Effect of Gelatin bloom on Fluid Affinity - A report for WG15/PG1

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Introduction

During the review of EN 13726, it was noted that sometimes the required specification of the gelatin was not available, and the question arises as to the effect the bloom has on the results.

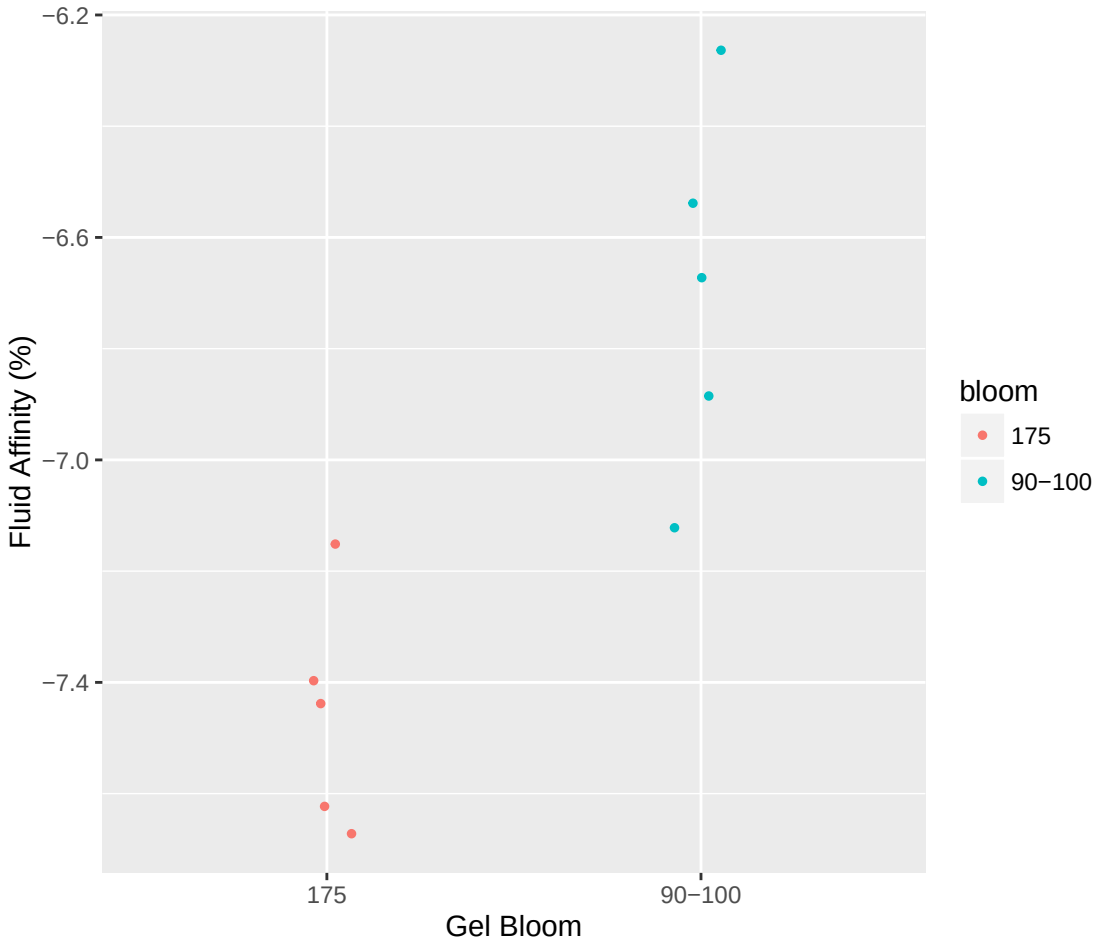
The test (EN 13726-1, monograph 3.4) measures the ability of hydrogel wound dressings to donate liquid to or absorb liquid from test substrates made from gelatine or agar respectively, and is reported as percentage weight change of the gel

The bloom of a gelatin is a measure of the stiffness of the gel. See https://en.wikipedia.org/wiki/Bloom_(test)

"The test determines the weight (in grams) needed by a probe (normally with a diameter of 0.5 inch) to deflect the surface of the gel 4 mm without breaking it."

SMTL have undertaken 2 tests with the same product but using two different bloom gelatins. This data is from 2015.

Plots


−6.2
−6.6
−7.0
−7.4
Fluid Affinity (%)
175
90−100
Gel Bloom
bloom
175
90−100

Statistics

		Fluid.Affinity	
bloom	n	mean	sd
175	5	−7.48	0.25
90-100	5	−6.68	0.37

Table 1: Analysis of Variance Table

	Df	Sum Sq	Mean Sq	F value	Pr(>F)	
bloom	1	1.574	1.574	15.66	0.004195	* *
Residuals	8	0.804	0.1005	NA	NA	NA

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Conclusion

Whilst the statistical analyses shows a statistically significant difference between the two blooms, further work is required to assess whether the difference is practically significant.

Appendix A - Raw Data

Quitting from lines 101-102 (GelatinBloom.Rmd) Error in terms.formula(formula, “Error”, data = data) : ‘data’ argument is of the wrong type Calls: ... eval -> pander -> anova -> aov -> terms -> terms.formula

dressing	bloom	w1	w2	w3	w4	Fluid.Affinity
A	175	44.83	54.83	54.81	45.55	-7.4
A	175	44.84	54.85	54.84	45.54	-7.093
A	175	44.88	54.89	54.86	45.62	-7.692
A	175	44.61	54.61	54.59	45.36	-7.7
A	175	44.08	54.09	54.08	44.82	-7.493
B	90-100	45.47	55.45	55.42	46.06	-6.212
B	90-100	44.22	54.2	54.18	44.86	-6.613
B	90-100	45.07	55.08	55.06	45.74	-6.893
B	90-100	45.16	55.15	55.13	45.79	-6.507
B	90-100	44.23	54.25	54.22	44.92	-7.186