

Lithologies	Compaction model Grain density [kg/m ³] Initial porosity [%] Minimum porosity [%] Athy's factor [1/km]	Porosity [%] -> Permeability [log(mD)]	Porosity [%] -> Capillary entry pressure [MPa] Interfacial tension [mN/m] Upscaling factor Hg-Air -> Oil-Water	Porosity [%] -> Heat flow generation [microW/m ²]	Thermal conductivity [W/m/K] At 20 °C (68 °F) [W/m/K] At 100 °C (212 °F) [W/m/K] Thermal conductivity Anisotropy factor []	Heat capacity [kcal/kg/K] At 20 °C (68 °F) [kcal/kg/K] At 100 °C (212 °F) [kcal/kg/K]
Cenozoic mudstone	Athy's law 2700 55 1 0.7	55 -> -1 25 -> -3 1 -> -8.52	-1.49 * porosity + 1.81 42 2.56	40 -> 1.22 30 -> 1.42 20 -> 1.63 10 -> 1.83 0 -> 2.03	Sekiguchi model 1.64 1.69 1.6	Waples model 0.21 0.24
Cenozoic sandstone	Athy's law 2760 40 1 0.32	41 -> 3.62 25 -> 2 1 -> -2.8	-0.0673 * porosity + 42.51 42 2.56	40 -> 0.66 30 -> 0.77 20 -> 0.88 10 -> 0.99 0 -> 1.1	Sekiguchi model 3.35 2.96 1.6	Waples model 0.21 0.24
Cenomanian MTD	Athy's law 2760 40 1 0.32	41 -> 3.62 25 -> 2 1 -> -2.8	-0.0673 * porosity + 42.51 42 2.56	40 -> 0.66 30 -> 0.77 20 -> 0.88 10 -> 0.99 0 -> 1.1	Sekiguchi model 3.35 2.96 1.6	Waples model 0.21 0.24
Mesozoic mudstone	Athy's law 2700 55 1 0.7	55 -> -1 25 -> -3 1 -> -8.52	-1.49 * porosity + 42.51 42 2.56	40 -> 1.22 30 -> 1.42 20 -> 1.63 10 -> 1.83 0 -> 2.03	Sekiguchi model 1.64 1.69 1.6	Waples model 0.21 0.24
Mesozoic sandstone	Athy's law 2720 41 1 2.47	41 -> 4.33 25 -> 3 1 -> -1.8	-0.03 * porosity + 1.04 42 2.56	40 -> 0.42 30 -> 0.49 20 -> 0.56 10 -> 0.63 0 -> 0.7	Sekiguchi model 3.95 3.38 1.15	Waples model 0.2 0.24
Oceanic crust	Not compactable	Impermeable	Perfect seal	Constant 0.52	Sekiguchi model 2.7 2.47 1	Waples model 0.19 0.22
Continental crust	Not compactable	Impermeable	Perfect seal	Constant 2	Sekiguchi model 2.6 2.4 1.15	Waples model 0.19 0.22

Table 1: Lithological parameters used for modeling.