

Competitive Comparison of FreeDerm® Adhesive Remover



PURPOSE

BioDerm, Inc.'s FreeDerm Adhesive Remover and other prominent medical adhesive removers were tested for effectiveness removing adhesive tapes and speed of evaporation from skin. Effectiveness was established as a combination of speed of removal, ability to remove the adhesive tape without tape residue, and speed of evaporation from skin.

The results are compared and significance to device performance are discussed.



TEST ARTICLES

Test articles of adhesive removers were:

- 1) BioDerm FreeDerm Adhesive Remover, spray or 1 mL ampoule
- 2) Bard Adhesive and Barrier Film Remover, #740020
- 3) Smith & Nephew Uni-Solve™ Adhesive Remover Wipes, #402300
- 4) SENSI-CARE Adhesive Releaser Spray
- 5) Detachol Adhesive Remover

Test articles of adhesive tapes were:

- 1) BioDerm XtraDerm™ Hydrocolloid
- 2) 3M Micropore™ "Paper Tape", #15303
- 3) Johnson & Johnson Zonas™ Porous Athletic Tape, #5107
- 4) Tegaderm™ Securement Dressing

The test articles combined represent a wide variety of formulations that fairly represent the market. Silicone adhesive tapes were not tested because as a class they are low adhesion and typically do not require adhesive remover.

TEST METHODS

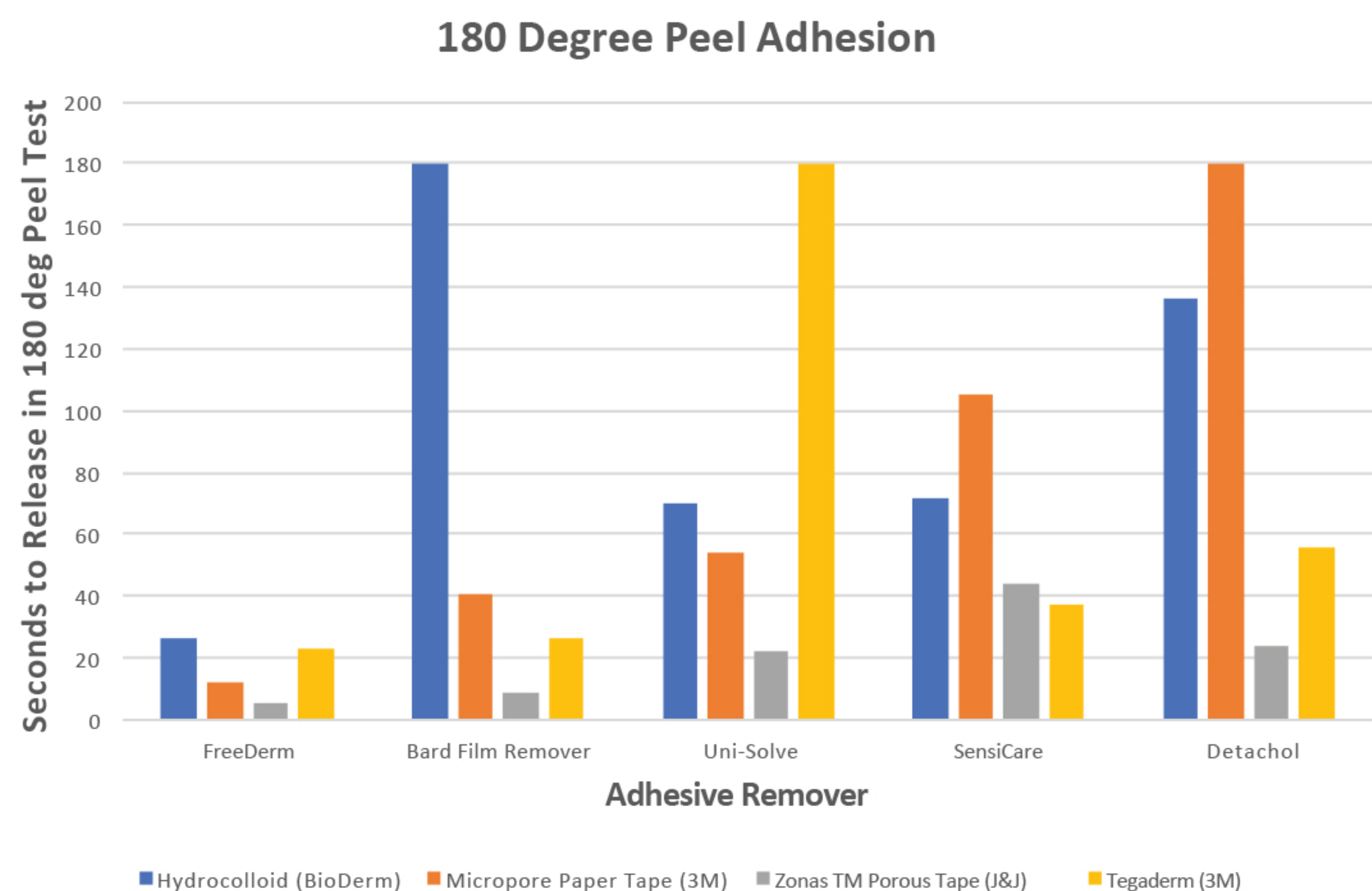
Adequate speed of tape or appliance removal is a practical and essential requirement for nurses or individual users.

