Table S1 Training set of samples together with the belonging quantification results.

Sample Nr.	Cotton Content (%)	Set	Surface Design	Textile Structure	Application Type	Product Category
1	100,0	Train	Patterned	Woven	Clothing	Pants
2	100,0	Train	Patterned	Knitted	Clothing	T-Shirt
3	100,0	Train	Patterned	Woven	Clothing	Shirt
4	100,0	Train	Unicolor	Knitted	Clothing	T-Shirt
5	100,0	Train	Unicolor	Knitted	Clothing	T-Shirt
6	100,0	Train	Unicolor	Knitted	Clothing	T-Shirt
7	100,0	Train	Unicolor	Woven	Clothing	Blouse
8	35,0	Train	Unicolor	Knitted	Clothing	Sweatshirt
9	80,0	Train	Unicolor	Knitted	Clothing	Sweatshirt
10	100,0	Train	Unicolor	Woven	Clothing	Shirt
11	100,0	Train	Unicolor	Woven	Clothing	Jacket
12	100,0	Train	Patterned	Woven	Clothing	Shirt
13	100,0	Train	Unicolor	Knitted	Clothing	Sweater
14	100,0	Train	Unicolor	Knitted	Clothing	T-Shirt
15	100,0	Train	Unicolor	Knitted	Clothing	T-Shirt
16	100,0	Train	Unicolor	Woven	Clothing	Jacket
17	100,0	Train	Unicolor	Knitted	Clothing	T-Shirt
18	100,0	Train	Patterned	Knitted	Clothing	T-Shirt
19	100,0	Train	Patterned	Woven	Clothing	Pants
20	100,0	Train	Unicolor	Woven	Clothing	Shirt
21	100,0	Train	Patterned	Woven	Clothing	Shirt
22	100,0	Train	Unicolor	Knitted	Clothing	Sweater
23	0,0	Train	Unicolor	Woven	Clothing	Scarf
24	35,0	Train	Unicolor	Knitted	Clothing	T-Shirt
25	0,0	Train	Patterned	Woven	Clothing	Scarf
26	35,0	Train	Unicolor	Woven	Clothing	Jacket
27	100,0	Train	Unicolor	Knitted	Clothing	Sweater

28	0,0	Train	Patterned	Knitted	Clothing	Blouse
29	100,0	Train	Unicolor	Knitted	Clothing	T-Shirt
30	0,0	Train	Unicolor	Knitted	Clothing	Sweatshirt
31	55,0	Train	Unicolor	Woven	Clothing	Shirt
32	35,0	Train	Unicolor	Knitted	Clothing	Sweatshirt
33	50,0	Train	Unicolor	Woven	Reference	Reference
34	50,0	Train	Unicolor	Woven	Reference	Reference
35	45,7	Train	Unicolor	Woven	Reference	Reference
36	45,1	Train	Unicolor	Woven	Reference	Reference
37	44,6	Train	Unicolor	Woven	Reference	Reference
38	44,1	Train	Unicolor	Woven	Reference	Reference
39	43,3	Train	Unicolor	Woven	Reference	Reference
40	42,8	Train	Unicolor	Woven	Reference	Reference
41	42,3	Train	Unicolor	Woven	Reference	Reference
42	41,8	Train	Unicolor	Woven	Reference	Reference
43	41,1	Train	Unicolor	Woven	Reference	Reference
44	40,6	Train	Unicolor	Woven	Reference	Reference
45	90,0	Train	Patterned	Woven	Home Textile	Home Textile
46	22,0	Train	Patterned	Woven	Home Textile	Home Textile
47	30,0	Train	Unicolor	Woven	Home Textile	Home Textile
48	35,0	Train	Unicolor	Woven	Home Textile	Home Textile
49	56,0	Train	Unicolor	Knitted	Home Textile	Home Textile
50	31,0	Train	Patterned	Woven	Home Textile	Home Textile
51	35,0	Train	Patterned	Woven	Home Textile	Home Textile
52	35,0	Train	Unicolor	Woven	Home Textile	Home Textile
53	35,0	Train	Patterned	Woven	Home Textile	Home Textile
54	53,0	Train	Unicolor	Woven	Home Textile	Home Textile
55	21,0	Train	Patterned	Woven	Home Textile	Home Textile
56	50,0	Train	Patterned	Knitted	Home Textile	Home Textile

