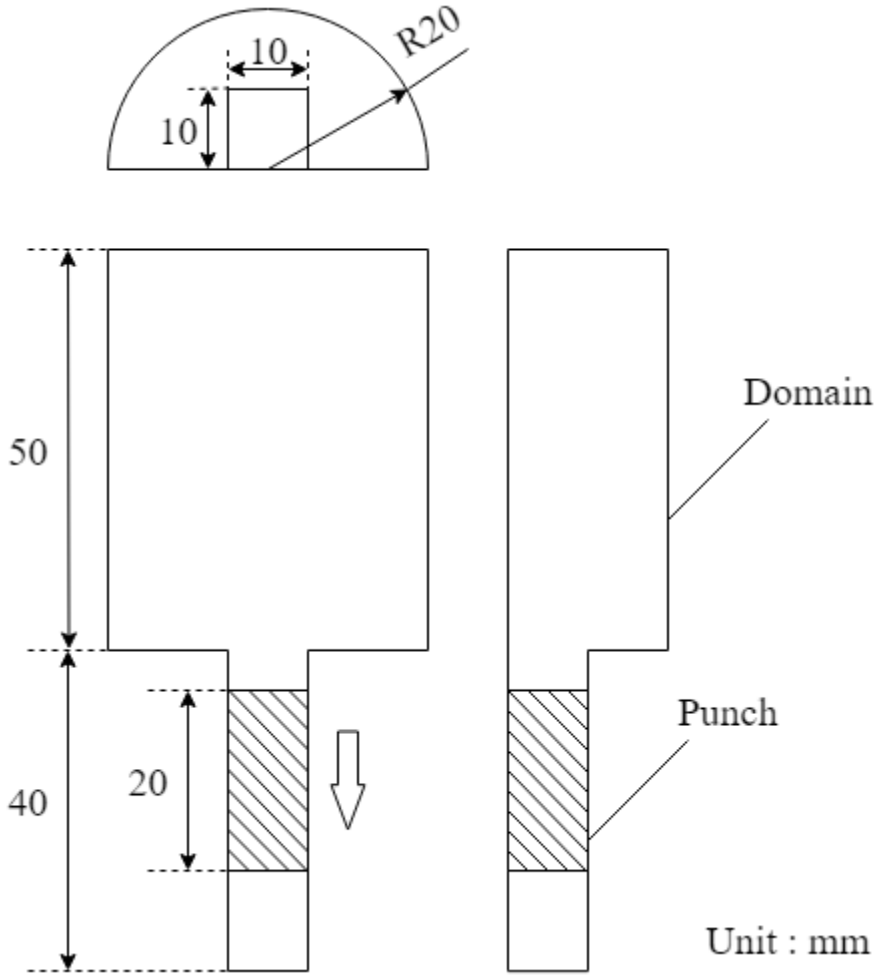

Figure 1. Schematic diagram

Table 1. Physical properties

Gas phase	
Viscosity	1.8×10^{-5} Pa・s
Density	1 kg/m^3
Solid phase	
Density	1500 kg/m^3
Spring constant	50 N/m
Coefficient of restitution	0.9
Coefficient of friction	0.3

Table 2. Calculation conditions

Particle diameter	250 μm
Number of particles	500,000
Grid size	0.5 mm
Calculation time	0.24 s

