**Parameters used to validate the fully coupled model in Validation Study 1**

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| --- | --- | --- | --- |
| **Parameter** | | **Unit** | **Value** |
| Solid fuel | Height |  | 0.02 |
| Dry fuel density |  | 593 |
| Surface area-to-volume ratio |  | 4550 |
| Packing ratio | - | 0.058 |
| Pre-exponential factor |  | 36,400 |
| Activation energy |  | 60,276 |
| Heat of pyrolysis |  | 418 |
|  | Mass fraction of dry fuel converted to char | - | 0.18 |
| Moisture | Fuel moisture content (for constant FMC case only) |  | 0.065 |
| Heat of vaporization of water |  | 2259 |
| Char | Density |  | 300 |
| Thermal conductivity |  | 0.05 |
| Specific heat  (As a function of temperature T) |  | 0.42 + 0.002 T + (6.85 10-7) T2 |
| Pre-exponential factor |  | 430 |
| Activation energy |  | -12,000 |
| Heat of formation |  |  |
| Mass fraction of char converted to ash | - | 0.2 |
| Mass fraction of oxygen | - | 1.65 |
| Ash | Density |  | 67 |
| Thermal conductivity |  | 0.1 |
| Specific heat  (As a function of temperature T) |  | 1.244(T/300)0.315 |
| Soot | Density |  | 1800 |
| Thermal conductivity |  | 0.55 |
| Specific heat |  | 2.1 |