

LIST OF SYMBOLS AND ABBREVIATIONS

Symbols

μ	-	Coefficient of friction
Γ'	-	Convective heat transfer coefficient-air side
ρ	-	Density (kg/m^3)
q	-	Heat flux (W/m^2)
h	-	Heat transfer coefficient ($\text{W/m}^2\cdot\text{K}$)
in	-	Inch
Γ''	-	Insulating boundary
kW	-	Kilo Watt
<i>lpm</i>	-	Litters per minute
μm	-	Micro meter
$\alpha\text{-Al}$	-	Primary aluminium phase
HRc	-	Rockwell Hardness number
λ_2	-	Secondary dendrite arm spacing (μm)
c	-	Specific heat ($\text{J/kg}\cdot\text{K}$)
T	-	Temperature ($^{\circ}\text{C}$)
σ	-	Tensile strength (MPa)
λ	-	Thermal conductivity ($\text{W/m}\cdot\text{K}$)
$\sigma_{c,T}$	-	True compressive stress (MPa)
ε_T	-	True tensile strain
σ_T	-	True tensile stress (MPa)
Γ_k	-	Unknown heat flux boundary
V	-	Volt

Abbreviations

Al	-	Aluminium
Al-Si	-	Aluminium-Silicon alloy
ASTM	-	American Society for Testing and Materials
ANOVA	-	Analysis of variance
COF	-	Coefficient Of Friction
Cu	-	Copper
CuAl ₂	-	Copper Aluminide
DAC	-	Data Acquisition Card
DAS	-	Dendrite Arm Spacing
DoE	-	Design of Experiment
GUI	-	Graphical User Interface
GDC	-	Gravity Die Casting
IHF	-	Interfacial Heat Flux
IHTC	-	Interfacial Heat Transfer Coefficient
IHCP	-	Inverse Heat Conduction Problem
MPa	-	Mega Pascal
OA	-	Orthogonal Array
SDAS	-	Secondary Dendrite Arm Spacing
Si	-	Silicon
SS	-	Stainless Steel
UTS	-	Ultimate Tensile Strength
YS	-	Yield strength