

## EFFECT OF QUATIN 350 TQ-D IN A 2-IN-1 LAUNDRY DETERGENT-SOFTENER *(provisional data)*

### Formulations

| Actual %                     | A         | B         | C         |
|------------------------------|-----------|-----------|-----------|
| Water (q.s.)                 | 62.47%    | 62.57%    | 62.47%    |
| Calcium Chloride Dihydrate   | 0.0133%   | 0.0133%   | 0.0133%   |
| MEA                          | 0.8100%   | 0.8100%   | 0.8100%   |
| NaOH (50%)                   | 1.8300%   | 1.8300%   | 1.8300%   |
| Citric acid (50%)            | 2.3400%   | 2.3400%   | 2.3400%   |
| Bio-soft S-101 (LAS)         | 2.5400%   | 2.5400%   | 2.5400%   |
| Coconut Fatty Acid           | 2.5400%   | 2.5400%   | 2.5400%   |
| Steol CS-370 (SLES)          | 10.0000%  | 10.0000%  | 10.0000%  |
| Tomadol 25-7 (LAE)           | 10.1600%  | 10.1600%  | 10.1600%  |
| Optical Brightener           | 0.0000%   | 0.0000%   | 0.0000%   |
| Acusol 445N                  | 1.0000%   | 1.0000%   | 1.0000%   |
| Sokalan HP-20                | 1.0000%   | 1.0000%   | 1.0000%   |
| Baypure CX-100               | 1.0000%   | 1.0000%   | 1.0000%   |
| Medley Essential (3 enzymes) | 3.0000%   | 3.0000%   | 3.0000%   |
| Cationic cellulose (PQ-10)   | 0.2000%   |           |           |
| QUATIN 350 TQ-D (40% active) |           | 0.1000%   |           |
| Cationic guar                |           |           | 0.2000%   |
| Acticide SPX                 | 0.1000%   | 0.1000%   | 0.1000%   |
| Fragrance (Optional)         | 1.0000%   | 1.0000%   | 1.0000%   |
| Dye (Optional)               | 0.0000%   | 0.0000%   | 0.0000%   |
| Total                        | 100.0000% | 100.0000% | 100.0000% |

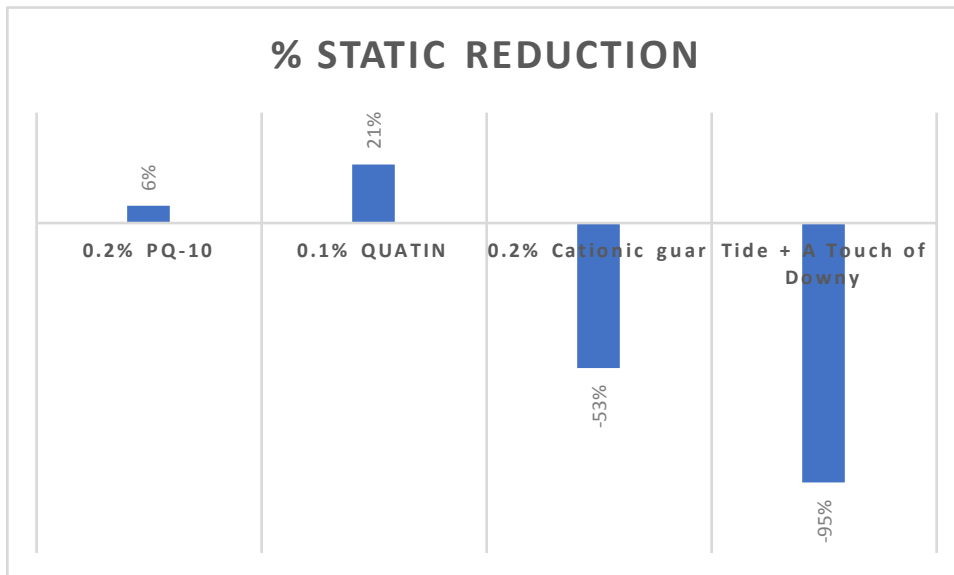
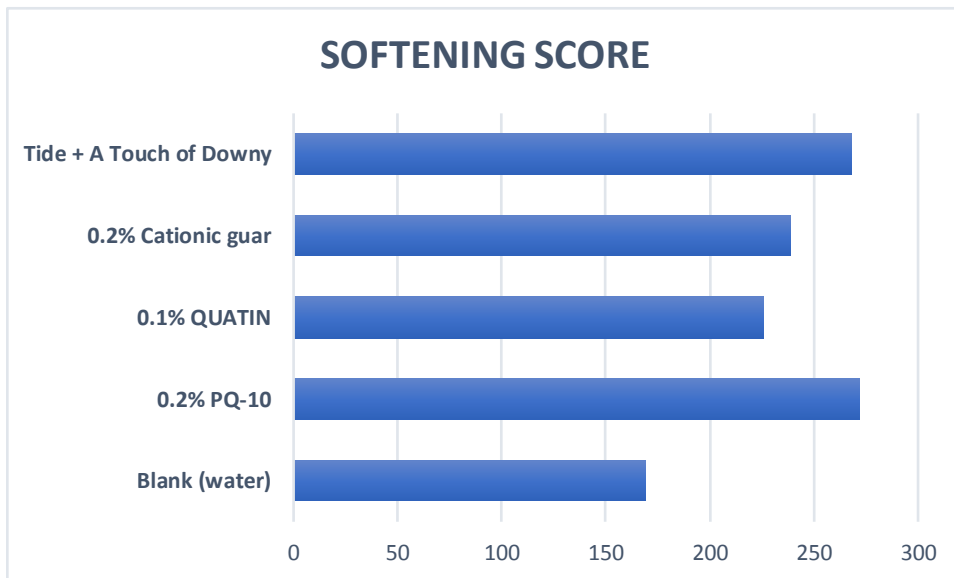
### Test method

Preparation: All the sheets, towels, pillowcases and synthetic fabric static swatches were stripped per ASTM D5237. They were machine-washed five times, two with detergent and three without. We assembled three wash bundles. Each contained two sheets, two pillowcases, terrycloth hand towels, and two swatches each of acrylic, acetate, nylon, polyester and rayon. Each static swatch was approximately 14" x 14".

Treatment: Each bundle was washed in a GE Washer (Model GTW330ASK0WW) with a warm water wash and a cold-water rinse. Toledo tap water was used throughout. Each liquid laundry sample was used a concentration of 47 mL in each wash load. A blank load was run without laundry detergent as the control. After washing, the bundles were dried one at a time in a GE Dryer, Model DDE-9200N, at a normal cycle. The dryer was cleaned with alcohol after each use.

| Run | Sample                 | Sample Amount |
|-----|------------------------|---------------|
| 1   | Blank                  | None          |
| 2   | A                      | 47 mL         |
| 3   | B                      | 47 mL         |
| 4   | C                      | 47 mL         |
| 5   | Tide+ A Touch of Downy | 47 mL         |

## Results



## Preliminary conclusions

- QUATIN provides significant softening as compared to water supporting a claim such as “touch of softness”.
- 0.1% QUATIN is parity to 0.2% cationic guar in providing a softening effect in 2-in-1 detergents.
- Probably due to the higher charge density, QUATIN shows better softening at lower dose levels.
- QUATIN shows the best static reduction.

- QUATIN is easier to mix into the formulation than cationic cellulose or guar, results in a clear detergent, and does not have an adverse effect on the fragrance of the detergent.