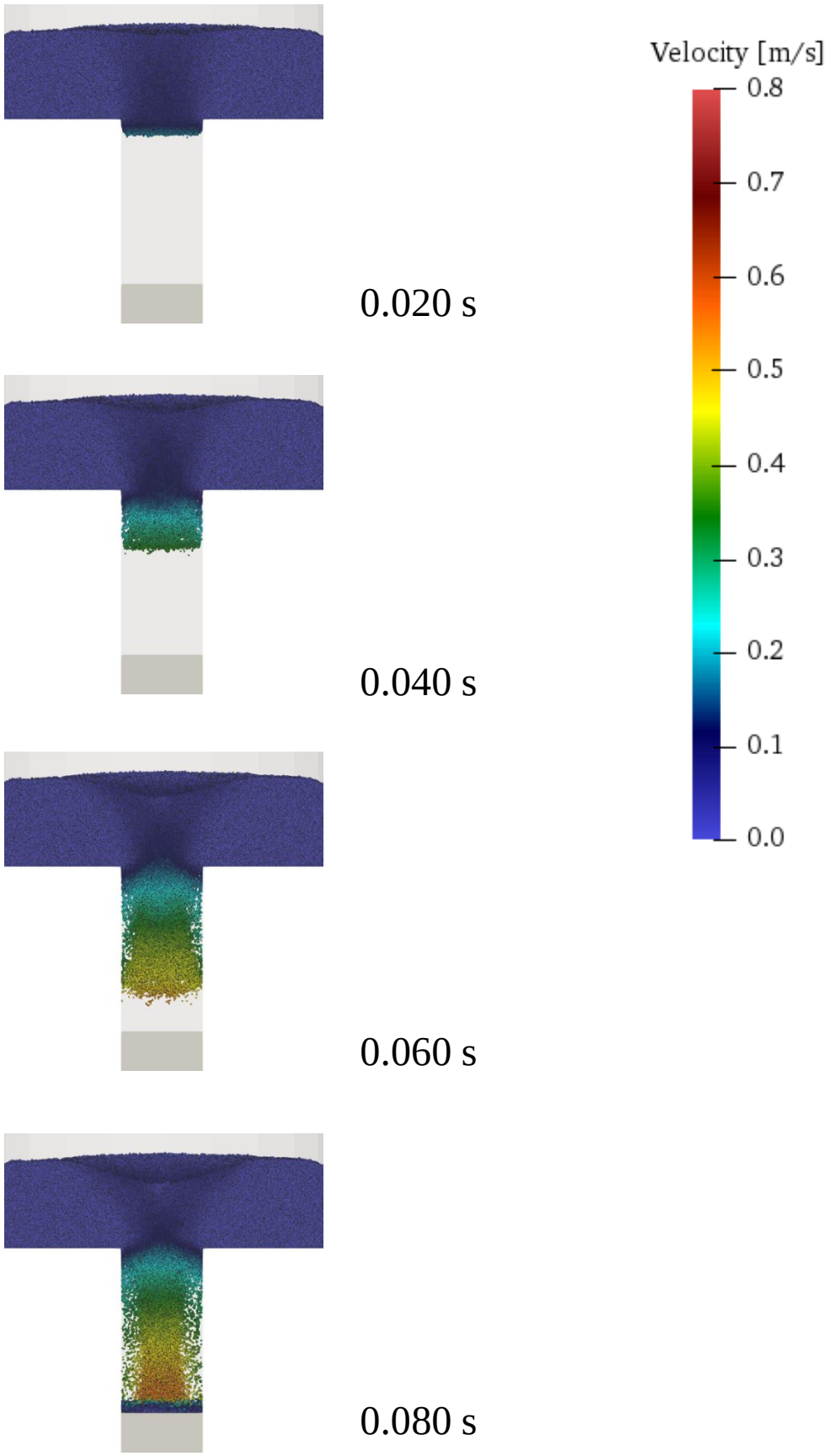

Figure 2. Powder velocity

