

## Supplemental Materials

The section that follows includes several matrices of post-hoc Tukey HSD p-values for the multiple comparisons made on results with significant main effects. The matrices are color coded to help the reader identify the exposure/cleaning treatment that resulted in significantly larger values between each pair of comparisons. For cells shaded in orange, the treatment to the left (row heading) results in a significantly larger value, while those shaded in green indicate the treatment listed above (i.e. column heading) was significantly larger.

### S.1. Material strength

#### S.1.1. Tear Strength

##### *Tear strength from thermal barrier specimens collected in the fill direction*

TBF	NN	NL	EL	ELhd	EW	ED
NN		0.000	0.000	0.000	0.006	0.252
NL	0.000		1.000	0.999	0.000	0.000
EL	0.000	1.000		1.000	0.000	0.000
ELhd	0.000	0.999	1.000		0.000	0.000
EW	0.006	0.000	0.000	0.000		0.287
ED	0.252	0.000	0.000	0.000	0.287	

##### *Tear strength from outer shell specimens collected in the warp direction*

OSW	NN	NL	EL	ELhd	EW	ED
NN		0.000	0.000	0.000	0.388	0.467
NL	0.000		0.996	0.179	0.000	0.000
EL	0.000	0.996		0.058	0.000	0.000
ELhd	0.000	0.179	0.058		0.000	0.000
EW	0.388	0.000	0.000	0.000		0.000
ED	0.467	0.000	0.000	0.000	0.000	

##### *Tear strength from outer shell specimens collected in the fill direction*

OSF	NN	NL	EL	ELhd	EW	ED
NN		0.000	0.000	0.000	0.020	0.000
NL	0.000		0.000	1.000	0.000	0.000
EL	0.000	0.000		0.000	0.000	0.000
ELhd	0.000	1.000	0.000		0.000	0.000
EW	0.020	0.000	0.000	0.000		0.003
ED	0.000	0.000	0.000	0.000	0.003	

S.1.2. Seam Strength

**Seam strength from moisture barrier specimens**

MBS	NN	NL	EL	ELhd	EW	ED
NN		1.000	0.454	1.000	0.013	0.996
NL	1.000		0.059	1.000	0.000	0.921
EL	0.454	0.059		0.106	0.230	0.421
ELhd	1.000	1.000	0.106		0.000	0.976
EW	0.013	0.000	0.230	0.000		0.001
ED	0.996	0.921	0.421	0.976	0.001	

**S.2. Thermal performance properties**

S.2.1. Flammability

**Char length from specimens collected in the warp direction**

CH-W	NN	NL	EL	EW	ED
NN		0.068	0.971	0.331	0.903
NL	0.068		0.038	0.791	0.000
EL	0.971	0.038		0.379	0.227
EW	0.331	0.791	0.379		0.002
ED	0.903	0.000	0.227	0.002	

**Char length from specimens collected in the fill direction**

CH-F	NN	NL	EL	EW	ED
NN		0.450	0.954	0.940	0.328
NL	0.450		0.639	0.687	0.000
EL	0.954	0.639		1.000	0.005
EW	0.940	0.687	1.000		0.004
ED	0.328	0.000	0.005	0.004	

S.2.2. Thermal Protective Performance (TPP)

TPP	NN	NL	EL	EW	ED
NN		0.091	0.007	0.999	0.736
NL	0.091		0.403	0.000	0.000
EL	0.007	0.403		0.000	0.000
EW	0.999	0.000	0.000		0.339
ED	0.736	0.000	0.000	0.339	

S.2.3. Total Heat Loss (THL)

<b>THL</b>	<b>NN</b>	<b>NL</b>	<b>EL</b>	<b>EW</b>	<b>ED</b>
<b>NN</b>		0.000	0.018	0.024	0.001
<b>NL</b>	0.000		0.081	0.058	0.954
<b>EL</b>	0.018	0.081		1.000	0.294
<b>EW</b>	0.024	0.058	1.000		0.226
<b>ED</b>	0.001	0.954	0.294	0.226	