

<https://sonrail.empa.ch/>

The sonRAIL method was developed on behalf of the Federal Office for the Environment (FOEN). The measurements have been organized by PROSE Ltd. The emission model comes from University of Technology Berlin. The federal institute of material science and testing EMPA has created a sufficient sound propagation method, which is available as sonX kernel (documentation at <http://www.empa.ch>).

The web application was programmed by n-Sphere Ltd. in Zurich and is maintained by the EMPA.

Proposals, Review and Requests to: [sonrail@empa.ch](mailto:sonrail@empa.ch)

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Cover picture: FOEN / E. Ammon-ALPRA

## > A good train: sonRAIL

*To reduce noise, to gather sympathy*



By means of sonRAIL noise emissions of rail vehicles, train compositions and railway tracks can be calculated accurately, it is useful to exchange experience and information and will be developed permanently also by user application.



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**sonRAIL**  
Noise Calculation Railway

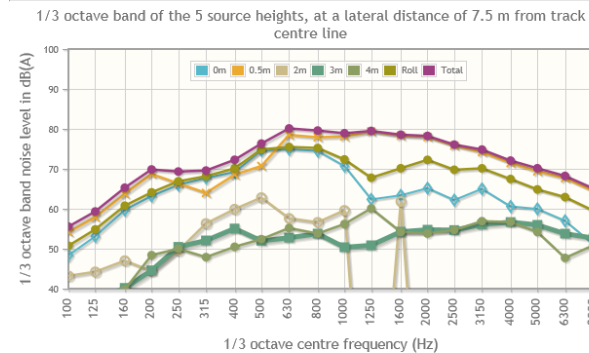
## > Quiet trains are requested

*Silence as precious asset is necessary for health and wellness. Silence provides market and location advantages. The train of tomorrow operates quiet.*

### Web tool for railway noise calculation

The web tool is made for engineers, planners and administrations, to lobby for noise reduction at the sound source. sonRAIL provides the opportunity to calculate pass-by noise of single vehicles or railway sections and to evaluate appropriate emission limiting measures based on these results.

#### RESULTS



#### RESULTS TABLE

Frequency	1/3 octave band at a lateral distance of 7.5 m from track centre line						
	Spectrum of 5 source heights					Rolling noise	Total noise level
	LpA_0m	LpA_0.5m	LpA_2m	LpA_3m	LpA_4m	LpA_roll	LpA_tot
100	48.4	54.2	43.2	36.9	34.4	50.8	55.5
125	53.1	57.9	44.2	37.3	35.5	54.9	59.3
160	59.7	63.8	47.0	40.2	39.8	60.8	65.3
200	63.2	68.7	44.4	44.6	48.4	64.1	69.9
250	66.0	66.4	49.5	50.5	50.0	66.9	69.3
315	67.7	64.0	56.3	52.1	47.9	68.2	69.6
400	69.2	68.6	59.9	55.1	50.5	70.1	72.3
500	74.6	70.7	62.8	52.0	52.4	74.9	76.3
630	74.9	78.5	57.6	52.8	55.2	75.5	80.1
800	74.5	77.9	56.6	53.8	53.8	75.2	79.6
1000	70.7	78.1	59.6	50.4	56.2	72.4	78.9

### Knowledge disc and idea generator

Furthermore, as internet platform sonRAIL is qualified to exchange knowledge and experience. Practical tips can be processed immediately. The web tool data base offers default parameters of vehicles and railway tracks to the user, who can add measuring values of a specific project to gain the accuracy of the entire prognosis. In future an active sonRAIL-community can become a pulse generator for an environment without disturbing railway noise.

All calculations are carried out with current parameters from the sonRAIL data base. The web tool application is free of charge and available over personal Log-In, to be requested at [sonrail@empa.ch](mailto:sonrail@empa.ch).

#### RESULTS/OVERVIEW

	Calculate	# trains	Leq,e (7.5m)	Kl adjustments	Lr,e (1m)	Lr,e (7.5m)
Day		2	57	-15	51.2	42
Night		2	60	-15	54.2	45

All noise levels indicated in dB(A)

Colour coding for uncertainty factor: Low Medium High Undefined

Copy results to clipboard

#### TRAIN COMPOSITIONS

Type of new train composition:

Activation	Control	Control detail	Train type	Length	Name	# trains day	# train night
<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	Ganzgüterzug	233.4	Ganzgüterzug	1	1
<input checked="" type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	Kombigüterzug	237	Kombigüterzug	1	1

All noise levels indicated in dB(A)

#### TRAIN DETAILS

Activation	Control	Composition	Category	Series	# vehicle
<input checked="" type="checkbox"/>	<input type="radio"/>	Ganzgüterzug	Cat. 1 (Electric K)	Re 420	1
<input checked="" type="checkbox"/>	<input type="radio"/>	Ganzgüterzug	Cat. 1 (Electric K)	Re 460	1
<input checked="" type="checkbox"/>	<input type="radio"/>	Ganzgüterzug	Cat. 6 (Freight w)	Offener Güterwa	5
<input checked="" type="checkbox"/>	<input type="radio"/>	Ganzgüterzug	Cat. 6 (Freight w)	Offener Güterwa	15
<input checked="" type="checkbox"/>	<input type="radio"/>	Kombigüterzug	Cat. 1 (Electric K)	Re 460	2
<input checked="" type="checkbox"/>	<input type="radio"/>	Kombigüterzug	Cat. 6 (Freight w)	Offener Güterwa	5