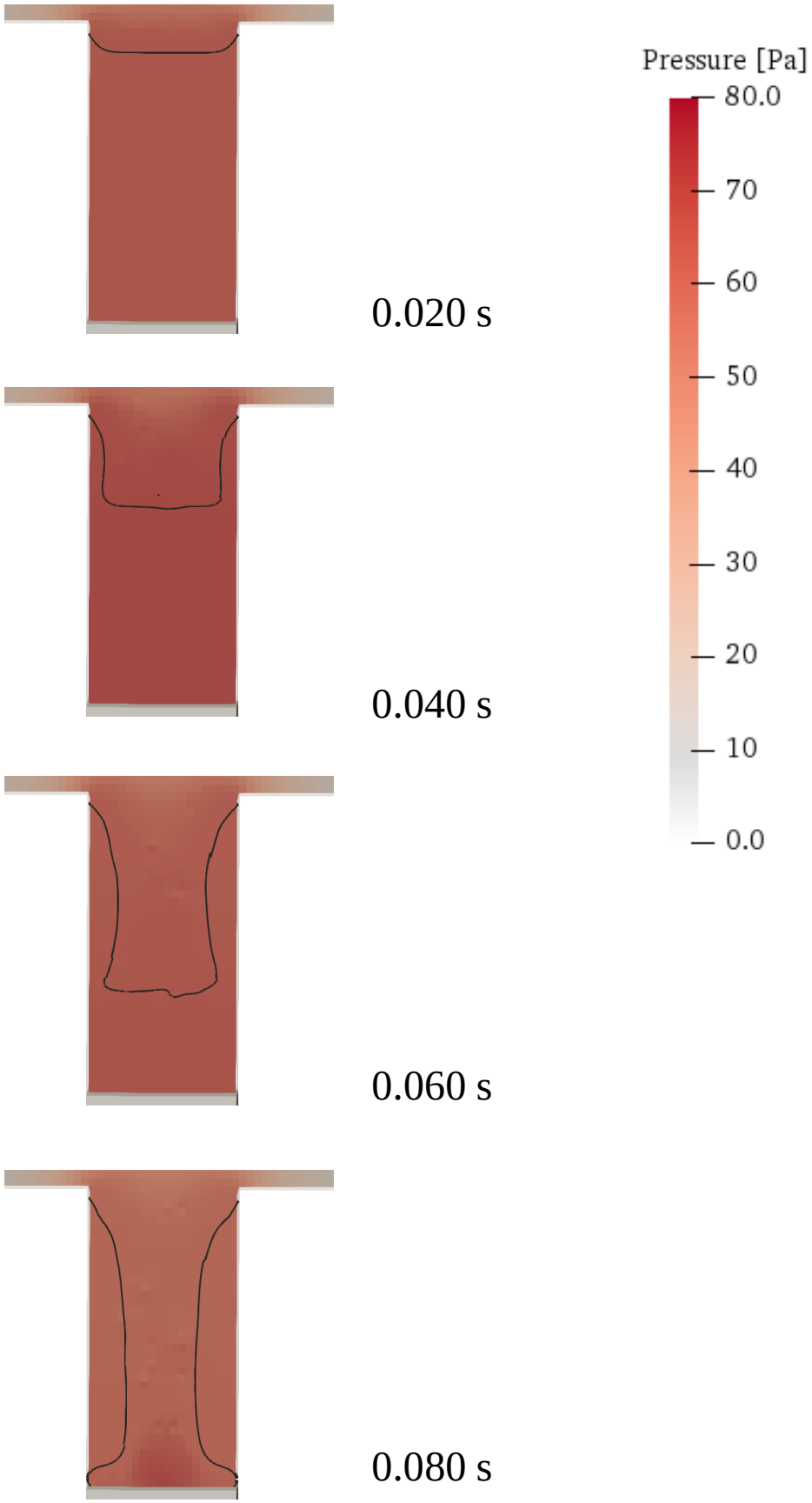

Figure 3. Pressure distribution

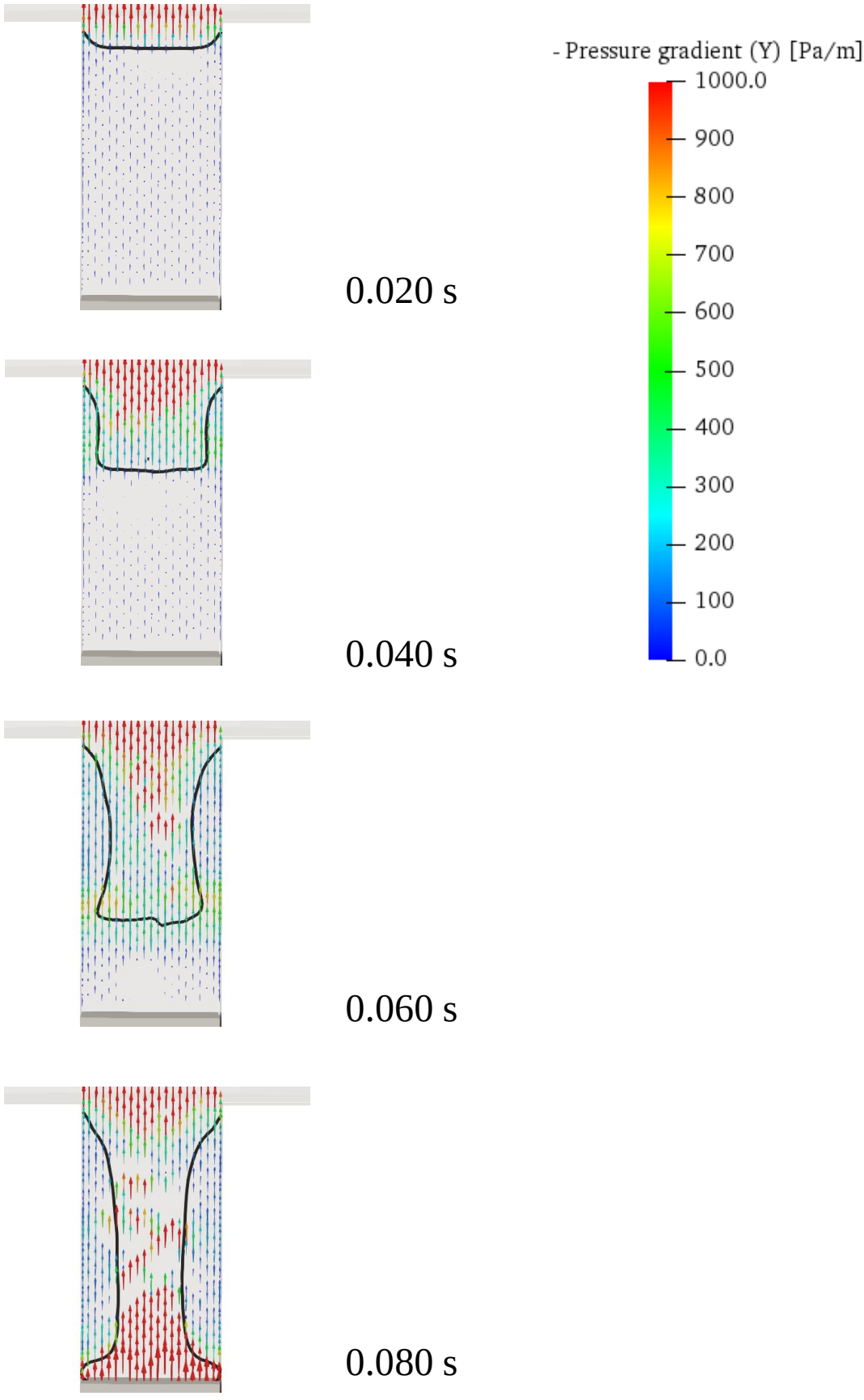

