

Objective

To test various compounds (Glycerin, Beeswax, Paraffin wax, and Scotchgarde) to determine which increases the overall life span of jeans.

DOE Parameters

Run Order	Gly	Bee	Para	Fabric	Avg Steps Increase
1	No	Yes	Yes	No	0
2	No	Yes	No	Yes	0
3	Yes	No	Yes	Yes	0
4	Yes	No	No	No	50
5	No	No	Yes	No	10
6	No	Yes	No	No	11
7	Yes	Yes	Yes	No	30
8	No	Yes	Yes	Yes	7
9	Yes	Yes	No	Yes	3
10	No	No	No	No	0
11	Yes	Yes	No	No	99
12	No	No	No	Yes	22
13	No	No	Yes	Yes	15
14	Yes	Yes	Yes	Yes	36
15	Yes	No	No	Yes	24
16	Yes	No	Yes	No	9

Data Collection



Figure 1: Preparation of wax mixtures (glycerin and beeswax)

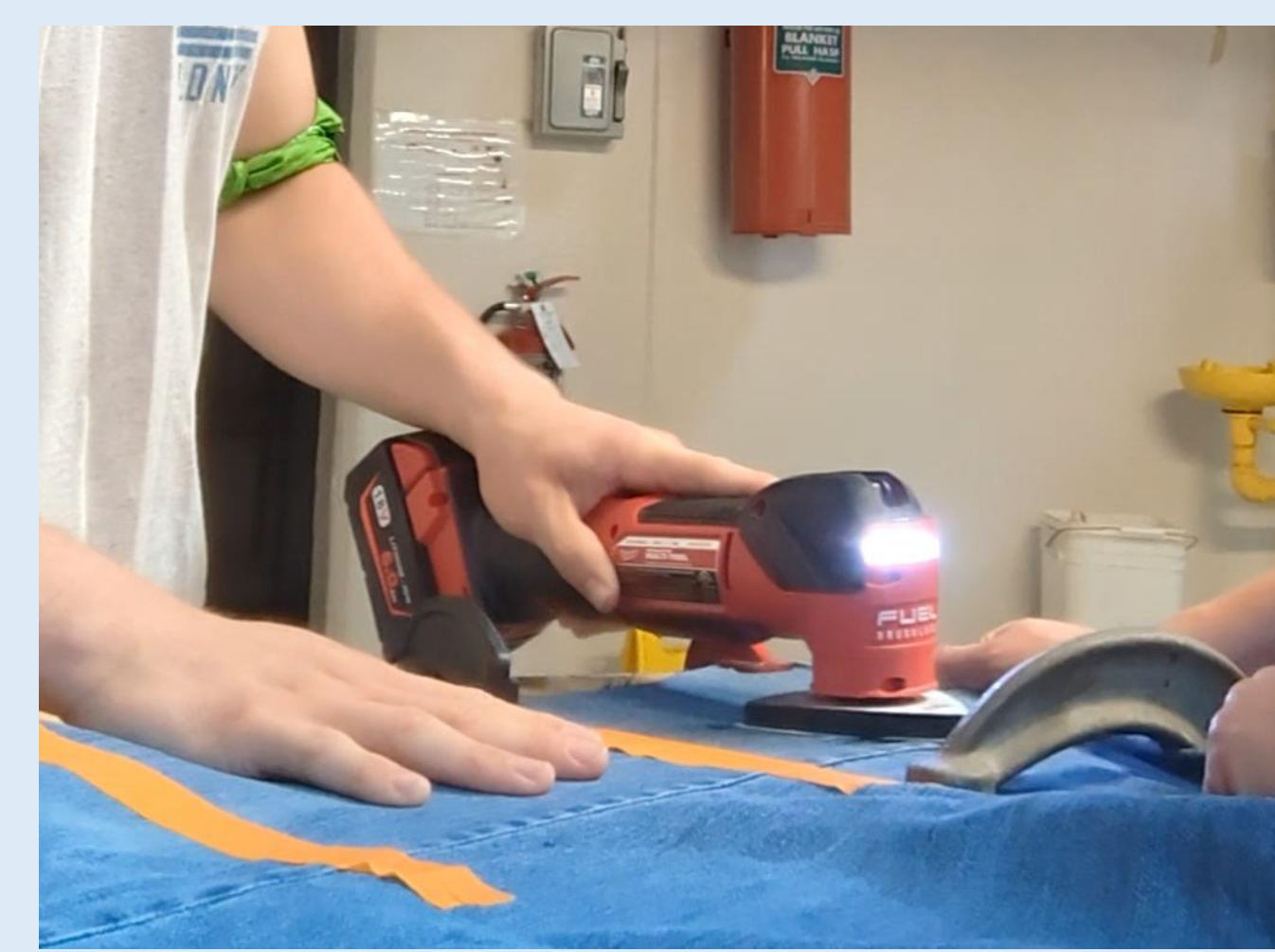


Figure 2: Method of testing applied wax/spray mixtures

Results

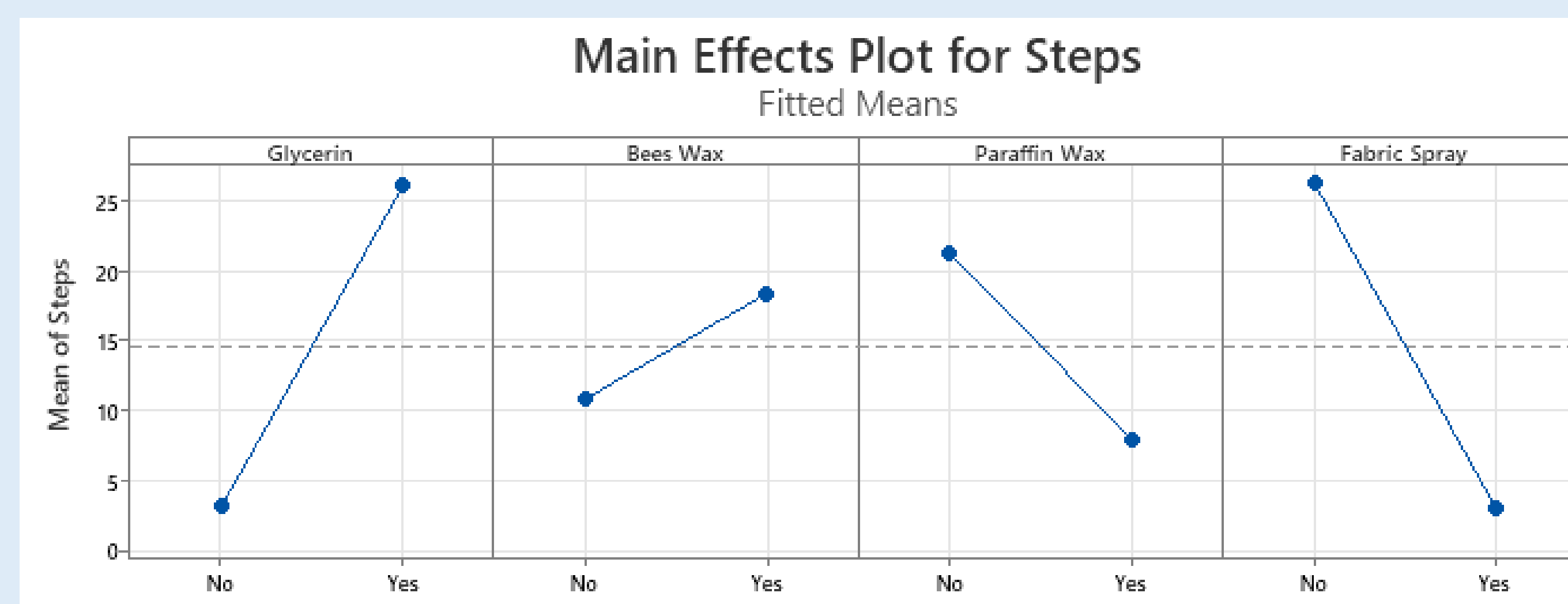
