

Supplementary Materials

Table S1. Physical properties of the components in the FEM model.

No.	Component	Density ρ , $\text{kg}\cdot\text{m}^{-3}$	Specific Heat C_p , $\text{J}/(\text{kg}\cdot\text{K})$	Thermal Conductivity k , $\text{W}/(\text{m}\cdot\text{K})$
1	K10 carbide	14900 [1]	200 [2]	130 at 293 K [1]
2	(TiAl)N coating	4650 [3]	645 [3]	25.21 + + 0.00127·T - - 0.00000029·T ² [3]
3	Medium carbon steel	7900 [4]	173.524 + + 0.345·T [4]	33.34 + + 0.01863 · T [4]
4	TiO ₂	4235 [4]	680 [4]	7.5 [5]
5	Al ₂ O ₃	3780 [3]	1079 [3]	42.5 - 0.0495·T [6]

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