57	50,0	Train	Patterned	Woven	Home Textile	Home Textile
58	37,0	Train	Unicolor	Woven	Home Textile	Home Textile
59	34,0	Train	Unicolor	Woven	Home Textile	Home Textile
60	52,0	Train	Patterned	Woven	Home Textile	Home Textile
61	100,0	Train	Patterned	Woven	Home Textile	Home Textile
62	67,0	Train	Patterned	Woven	Home Textile	Home Textile
63	53,0	Train	Unicolor	Woven	Home Textile	Home Textile
64	90,0	Train	Patterned	Woven	Home Textile	Home Textile
65	88,0	Train	Patterned	Woven	Home Textile	Home Textile
66	55,0	Train	Patterned	Woven	Home Textile	Home Textile
67	100,0	Train	Unicolor	Woven	Home Textile	Home Textile
68	50,0	Train	Patterned	Woven	Home Textile	Home Textile
69	60,0	Train	Unicolor	Knitted	Home Textile	Home Textile
70	100,0	Train	Unicolor	Woven	Home Textile	Home Textile
71	100,0	Train	Unicolor	Woven	Home Textile	Home Textile
72	100,0	Train	Unicolor	Woven	Home Textile	Home Textile
73	100,0	Train	Unicolor	Woven	Home Textile	Home Textile
74	100,0	Train	Unicolor	Woven	Home Textile	Home Textile
75	0,0	Train	Unicolor	Woven	Home Textile	Home Textile
76	0,0	Train	Unicolor	Woven	Home Textile	Home Textile
77	0,0	Train	Unicolor	Woven	Home Textile	Home Textile
78	0,0	Train	Unicolor	Woven	Home Textile	Home Textile
79	0,0	Train	Unicolor	Woven	Home Textile	Home Textile

Table S2 Test set of samples together with the belonging quantification results.

Sample Nr.	Cotton Content (%)	Set	Surface Design	Textile Structure	Application Type	Product Category	Sorter Result (%)	Handheld Result (%)
80	70,0	Test	Unicolor	Knitted	Clothing	Baby Bodysuit	74,0	72,8
81	61,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	66,0	59,0
82	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	97,0	97,2
83	100,0	Test	Unicolor	Woven	Clothing	Blouse	98,0	94,4
84	100,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	96,0	96,9
85	0,0	Test	Unicolor	Woven	Clothing	Jacket	9,0	14,3
86	0,0	Test	Patterned	Woven	Clothing	Scarf	9,0	17,4
87	0,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	10,0	14,3
88	0,0	Test	Unicolor	Woven	Clothing	Shirt	90,0	17,1
89	100,0	Test	Unicolor	Woven	Clothing	Blouse	97,0	97,3
90	100,0	Test	Patterned	Woven	Clothing	Shirt	96,0	99,00
91	0,0	Test	Unicolor	Woven	Clothing	Blouse	10,0	15,00
92	55,0	Test	Unicolor	Woven	Clothing	Shirt	63,0	51,5
93	80,0	Test	Unicolor	Knitted	Clothing	Baby Bodysuit	95,0	85,3
94	0,0	Test	Patterned	Woven	Clothing	Scarf	9,0	17,1
95	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	98,0	98,2
96	60,0	Test	Unicolor	Knitted	Clothing	T-Shirt	50,0	51,8
97	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	98,0	99,2
98	60,0	Test	Patterned	Knitted	Clothing	Pants	57,0	60,7
99	100,0	Test	Patterned	Woven	Clothing	Underpants	93,0	97,1
100	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	98,0	99,0
101	100,0	Test	Unicolor	Woven	Clothing	Shirt	97,0	92,7
102	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	97,0	100,0
103	100,0	Test	Patterned	Woven	Clothing	Underpants	98,0	97,2
104	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	98,0	100,0
105	0,0	Test	Unicolor	Woven	Clothing	Scarf	9,0	17,2

