NPRE 457: HW 34

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The debris cooling efficiency depends on the particle sizes. For particles of 4 mm in diameter, the heat dissipation rate is roughly 750 kW/m^3. This is far greater than the heat dissipation rate of 20 kW/m^3 for particles of 0.1 mm diameter. However, the volumetric heat generation rate is the same for both particles. For the larger particles, the heat is simply evacuated quicker than the smaller particles. This results in the heat dissipation rate being lower for the smaller particles because their small size does not allow the heat to be stored. It would be expected that the center of the larger particles would be far hotter than the center of the smaller particles.