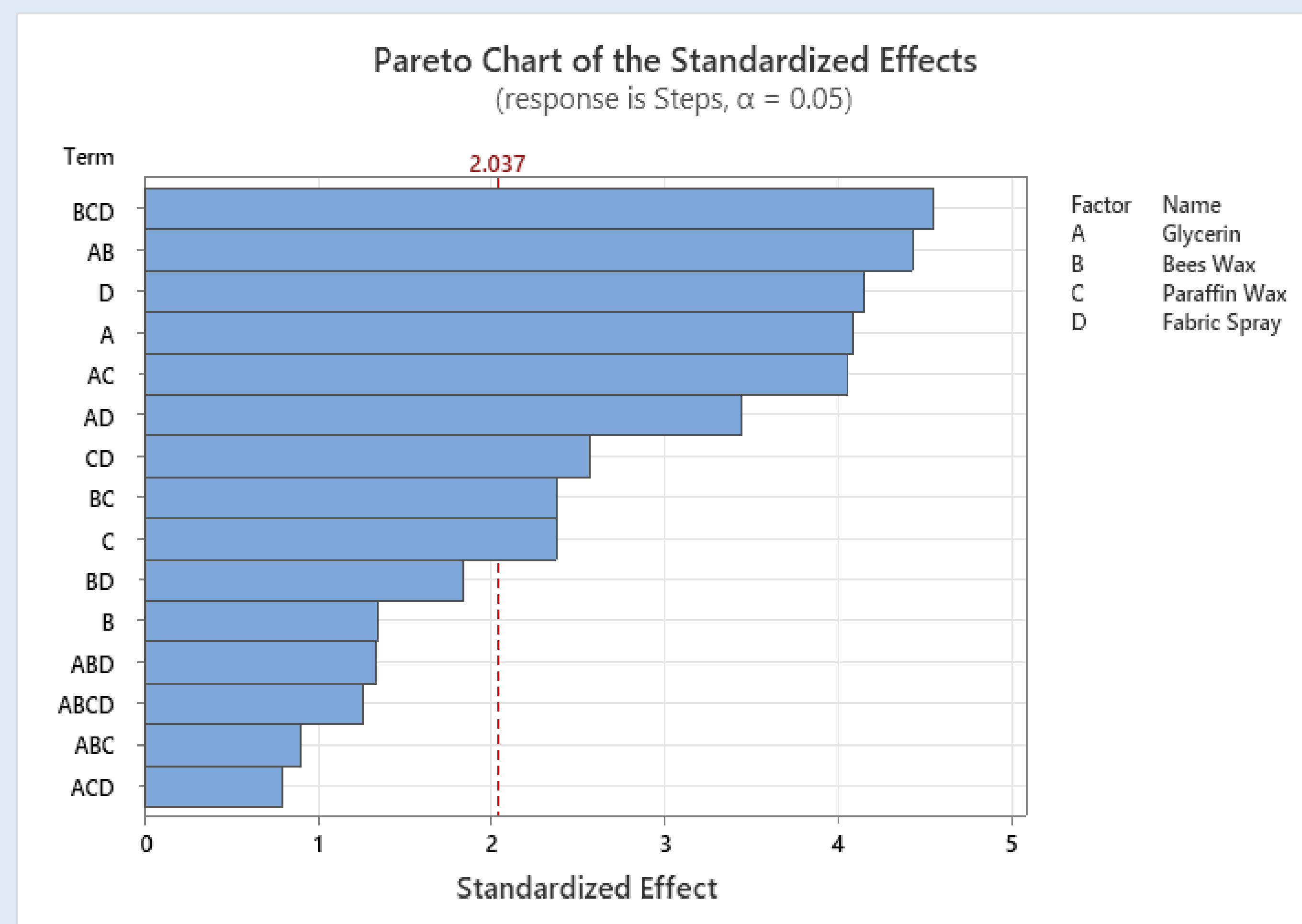


Figure 3: The interaction data shown by the main effects per each compound applied. The Pareto chart shows each interaction that was characterized in the experiment. The main effect plots shows the primary factors that attributed to the increased durability of jeans. The data was analyzed through Minitab with three replicates.