106	100,0	Test	Patterned	Knitted	Clothing	Polo T-Shirt	98,0	99,2
107	100,0	Test	Patterned	Woven	Clothing	Shirt	97,0	98,0
108	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	96,0	100,0
109	100,0	Test	Patterned	Woven	Clothing	Skirt	97,0	99,3
110	0,0	Test	Unicolor	Woven	Clothing	Jacket	8,0	13,2
111	80,0	Test	Unicolor	Knitted	Clothing	Sweatpants	74,0	83,8
112	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	97,0	100,0
113	0,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	9,0	12,8
114	100,0	Test	Unicolor	Knitted	Clothing	Polo T-Shirt	97,0	100,0
115	100,0	Test	Unicolor	Woven	Clothing	Pants	97,0	100,0
116	100,0	Test	Unicolor	Woven	Clothing	Pants	98,0	100,0
117	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	95,0	100,0
118	52,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	54,0	53,8
119	0,0	Test	Patterned	Knitted	Clothing	Blouse	8,0	13,3
120	100,0	Test	Unicolor	Knitted	Clothing	Sweater	98,0	100,0
121	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	96,0	97,4
122	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	97,0	100,0
123	100,0	Test	Unicolor	Knitted	Clothing	Polo T-Shirt	96,0	100,0
124	93,0	Test	Unicolor	Knitted	Clothing	Sweatpants	77,0	92,2
125	90,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	92,0	88,6
126	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	96,0	99,8
127	57,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	58,0	62,3
128	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	94,0	98,2
129	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	96,0	100,0
130	0,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	9,0	16,1
131	0,0	Test	Patterned	Knitted	Clothing	Sport T-Shirt	9,0	12,1
132	0,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	9,0	14,2
133	0,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	9,0	17,4
134	0,0	Test	Patterned	Woven	Clothing	Scarf	9,0	14,5

135	100,0	Test	Patterned	Knitted	Clothing	T-Shirt	96,0	100,0
136	100,0	Test	Patterned	Woven	Clothing	Blouse	98,0	98,5
137	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	96,0	98,4
138	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	97,0	100,0
139	0,0	Test	Unicolor	Woven	Clothing	Blouse	9,0	11,2
140	0,0	Test	Patterned	Woven	Clothing	Scarf	10,0	15,4
141	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	96,0	98,3
142	100,0	Test	Unicolor	Woven	Clothing	Blouse	98,0	97,9
143	100,0	Test	Patterned	Knitted	Clothing	T-Shirt	97,0	99,6
144	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	97,0	96,0
145	35,0	Test	Unicolor	Knitted	Clothing	T-Shirt	28,0	34,3
146	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	96,0	100,0
147	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	97,0	99,1
148	0,0	Test	Unicolor	Knitted	Clothing	Skirt	9,0	15,4
149	100,0	Test	Unicolor	Woven	Clothing	Pants	98,0	98,8
150	100,0	Test	Unicolor	Knitted	Clothing	Sweater	99,0	97,0
151	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	98,0	99,9
152	0,0	Test	Unicolor	Woven	Clothing	Jacket	9,0	17,2
153	100,0	Test	Unicolor	Knitted	Clothing	Polo T-Shirt	98,0	98,9
154	100,0	Test	Unicolor	Knitted	Clothing	T-Shirt	99,0	97,2
155	32,0	Test	Unicolor	Knitted	Clothing	Sweatpants	32,0	31,4
156	100,0	Test	Unicolor	Woven	Clothing	Shirt	98,0	95,6
157	50,0	Test	Patterned	Knitted	Clothing	T-Shirt	51,0	48,4
158	0,0	Test	Unicolor	Woven	Clothing	Jacket	10,0	18,0
159	0,0	Test	Unicolor	Woven	Clothing	Sport Pants	10,0	15,7
160	70,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	54,0	76,8
161	80,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	95,0	87,7
162	0,0	Test	Patterned	Knitted	Clothing	Sport T-Shirt	10,0	15,3
163	0,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	10,0	14,2