Figure 3-2. Pressure gradient

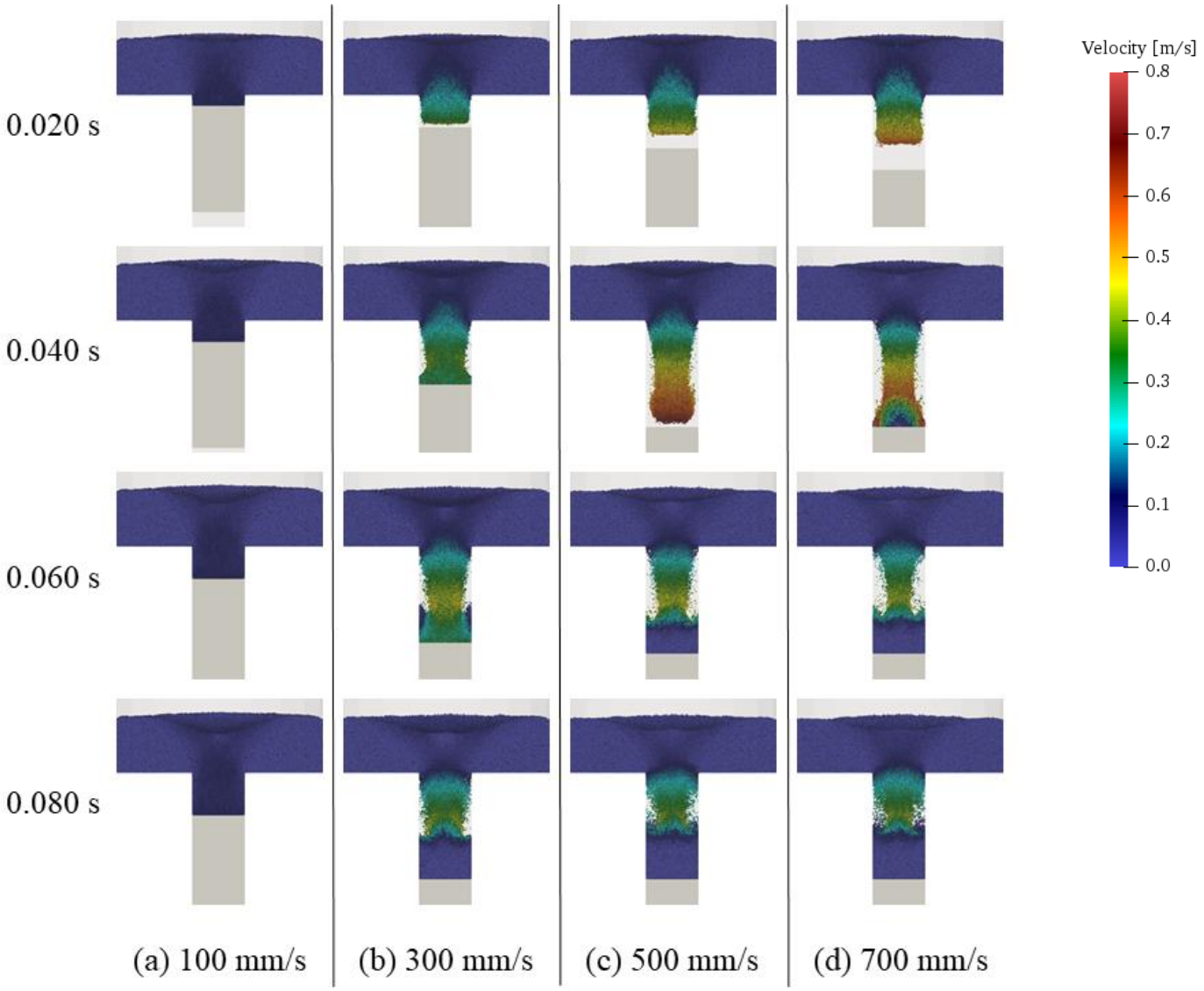

