Parameters and properties used in the MOTIV model for ground types, track and train vehicle

Table 1 The parameters used for the different types of ground.

Ground	Layer	Properties				
		P-wave speed (m/s)	S-wave speed (m/s)	Density (kg/m^3)	Damping loss factor	Layer depth (m)
Type 1	Top layer	1290	108	1930	0.084	3
	2nd layer	1489	125	2000	0.06	2.5
	Half-space	1586	132	2000	0.06	infinite
Type 2	Top layer	225	75	2000	0.1	5
	Half-space	602	432	2000	0.1	infinite
Type 3	Top layer	107	57.5	1750	0.1	1
	2nd layer	148	79	2000	0.1	3
	Half-space	287	166	2000	0.1	infinite

Table 2 The properties of the track

Rail type	Railpad stiffness (MN/m)	Railpad damping loss factor	Sleeper mass (kg)	Ballast mass (kg/m)	Ballast stiffness (MN/m^2)	Ballast damping loss factor
UIC60	800	0.2	280	1740	4640	0.1

Table 3 The properties of the train vehicle

Car body mass (kg)	Bogie mass (kg)	Wheelset mass (kg)	Distance between axles (m)	Distance between bogie centres (m)	Vehicle length (m)
26200	5000	1800	2.6	14.2	20