

List of Symbols

Symbol	Description
X_{com}	Property of Interest in Composite Manufacturing
V_{mat}	Volume of Matrix
X_{mat}	Property of Matrix
V_{fiber}	Volume of Fiber
X_{fiber}	Property of Fiber
m	Index
x, X, Y, D_n	Random Variable
$\sim N$	Normally Distributed
μ	Population Mean
σ^2	Population Variance
$f(x)$	Probability Density Function
σ	Standard Deviation
P	Probability
$F(x), F(a)$	Cumulative Distribution Function
β_0	Shape Parameter
η	Scale Parameter
$E(x)$	Expected Mean
$V(x)$	Population Variance
$\alpha_0, \mu_0, \varepsilon_i, a_i, b_i, \beta, b_i, \kappa_i, a_i, \varepsilon, \varepsilon_1, a_1$	Model Constant
X_i, V_i, T_i, D_i, C_i	Predictor Random Variable at Step i
$[X_{ij}]$	Matrix of Correlated Variables
$\bar{X}_{i,j}$	Elements of Matrix of Correlated Variables
\bar{X}_{ij}	Column Vector
$\mu_{X_{i,j}}$	Mean of Elements of Matrix $[X_{i,j}]$
$\sigma_{X_{i,j}}$	Standard Deviation of Elements of Matrix $[X_{i,j}]$
$[\bar{T}]$	Transformation Matrix
$\lambda_{i,j}$	Participating Variables of Covariance Matrix
$[\theta]$	Eigenvector
$[\bar{V}_{i,j}]$	Scores or Principal Components
$[C^r]$	Covariance Matrix
$\rho \bar{X}_{i,j}$	Elements of Covariance Matrix
$[\theta_{i,j}]$	Eigenvector Matrix
Y_i, y_i, q_i	Response Variable at Step i
$S_n(x)$	Empirical Distribution Function
α	Level of Significance
D_n^α	Value of Random Variable at Significance Level α
σ_f	Flexural Strength
F_Q, F_q	Load at the Onset of Failure
L	Distance Between the Support Points
B	The Breadth of the Specimen
W	The width of the Specimen
σ_c	Compressive Strength of Composite
A_0	Initial Cross-Sectional Area
K_{Ic}	Stress Intensity Factor
a	The Depth of the Pre-Crack
K	Thermal Conductivity

G_K	Multiparameter Random Variable for Thermal Conductivity
Y_K	Response Variable for Thermal Conductivity
Y_d	Response Variable for Density
D_i	Multiparameter Random Variable for Density at Step i
R^2	Coefficient of Determination
s	Model Error
Y_c	Response Variable for Cured Sample Weight
Q_f	Response Variable for Flexural Strength
Z_{perco}	Percolation Rate
w_c	The Weight of Cured Sample
X_{pot}	Height of Pot
Y_{pot}	Compressive Strength of Pot
T	Sample Age
$\beta_1, \beta_2, \delta_1, \delta_2, v_1, v_2, v_3, \gamma_1, \phi_i, d_i, e_i$	Coefficients of Predictor Variables
Y_{com}	Response Variable for Compressive Strength of Composite
X_{mm}	Volume Fraction of MM
T_a	Ambient Temperature
Φ_a	Humidity