Figure 4. Powder velocity

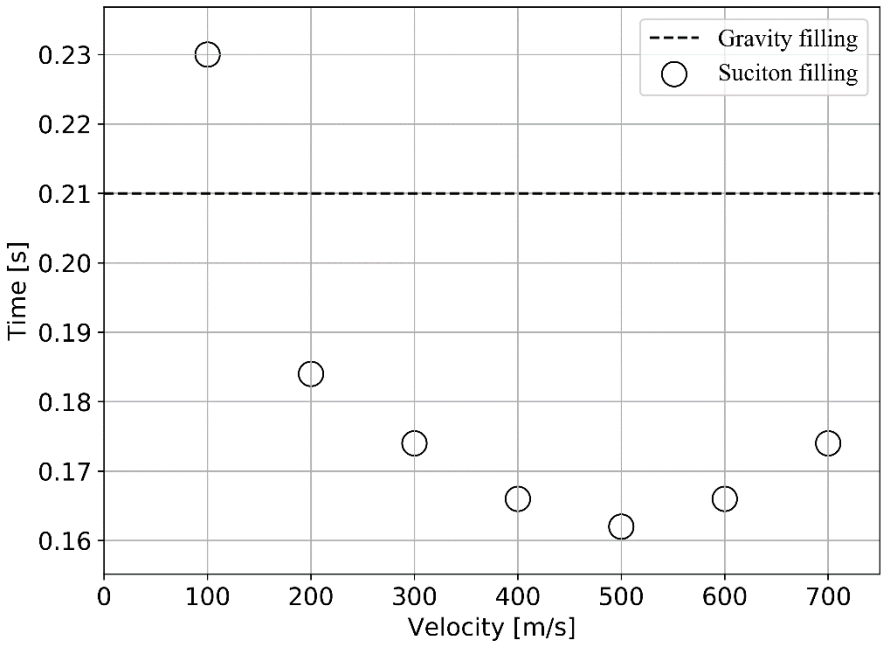

Figure 5. Filling time

