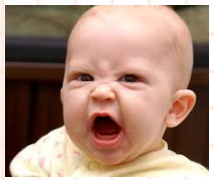
CR Formula

Presented by Keystone-cable

Formula



TCF

TEMPERATURE CORRECTION FACTOR

Temperature	PVC		EPR (in air,water) BS 6500	Soft copper	Hard copper	Steel wire	Aluminium
	In water	In air					
°C	PVC Flex.						
23.0	1.200	1.390	/	0.9883	0.9887	0.9867	0.9881
23.5	1.235	1.470	/	0.9864	0.9868	0.9845	0.9861
24.0	1.270	1.550	/	0.9845	0.9850	0.9823	0.9841
24.5	1.310	1.645	/	0.9826	0.9831	0.9802	0.9822
25.0	1.350	1.740	1.35	0.9807	0.9813	0.9780	0.9802
27.5	1.595	2.370	1.600	0.9714	0.9722	0.9674	0.9707
28.0	1.650	2.520	1.65	0.9695	0.9704	0.9653	0.9688

Refer to the Temperature Correction Factor table

Take n or mΩ

Do remember that final reporting unit for numerator is in Ω

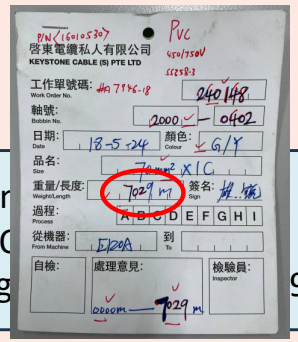
Material's specifc temperature correction factor x Result from machine

Length

Do take note of the its units

Because the final reporting unit for length is in km

100m coil



7029m drum

How to Find Temperature Correction Factor ?

Lets say that during your experiment, the temperature shown is 26.2℃, by referring to the Temperature Correction Factor table, should you round down to 26.0℃ or 26.5℃ ?

For number between .1 to .4:

- If number is .1 or .2, round down to .0
- if number is .3 or .4, round up to .5

For number between .6 to .9:

- If number is .6 or .7, round down to .5
- if number is .8 or .9, round up to .0

TCF

TEMPERATURE CORRECTION FACTOR

Temperature °C	PVC: In water PVC Flex.	PVC: In air	EPR (in air,water) BS 6500	Soft copper	Hard copper	Steel wire	Aluminium
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26.5	1.490	2.090	1.490	0.9751	0.9758	0.9716	0.9745
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$$\frac{\text{Material's specifc temperature correction factor} \times \text{Result from machine}}{\text{Length}}$$

How to Find Temperature Correction Factor ?

Lets say that during your experiment, the temperature shown is 26.2℃, by referring to the Temperature Correction Factor table, should you round down to 26.0℃ or 26.5℃ ?

Therefore, for this example of 26.2℃, we round down to 26.0℃ and refer to this row

TCF

TEMPERATURE CORRECTION FACTOR

Temperature	PVC		EPR (in air,water) BS 6500	Soft copper	Hard copper	Steel wire	Aluminium
	In water	In air					
°C	PVC Flex.						
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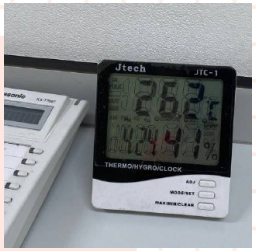
Know which material you are testing, **taking soft copper as example**, the correction factor = 0.9770

$$\frac{\text{Material's specifc temperature correction factor} \times \text{Result from machine}}{\text{Length}}$$

Example 1

A 100m soft copper is being test for CR, the result shown from the CR machine is 0.7127Ω, meanwhile the temperature during the experiment is 26.2℃, what is the final reporting result in the units of $\frac{\Omega}{\text{km}}$?



TCF

TEMPERATURE CORRECTION FACTOR

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1. Round down to 26.0℃, refer to the Temperature Correction Factor table, and take 0.9770 as the corrected factor.

2. $$\frac{0.9770 \times 0.7127\Omega}{\underbrace{100\text{m} \div 1000}} = 6.96\ \frac{\Omega}{\text{km}}$$

Remember?

As mention, since the final reporting unit for length is in km, to make m to km, we have to divide by 1000, because 1km = 1000m

Practice 1

Let's say that your material is a 9500m Aluminum and the temperature shown during the experiment is 25.4℃, if the CR machine showed a value of 0.7001 Ω, what is your final result you should report in the units of $\frac{\Omega}{km}$?

TCF

TEMPERATURE CORRECTION FACTOR

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NUMBER	10^{12}	10^{9}	10^{6}	10^{3}	10^{0}	10^{-1}	10^{-2}	10^{-3}	10^{-6}	10^{-9}	10^{-12}

$$\frac{\text{Material's specifc temperature correction factor} \times \text{Result from machine}}{\text{Length}}$$

TRY THIS QUESTION NOW!

Practice 1 Answer

Let's say that your material is a 9500m Aluminum and the temperature shown during the experiment is 25.4℃, if the CR machine showed a value of 0.7001 Ω, what is your final result you should report in the units of $\frac{\Omega}{km}$?

TCF

TEMPERATURE CORRECTION FACTOR

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The difference between kilom to m is 1000

$$\frac{0.9783 \text{ x } 0.7001\Omega}{9500\text{m} \div 1000} = 0.0721 \frac{\Omega}{\text{km}}$$

Practice 2

Let's say that your material is a 200m soft copper and the temperature shown during the experiment is 25.7℃, if the CR machine showed a value of 931 mΩ, what is your final result you should report in the units of $\frac{\Omega}{km}$?

TCF

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$$\frac{\text{Material's specifc temperature correction factor} \times \text{Result from machine}}{\text{Length}}$$

TRY THIS QUESTION NOW!

Practice 2 Answer

Let's say that your material is a 200m soft copper and the temperature shown during the experiment is 25.7℃, if the CR machine showed a value of 931 mΩ, what is your final result you should report in the units of $\frac{\Omega}{km}$?

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The difference between miliΩ to Ω is 1000

$$\frac{0.9788 \text{ x } (931\text{m}\Omega \div 1000)}{200\text{m} \div 1000} = 4.56 \frac{\Omega}{\text{km}}$$

Practice 3

Let's say that your material is a 200 yard soft copper and the temperature shown during the experiment is 25.7℃, if the CR machine showed a value of 931 mΩ, what is your final result you should report in the units of $\frac{\Omega}{kyd}$?

TCF

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$$\frac{\text{Material's specifc temperature correction factor} \times \text{Result from machine}}{\text{Length}}$$

TRY THIS QUESTION NOW!

Clue: Since the final units are in kiloyards, how can we convert yards to kiloyards?

Practice 3 Answer

Let's say that your material is a 200 yard soft copper and the temperature shown during the experiment is 25.7℃, if the CR machine showed a value of 931 mΩ, what is your final result you should report in the units of $\frac{\Omega}{kyd}$?

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The difference between miliΩ to Ω is 1000

$$\frac{0.9788 \text{ x } (931\text{m}\Omega \div 1000)}{200 \text{ yd} \div 1000} = 4.56 \frac{\Omega}{kyd}$$

Occasionally, if you see yard (yd) in your sample, simply convert it using the same calculation, to kiloyard (kyd) by dividing by 1000.

THANKYOU