</p> <p>Std Dev: 14.11</p> <p>Level: _____</p> <p>Count: _____</p>
Water + <b>20830 ProCutiGen® Thermal Shield</b> + Blown Dry & Flat Ironed		 <p>Channel: Luminosity</p> <p>Source: Entire Image</p> <p>Mean: 86.69</p> <p>Std Dev: 27.93</p> <p>Level: _____</p> <p>Count: _____</p>

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### Discussion

Hirox 3D Microscopic Examination is a test method for microscopic examination of hair samples. Damage of the hair fiber can be seen within these images in which the damaged areas of the fiber fluoresce. The more fluorescence a fiber exhibits, the more damaged. Within the images above significant less damage can be viewed on both the Untreated Virgin swatch and **ProCutiGen® Thermal Shield** treated swatch. Whereas the water treated swatch exhibits significantly more damage visually. In addition to the visual evidence, the photos were quantified via histograms based on luminescence. The values denoted clearly depict the ability of **ProCutiGen® Thermal Shield** to protect the hair fiber reducing overall damage to the fiber after being exposed to thermal styling stress. **ProCutiGen® Thermal Shield** consists of bivalent cationic peptides that create a *de novo* cuticle on the hair to prevent damage from happening in the first place.