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Materials Required per km of Railway Track Formulas

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List of 23 Materials Required per km of Railway Track Formulas

Materials Required per km of Railway Track

1) Density Factor at given Number of Sleepers per km

Open Calculator

fx $$x = \left(2 \cdot \frac{N_s}{N}\right) - (L)$$

ex $$6 = \left(2 \cdot \frac{1463}{154}\right) - (13\text{m})$$

2) Density Factor using Sleeper Density

Open Calculator

fx $$x = S.D. - L$$

ex $$6 = 19 - 13\text{m}$$

3) Length of Single Rail at given Number of Rails per km

Open Calculator

fx $$L = \left(\frac{1000}{N}\right) \cdot 2$$

ex $$12.98701\text{m} = \left(\frac{1000}{154}\right) \cdot 2$$

4) Length of Single Rail at given Number of Sleepers per km

Open Calculator

fx $$L = \left(2 \cdot \frac{N_s}{N}\right) - (x)$$

ex $$13m = \left(2 \cdot \frac{1463}{154}\right) - (6)$$

5) Length of Single Rail at given Weight of Rails per km

Open Calculator

fx $$L = \frac{1000 \cdot W}{N \cdot w}$$

ex $$13m = \frac{1000 \cdot 104.104t}{154 \cdot 52kg/m}$$

6) Length of Single Rail using Sleeper Density

Open Calculator

fx $$L = S.D. - x$$

ex $$13m = 19 - 6$$

7) Number of Bearing Plates per km of Track

Open Calculator

fx $$N_{bp} = 2 \cdot N_s$$

ex $$2926 = 2 \cdot 1463$$

8) Number of Bearing Plates per km of Track using Number of Rails

Open Calculator

fx $N_{bp} = 4 \cdot N$

ex $616 = 4 \cdot 154$

9) Number of Dog Spikes per km of Track for Timber Sleepers

Open Calculator

fx $N_{ds} = 4 \cdot N_s$

ex $5852 = 4 \cdot 1463$

10) Number of Fish Bolts per km of Track

Open Calculator

fx $N_{fb} = 4 \cdot N$

ex $616 = 4 \cdot 154$

11) Number of Fish-Plates per km of Track

Open Calculator

fx $N_{fp} = 2 \cdot N$

ex $308 = 2 \cdot 154$

12) Number of Rails per km

Open Calculator

fx $N = \left(\frac{1000}{L}\right) \cdot 2$

ex $153.8462 = \left(\frac{1000}{13m}\right) \cdot 2$

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13) Number of Rails per km at given Number of Sleepers per km

Open Calculator

fx $$N = 2 \cdot \frac{N_s}{L + x}$$

ex $$154 = 2 \cdot \frac{1463}{13m + 6}$$

14) Number of rails per km at given weight of rails per km

Open Calculator

fx $$N = \frac{1000 \cdot W}{L \cdot w}$$

ex $$154 = \frac{1000 \cdot 104.104t}{13m \cdot 52kg/m}$$

15) Number of Rails using Bearing Plates

Open Calculator

fx $$N_{Rbp} = \frac{N_b}{4}$$

ex $$731.5 = \frac{2926}{4}$$

16) Number of Rails using Fish Bolts

Open Calculator

fx $$N_{Rfb} = \frac{N_{fb}}{4}$$

ex $$154 = \frac{616}{4}$$

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17) Number of Rails using Fish Plates

Open Calculator

fx $$N_{Rfp} = \frac{N_{fp}}{2}$$

ex $$154 = \frac{308}{2}$$

18) Number of Sleepers per km

Open Calculator

fx $$N_s = (L + x) \cdot \frac{N}{2}$$

ex $$1463 = (13m + 6) \cdot \frac{154}{2}$$

19) Number of Sleepers using Dog Spikes

Open Calculator

fx $$N_{Sds} = \frac{N_{ds}}{4}$$

ex $$1463 = \frac{5852}{4}$$

20) Number of Ssleepers using Bearing Plates

Open Calculator

fx $$N_{Sbp} = \frac{N_{bp}}{2}$$

ex $$1463 = \frac{2926}{2}$$

21) Sleeper Density

Open Calculator

fx $$S.D. = L + x$$

ex $$19 = 13m + 6$$

22) Weight of Rail per m at given Weight of Rails per km

Open Calculator

fx $$w = \frac{1000 \cdot W}{N \cdot L}$$

ex $$52kg/m = \frac{1000 \cdot 104.104t}{154 \cdot 13m}$$

23) Weight of Rails per km

Open Calculator

fx $$W = N \cdot L \cdot \frac{w}{1000}$$

ex $$104.104t = 154 \cdot 13m \cdot \frac{52kg/m}{1000}$$

Variables Used

- **L** Length of Single Rail *(Meter)*
- **N** Number of Rails per Km
- N_b No of Bearing Plates using No of Rails
- N_{bp} Number of Bearing Plates per Km of Track
- N_{ds} Number of Dog-Spikes per Km of Track
- N_{fb} Number of Fish Bolts per Km of Track
- N_{fp} Number of Fish Plates per Km of Track
- N_{Rbp} No of Rails using Bearing Plates
- N_{Rfb} No of Rails using Fish Bolts
- N_{Rfp} No of Rails using Fish Plates
- N_s Number of Sleepers per Km
- N_{Sbp} No of Sleepers using Bearing Plates
- N_{Sds} No of Sleepers using Dog Spikes
- **S.D.** Sleeper Density
- **w** Weight of Rail per Meter *(Kilogram per Meter)*
- **W** Weight of Rails per Km *(Tonne)*
- **x** Density Factor

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Constants, Functions, Measurements used

- Measurement: **Length** in Meter (m)
  Length Unit Conversion
- Measurement: **Weight** in Tonne (t)
  Weight Unit Conversion
- Measurement: **Linear Mass Density** in Kilogram per Meter (kg/m)
  Linear Mass Density Unit Conversion

Check other formula lists

- **Geometric Design of Railway Track Formulas**
- **Materials Required per km of Railway Track Formulas**
- **Points and Crossings Formulas**
- **Rail Joints, Welding of Rails and Sleepers Formulas**
- **Railway Track and Track Stresses Formulas**
- **Traction and Tractive Resistances Formulas**

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