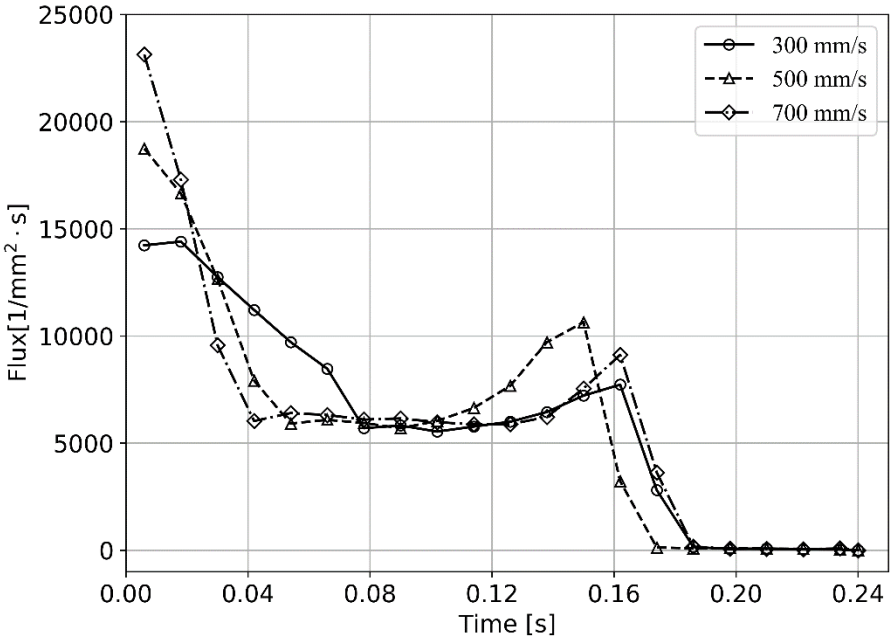

Figure 6. Flux of powder flow