180 Degree Peel Test: Test articles were cut into 1" x 9" strips. Three inches of each strip length were applied to a vertical 2" x 6" polished stainless steel (SS) coupon, with the 180% fold of the tape on top, and the remaining tape hanging down beyond the vertical SS plate. A 75g weight was attached to the hanging tape end. The test consisted of applying and maintaining saturation of adhesive remover at the exposed adhesive at the 180 degree bend. Time to completely peel from the SS plate was measured. Peel tests were limited to 3 minutes (180 seconds), essentially indicating failure of the adhesive remover tested. Degree of adhesive residue left on the SS plate, if any, was visually estimated as % of area that had been in contact.

Another practical performance concern is the rate of evaporation from skin, and whether any residues remain after evaporation that would require an additional cleaning step.

Skin Evaporation Rate: Wipes were applied to forearms of subjects according to manufacturing instructions. Each application was applied to a fresh location to avoid cross contamination. Time to evaporate was measured and the test repeated for each subject. Any obvious residue remaining was also recorded.

TEST RESULTS



Hydrocolloid Results

- FreeDerm results indicated superior speed of release, at 26 seconds.
- The Bard Adhesive Remover failed to release within the 3 minute limit.
- None of the adhesive removers left adhesive residue on the steel test coupon.

Micropore Paper Tape (3M) Results

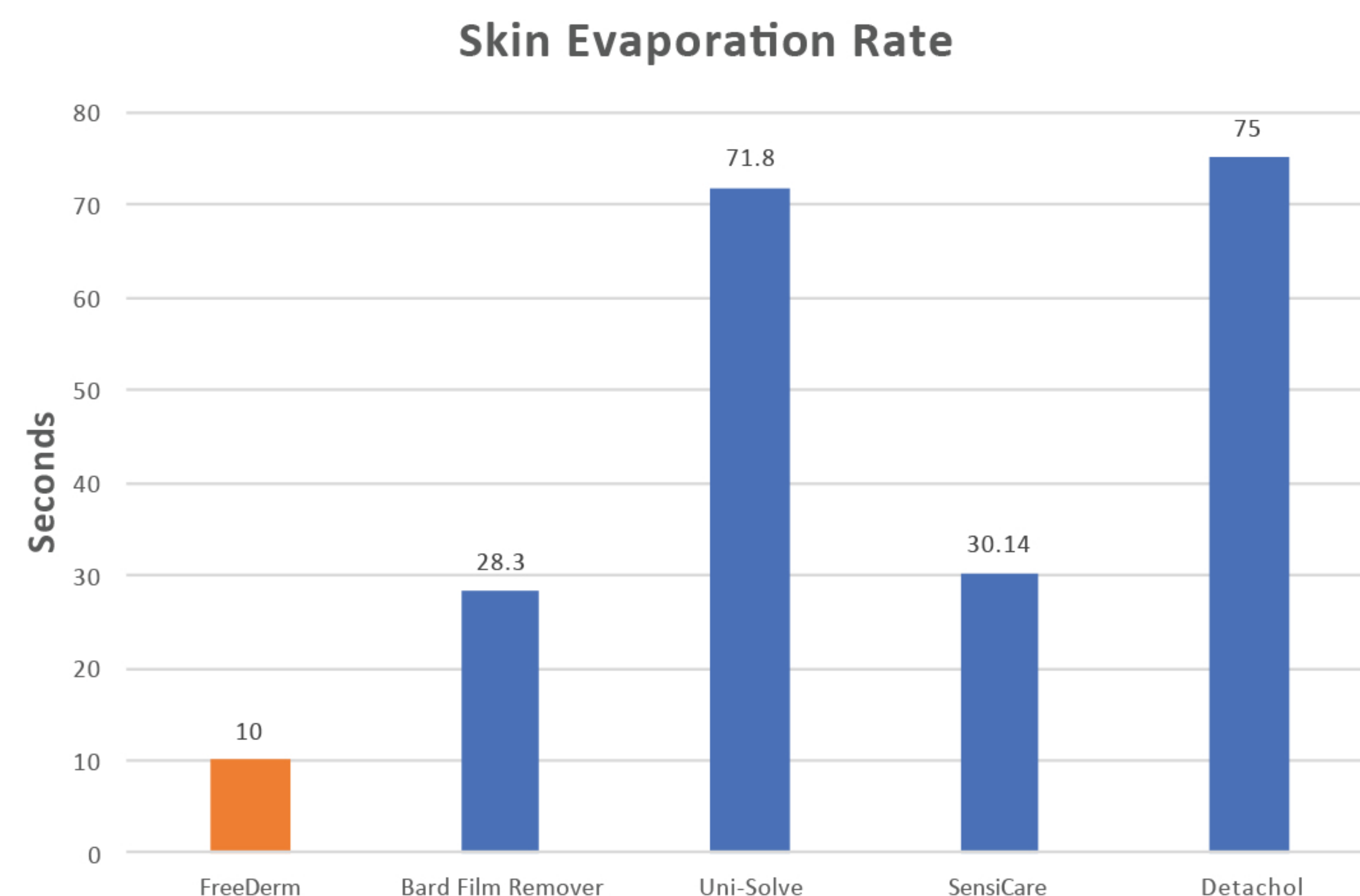
- FreeDerm results indicated superior speed of release, at 12 seconds.