164	35,0	Test	Unicolor	Knitted	Clothing	T-Shirt	35,0	35,7
165	0,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	10,0	14,1
166	0,0	Test	Patterned	Knitted	Clothing	T-Shirt	10,0	12,6
167	60,0	Test	Unicolor	Knitted	Clothing	Sweatpants	65,0	55,8
168	0,0	Test	Unicolor	Knitted	Clothing	Sport T-Shirt	10,0	16,2
169	80,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	91,0	81,4
170	0,0	Test	Unicolor	Woven	Clothing	Blouse	11,0	12,3
171	55,0	Test	Unicolor	Woven	Clothing	Shirt	66,0	53,2
172	54,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	57,0	61,8
173	80,0	Test	Patterned	Knitted	Clothing	Sweatpants	93,0	83,5
174	0,0	Test	Unicolor	Knitted	Clothing	Sweatshirt	10,0	13,3
175	35,0	Test	Unicolor	Woven	Clothing	Jacket	40,0	34,1
176	0,0	Test	Patterned	Knitted	Clothing	Sport T-Shirt	10,0	10,5
177	0,0	Test	Patterned	Knitted	Clothing	Tights	8,0	11,3
178	55,0	Test	Unicolor	Woven	Clothing	Shirt	69,0	57,3
179	20,0	Test	Patterned	Knitted	Home Textile	Home Textile	38,0	24,0
180	39,0	Test	Unicolor	Woven	Home Textile	Home Textile	52,0	36,0
181	100,0	Test	Patterned	Woven	Home Textile	Home Textile	89,0	97,0
182	90,0	Test	Unicolor	Knitted	Home Textile	Home Textile	96,0	91,1
183	95,0	Test	Unicolor	Woven	Home Textile	Home Textile	98,0	94,6
184	90,0	Test	Unicolor	Woven	Home Textile	Home Textile	88,0	91,9
185	80,0	Test	Patterned	Woven	Home Textile	Home Textile	87,0	80,0
186	80,0	Test	Patterned	Woven	Home Textile	Home Textile	84,0	84,9
187	80,0	Test	Patterned	Woven	Home Textile	Home Textile	77,0	79,6
188	41,0	Test	Patterned	Woven	Home Textile	Home Textile	28,0	43,1
189	40,0	Test	Unicolor	Woven	Home Textile	Home Textile	27,0	31,1
190	100,0	Test	Unicolor	Woven	Home Textile	Home Textile	97,0	97,1

Table S3 Alkaline treatment samples with the belonging quantification results.

Sample Nr.	Cotton Content (%)	Set	Surface Design	Textile Structure	Application Type	Product Category	Sorter Result (%)	Handheld Result (%)
191	50,0	Test/AT1	Unicolor	Woven	Reference	Reference	50,3	48,9
192	50,0	Test/AT2	Unicolor	Woven	Reference	Reference	50,0	49,0
193	50,0	Test/AT3	Unicolor	Woven	Reference	Reference	50,0	47,6
194	50,0	Test/AT4	Unicolor	Woven	Reference	Reference	50,3	48,4
195	50,0	Test/AT5	Unicolor	Woven	Reference	Reference	52,7	48,0
196	50,0	Test/AT6	Unicolor	Woven	Reference	Reference	55,7	46,2
197	50,0	Test/AT7	Unicolor	Woven	Reference	Reference	57,0	45,7