

List of Tables

2.1	Harmful effects of noise level on human health	7
2.2	Octave bands frequencies	11
2.3	Classification of sound based on the frequency	12
2.4	Sound source and sound pressure level	14
2.5	Physical properties of natural fibers	63
2.6	Average physical properties of kapok fibre	64
2.7	Chemical composition of different natural fibres	68
2.8	Comparison of properties of milkweed, kapok and cotton fibres	74
2.9	Uniformity ratio of milkweed fibres Vs. cotton	77
2.10	Mechanical properties of milkweed fibre	78
2.11	Chemical composition of Milkweed fibre	79
3.1	Kapok & Milkweed fibres properties	89
3.2	Kapok fibre - Experimental range and levels of the independent variables .	90
3.3	Milkweed fibre - Experimental range and levels of the independent variables	90
3.4	Kapok fibre - Central composite design experiments	91
3.5	Milkweed fibre - Central composite design experiments	92
4.1	Impedance tube component list	102
5.1	Coded variable of kapok fibre variables	119
5.2	ANOVA regression model for the sound absorption coefficient of kapok fibre nonwoven fabric	120
5.3	Estimated regression coefficient and corresponding p-value for kapok fibre nonwoven fabric	123
5.4	Multiple response prediction: NAC(α)	125

5.5	Average sound absorption coefficient value of samples with different proportion of kapok fibre in the blend at different frequency	126
5.6	Average sound absorption coefficient value of samples with different carded web mass at different frequency	129
5.7	Average sound absorption coefficient value of samples with different stroke frequency at different sound frequency	131
5.8	Average sound absorption coefficient value of samples with different needle depth at different sound frequency	133
5.9	Average sound absorption coefficient value of kapok fibre samples with different fabric thickness at different sound frequency	135
5.10	Average sound absorption coefficient value of samples with different kapok fabric GSM at different sound frequency	137
5.11	Average sound absorption coefficient of kapok fabric with different air permeability at different frequency	138
5.12	Average sound absorption coefficient of kapok fabric with different porosity at different frequency	140
5.13	Coded variable for physical properties of kapok fibre fabric	142
5.14	ANOVA regression model of kapok fabric physical properties for the sound absorption coefficient	142
5.15	Regression Analysis: physical properties of kapok fibre nonwoven fabric . .	145
5.16	Coded variable of milkweed fibre variables	158
5.17	ANOVA regression model for the sound absorption coefficient of milkweed fibre nonwoven fabric	159
5.18	Estimated regression coefficient and corresponding p-value for Milkweed fibre nonwoven fabric	162
5.19	Comparison of kapok and milkweed regression coefficient	164
5.20	Multiple response prediction: NAC(α)	165
5.21	Average sound absorption coefficient value of milkweed fabric for different proportion of fibre in the blend at different frequency	166
5.22	Average sound absorption coefficient value of milkweed fabric for different carded web mass at different frequency	169
5.23	Average sound absorption coefficient value of milkweed fabric for different stroke frequency at different sound frequency	171

5.24 Average sound absorption coefficient value of milkweed fabric for different needle depth at different sound frequency	173
5.25 Average sound absorption coefficient value of milkweed fibre samples for different fabric thickness at different sound frequency	175
5.26 Average sound absorption coefficient value of milkweed samples for different fabric GSM at different sound frequency	177
5.27 Average sound absorption coefficient value of milkweed samples for different fabric air permeability at different sound frequency	178
5.28 Average sound absorption coefficient value of milkweed samples for different fabric porosity at different sound frequency	180
5.29 Coded variable for physical properties of milkweed fibre fabric	182
5.30 ANOVA regression model of milkweed fabric physical properties for the sound absorption coefficient	183
5.31 Regression Analysis: physical properties of milkweed fibre nonwoven fabric	185
5.32 Regression coefficient: kapok vs milkweed fabric physical properties	187
5.33 Comparison of sound absorption coefficient for kapok fiber nonwoven fabric	189
5.34 Comparison of sound absorption coefficient for milkweed fiber nonwoven fabric	191