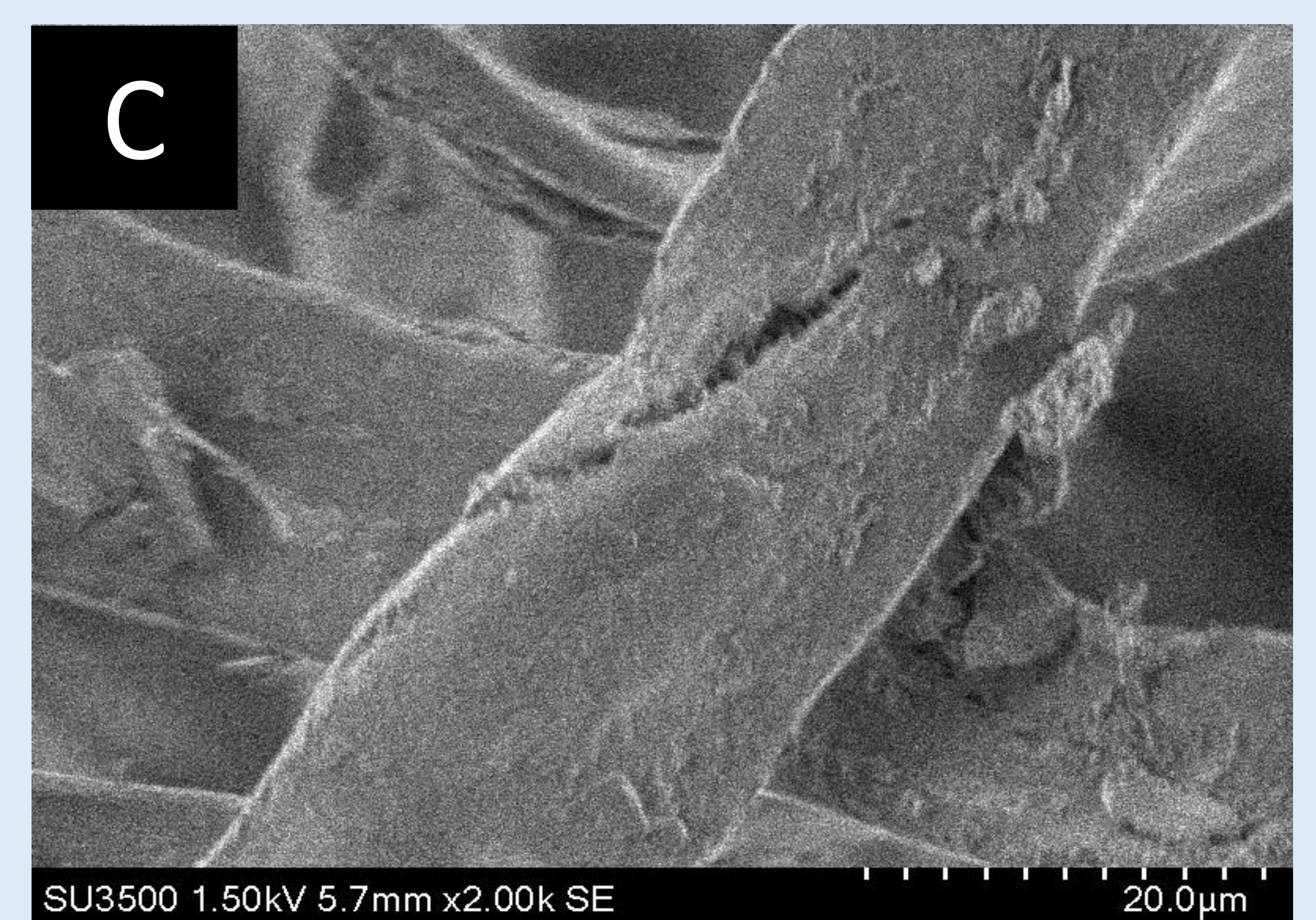
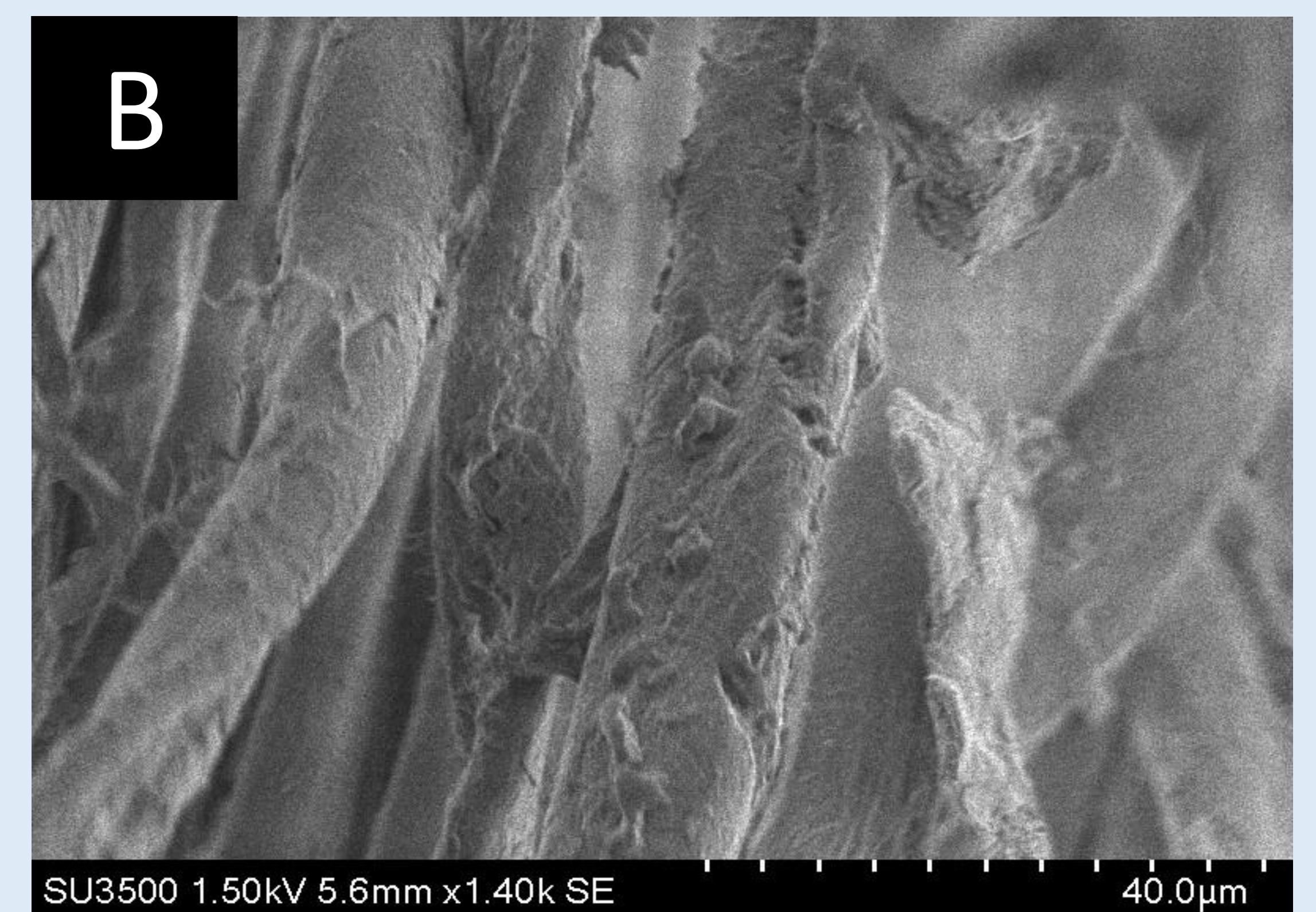