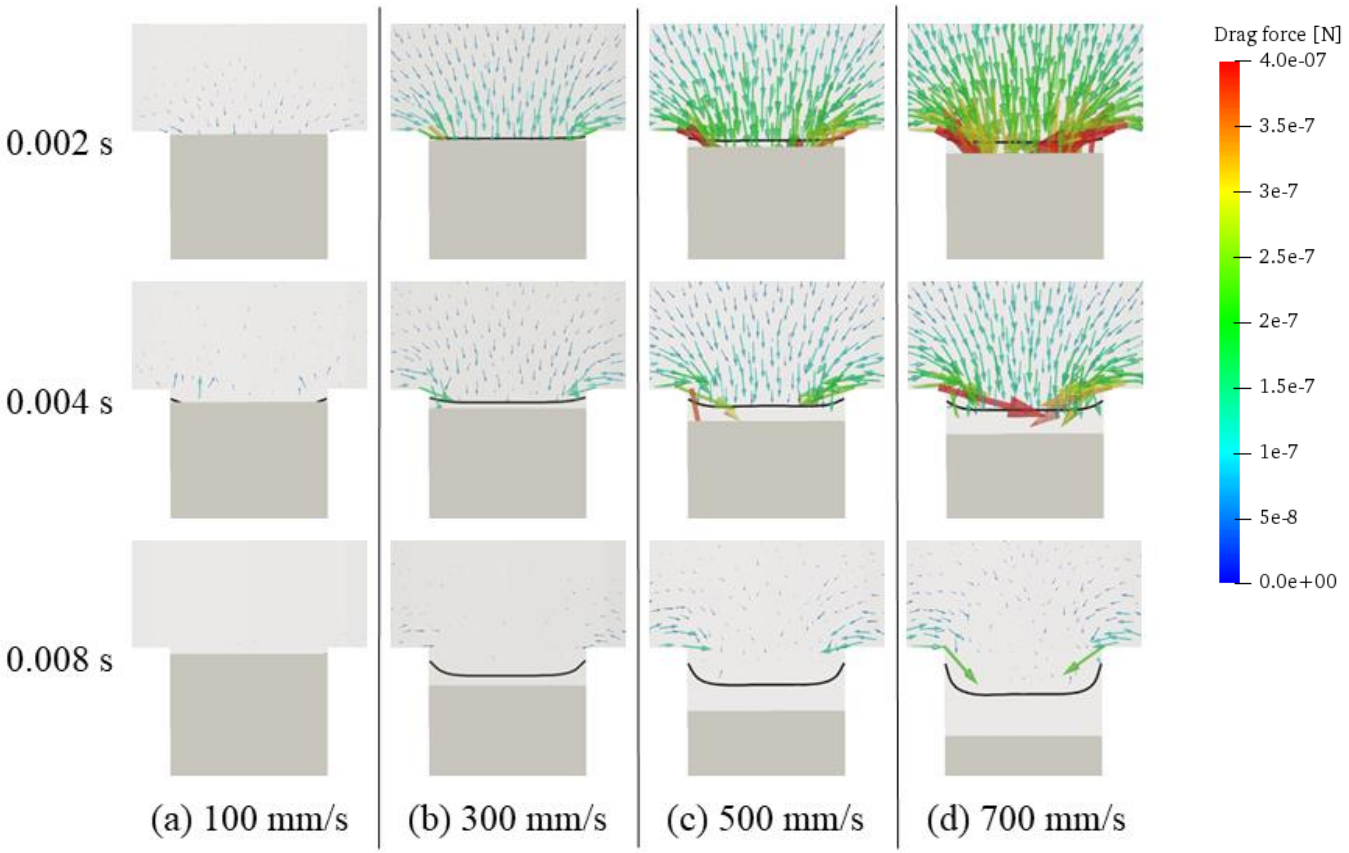

Figure 7. Drag force

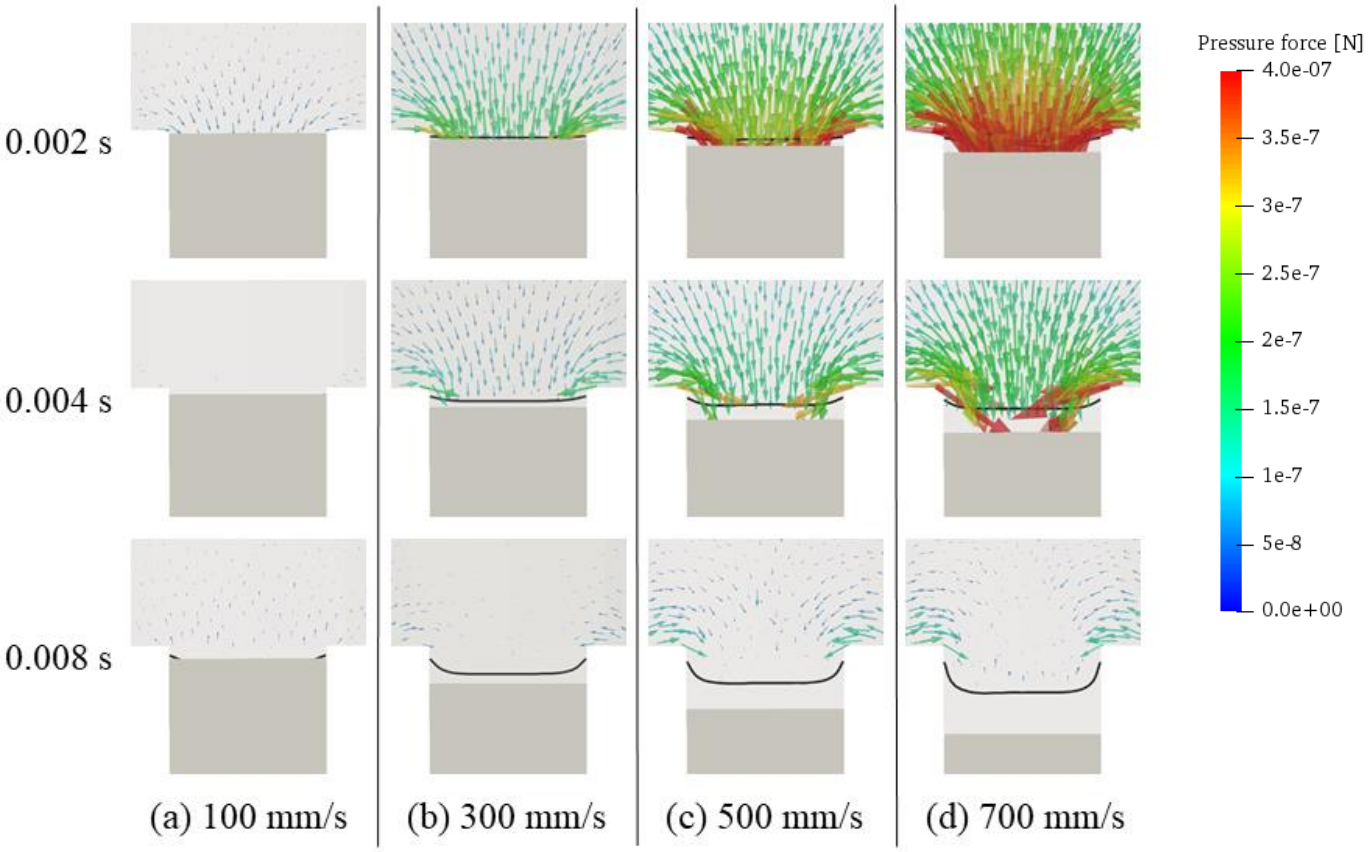

