

Postal address Swerea IVF AB Box 104 SE-431 22 MÖLNDAL Tfn +46 (0)31 706 60 00 Fax +46 (0)31 706 63		Visiting address Argongatan 30, SE- 431 53 MÖLNDAL Org. nr. 556053-1526 VAT no. SE556053-152601	
Client <b>Swatab</b> <b>Jägershillsgatan 26</b> <b>213 75 Malmö</b>		Client's ref. no.	
		Contact person <b>Per Hansson</b>	Our ref. no. <b>5180815</b>

### Object

Measurement of washed soil strips.

### Test Material

Unwashed soil strip
Washed soil strips marked 1 to 9, two of each

The test material was received from the client 2018-10-11

### Procedure and results

#### Reflectance measurements

Equipment: Spectrophotometer Konica Minolta CM-3600

Geometry: di:8,de:8

Opening diameter: 25.4 mm.

Setting : D-65, 10 °-observer, Y-value.

UV Setting: 420 nm cut

Specular Component: Excluded

Number of measuring points: 4 per soiled piece

Date of measurements: 2018-10-18--19

Table 1a. Reflectance values

Stain A	Sample	Y(D65)	dY(D65)	Mean Y	Mean dY
Tea EMPA 167	Unwashed	44,52	-----	-----	-----
	1:1-A	45.74	1.22	46.39	1.87
	1:2-A	47.04	2.52		
	2:1-A	46.64	2.12	46.20	1.68
	2:2-A	45.76	1.24		
	3:1-A	45.32	0.8	44.97	0.45
	3:2-A	44.61	0.09		
	4:1-A	45.18	0.66	45.48	0.96
	4:2-A	45.78	1.26		
	5:1-A	44.62	0.1	45.35	0.83
	5:2-A	46.07	1.55		
	6:1-A	45.8	1.28	45.37	0.85
	6:2-A	44.94	0.42		
	7:1-A	46.75	2.23	46.58	2.06
	7:2-A	46.41	1.89		
	8:1-A	46.35	1.83	47.03	2.51
	8:2-A	47.7	3.18		
	9:1-A	47.48	2.96	47.68	3.16
	9:2-A	47.88	3.36		

Table 1b. Reflectance values

Stain B	Sample	Y(D65)	dY(D65)	Mean Y	Mean dY
Red wine EMPA 114	Unwashed	47,81	-----	-----	-----
	1:1-B	64.09	16.28	63.97	16.16
	1:2-B	63.85	16.04		
	2:1-B	62.26	14.45	63.19	15.39
	2:2-B	64.12	16.32		
	3:1-B	65.72	17.91	65.96	18.16
	3:2-B	66.2	18.4		
	4:1-B	66.19	18.38	65.96	18.15
	4:2-B	65.72	17.91		
	5:1-B	63.49	15.68	63.91	16.11
	5:2-B	64.33	16.53		
	6:1-B	64.54	16.73	64.19	16.38
	6:2-B	63.84	16.03		
	7:1-B	62.47	14.66	62.88	15.07
	7:2-B	63.28	15.47		
	8:1-B	66.7	18.89	66.51	18.70
	8:2-B	66.31	18.5		
	9:1-B	69.88	22.07	70.07	22.26
	9:2-B	70.26	22.45		

Table 1c. Reflectance values

Stain C	Sample	Y(D65)	dY(D65)	Mean Y	Mean dY
Unused motor oil EMPA 106	Unwashed	28.9	-----	-----	-----
	1:1-C	36.17	7.27	35.61	6.71
	1:2-C	35.04	6.14		
	2:1-C	33.4	4.5	32.87	3.96
	2:2-C	32.33	3.42		
	3:1-C	39.93	11.02	38.86	9.95
	3:2-C	37.78	8.87		
	4:1-C	42.34	13.44	41.91	13.00
	4:2-C	41.47	12.56		
	5:1-C	33.72	4.82	35.58	6.68
	5:2-C	37.44	8.54		
	6:1-C	35.95	7.04	37.69	8.79
	6:2-C	39.43	10.53		
	7:2-C	36.53	7.63	35.84	6.93
	7:1-C	35.14	6.23		
	8:1-C	38.94	10.04	39.17	10.27
	8:2-C	39.4	10.49		
	9:1-C	38.92	10.01	39.01	10.10
	9:2-C	39.09	10.19		

Table 1d. Reflectance values

Stain D	Sample	Y(D65)	dY(D65)	Mean Y	Mean dY
Chocolate EMPA 160	Unwashed	47.1	-----	-----	-----
	1:1-D	51.98	4.88	51.88	4.78
	1:2-D	51.78	4.68		
	2:1-D	51.19	4.09	51.00	3.90
	2:2-D	50.8	3.7		
	3:1-D	46.61	-0.49	46.68	-0.42
	3:2-D	46.75	-0.35		
	4:1-D	48.72	1.62	48.88	1.78
	4:2-D	49.04	1.94		
	5:1-D	50.36	3.26	50.25	3.15
	5:2-D	50.13	3.03		
	6:1-D	51.38	4.28	51.72	4.62
	6:2-D	52.05	4.95		
	7:1-D	53.28	6.18	52.90	5.80
	7:2-D	52.52	5.41		
	8:2-D	53.31	6.21	53.07	5.96
	8:1-D	52.82	5.71		
	9:1-D	52.04	4.94	52.41	5.31
	9:2-D	52.78	5.68		

Table 1e. Reflectance values

Stain E	Sample	Y(D65)	dY(D65)	Mean Y	Mean dY
Make up EMPA 143	Unwashed	66.54	-----	-----	-----
	1:1-E	68.16	1.63	68.37	1.84
	1:2-E	68.58	2.04		
	2:1-E	66.87	0.33	66.81	0.27
	2:2-E	66.74	0.21		
	3:1-E	68.99	2.46	68.91	2.38
	3:2-E	68.83	2.29		
	4:2-E	69.51	2.98	69.31	2.78
	4:1-E	69.11	2.57		
	5:1-E	67.04	0.5	66.73	0.19
	5:2-E	66.41	-0.13		
	6:1-E	66.59	0.05	66.57	0.03
	6:2-E	66.54	0		
	7:1-E	68.38	1.84	68.03	1.49
	7:2-E	67.67	1.13		
	8:1-E	67.73	1.19	67.66	1.12
	8:2-E	67.59	1.05		
	9:1-E	67.36	0.82	67.21	0.67
	9:2-E	67.06	0.52		

All results relate only to the material tested.

Mölndal, 2018-10-24  
Swerea IVF  
Analysis and certification



Valter Dejke  
Technical Reviewer



Ann Stare  
Project leader