- The Bard Adhesive Remover left significant adhesive residue on the steel coupon, estimated at 55% of contact area.

Zonas Porous Tape (J&J) Results

- FreeDerm results indicated superior speed of release, at 5 seconds.
- None of the adhesive removers left adhesive residue on the steel test coupon.

Tegaderm (3M) Results

- FreeDerm results indicated superior speed of release, at 23 seconds. The Uni-Solve (S&N) failed to release within the 3 minute limit.
- The Uni-Solve (S&N) left adhesive residue on the steel test coupon, estimated at 10% of contact area.



Skin Evaporation Results

- FreeDerm flash evaporated in 10 seconds from human skin, the fastest of the formulas tested. The sample size was n=4 for each test.

CONCLUSIONS

- FreeDerm removed all tapes tested faster than the competitor adhesive removers. In addition, **FreeDerm was the only adhesive remover that could remove all of the tapes**; the competitors each failed to remove one type each.
- **FreeDerm was able to flash evaporate from skin significantly faster than the competitors. In addition it left no residue.** The instructions from all three competitors recommend cleaning after use with soap and water or alcohol; only FreeDerm allows new tapes or appliances to be applied immediately without cleaning the skin site.
- The Bard and Uni-Solve removers left adhesive residue on some of the testing. **FreeDerm did not.**
- These results indicate **FreeDerm has superior speed of action, evaporation rate, and residue-free properties** that make it most practical in nursing and individual user applications.



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