Figure 7. Pressure force

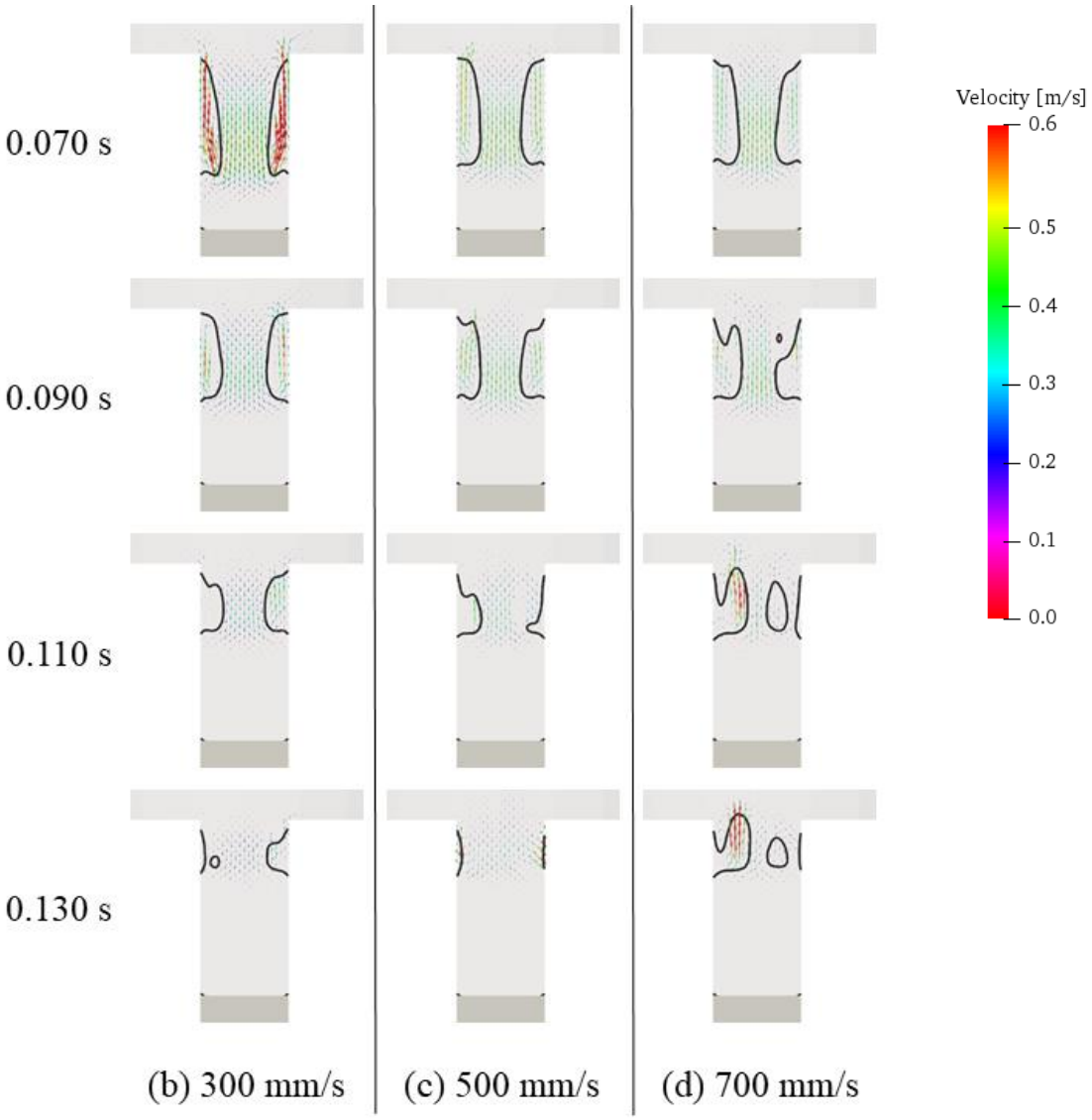

Figure 8. Air velocity