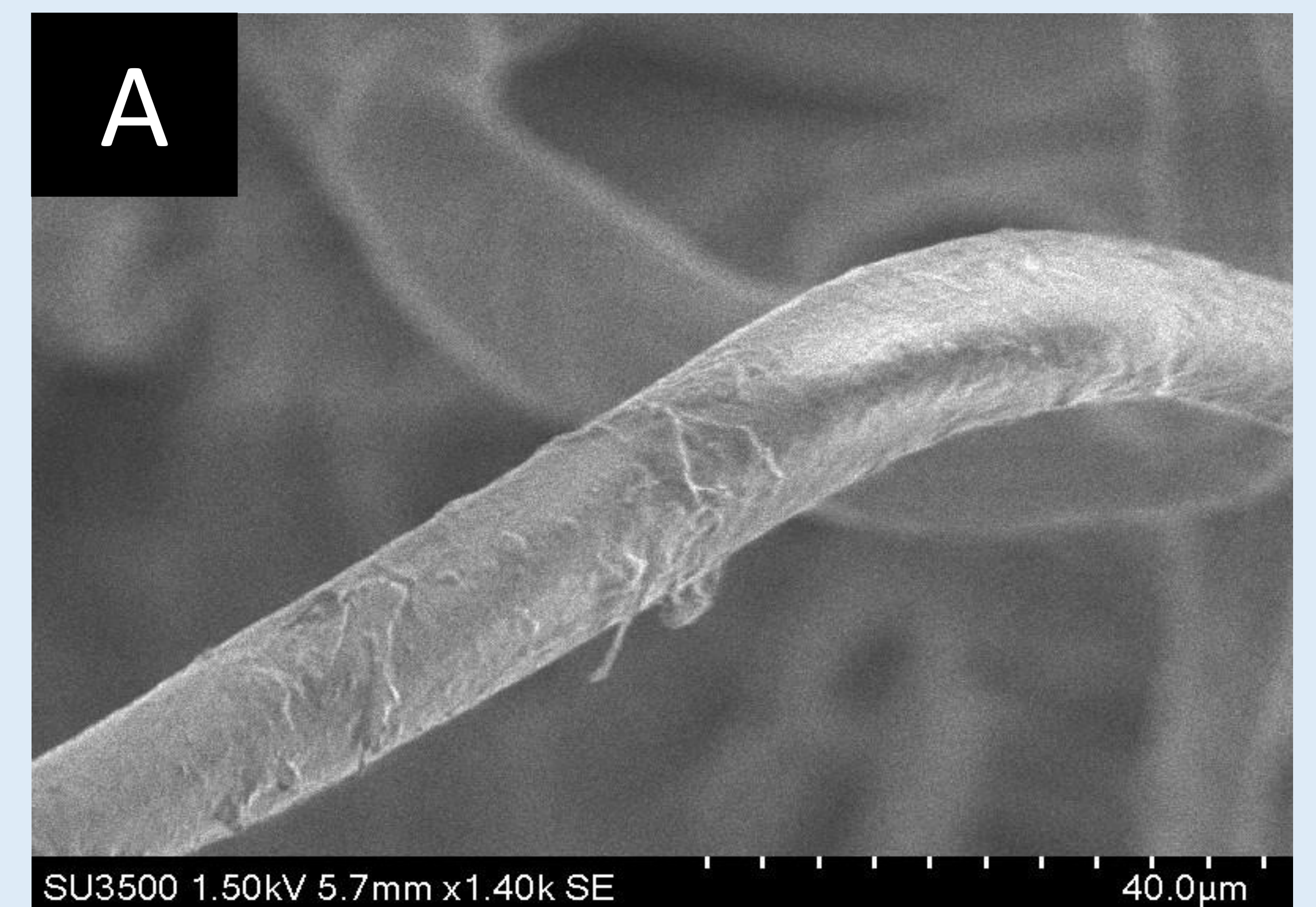


Figure 4: SEM Images of Run 3, Control (A), Post-Application (B), Post-Run (C)