



# UKMA news

The newsletter of the UK Metric Association  
For a **single** *rational* system of measurement

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## Editorial, by John Austin

I would like to introduce myself as the new Editor of the UKMA newsletter. In my first task as the new Editor, I would like to thank the UKMA secretary, Derek Pollard, for continuing its preparation and publication in the absence of a formal Editor.

I was a research scientist in the past (ozone depletion/climate change) and I'm now retired. Of course all scientific work uses the metric system without question and I have become a passionate supporter of it in my everyday life. Of all mankind's contributions to the body of knowledge, the metric system is an intellectual and practical tour de force. I was especially inspired a few years ago by the change in the definition of the kilogram. Formerly a carefully engineered sphere held in a Paris lab, now defined like all the other units in universal terms. But you don't have to understand these issues to appreciate the metric system.

By contrast the Imperial system of units is not a system at all, but a mishmash of measurements from centuries ago when scientific understanding was significantly poorer. For example, there are multiple energy units and no electrical units at all. When units are not available, the Imperial system just borrows from the metric, which has contributed to the measurement muddle that exists in this country. Regular readers of the newsletter will know that the UKMA is an organisation formed to eliminate that muddle of units. We buy UHT milk by the litre, but fresh milk by the pint. We buy petrol in litres but measure fuel economy in miles per gallon. In pubs

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we buy beer by the pint but wine in ml measure glasses. Hardly anyone knows, when push comes to shove, how big an acre is, but Estate Agent bumpf is full of it. The use of the metric system will eliminate all that confusion at a stroke.

We appreciate that the newsletter is perhaps the main tangible benefit for UKMA members, and in the future I will do my best to maintain its standard. Newsletters are due to be published quarterly, and of course we are highly dependent on individuals suggesting items or producing contributions themselves. The sort of articles we are looking for include examples of where unit muddles still exist in Britain, ideally with some photos or graphs, or better still, how unit muddles have been reduced to the benefit of those concerned. I shall be looking over the UKMA Facebook page and the UKMA website, <https://UKMA.org.uk> page for ideas as well, but otherwise contributions can be sent to me at [editor@metric.org.uk](mailto:editor@metric.org.uk).

In this newsletter, Association News is followed by examples of good practice (Tony Wilson on Welsh road signs and an article on the examples of the use of very small sizes by Ronnie Cohen). E-scooters are now legal in the UK but the legislation has missed an opportunity for consistency, as pointed out by Martin Ward. We then follow with a mix of horror stories involving confused measurements! Finally, we present website information from UKMA which you may not be aware of.

### Association News

#### Annual Conference

A virtual conference followed the AGM on the morning of 26 July, using Skype. Fourteen members attended and there were lively discussions on the current situation relating to Covid-19 and Brexit, the position on the conversion of road traffic signs and the suggestion that this might be a shovel-ready infrastructure project. There was a general view that the virtual conference was a success and should be repeated. Notes on the discussions will be e-mailed to all members.

#### Subscription rates for 2020-2021

The rates for 2020-2021 are unchanged from last year and are as follows:

Member annual	£15.00
Member annual by standing order	£10.00
Member (concession) annual	£5.00
Member life	£150.00

#### General Data Protection and Regulation (GDPR)

Members of UKMA and former members receive this newsletter automatically. Supporters who have not been members will now need to opt-in to receive UKMA News.

If you are a supporter, and are not or have not been a member of UKMA, and you would like to continue to receive UKMA News please e-mail the Secretary: [secretary@metric.org.uk](mailto:secretary@metric.org.uk)

### New 1.5 m signs in Gwynedd, by Tony Wilson

A new scheme to remind drivers of the minimum space needed to ensure safety when passing a cyclist was launched in June by Gwynedd Council in North Wales. The first of their kind in the UK, the road signs installed along popular routes in Snowdonia are urging motorists to give cyclists a minimum space of 1.5 metres.



As part of a trial, the Council has received Welsh Government support to install the signage at locations along roads popular with cyclists in the northern part of the county.

Interestingly for UKMA members, the new signs include no imperial measurements on them, just the distance in metres, negating the need to include *troedfeddi* (feet in Welsh) – as metres are universal and need no translation.

Councillor Gareth Griffith, Gwynedd Council Cabinet Member for the Environment, said, “This project has been planned for some time and has looked at similar signage which is already used in many countries in Europe. I am therefore pleased that Gwynedd will be the first to trial these new safe passing distance signs which will inform motorists of the need to give cyclists the space they need as well as reminding motorists of their likely presence on the road.

“The signs have been placed in specified locations in Snowdonia and if they prove popular we hope to be able to see them used in other parts of Gwynedd and beyond.”

The signage has been supported by GoSafe, the Wales Road Casualty Reduction Partnership. The signs have been placed in the mountain passes and road network that surround the Snowdon Massif, namely

- Llanberis Pass
- Pen y Gwryd
- Nant Gwynant
- Drws y Coed

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- Ogwen Valley
- Dyffryn Mymbyr



At the end of July, North Wales Police launched a related scheme to provide bright gilets to cyclists spotted wearing dark clothing, including a prominent reminder to drivers to give cyclists 1.5 m to pass.

We hope that we can look forward to many more signs on the UK's roads using only metres in the years to come.

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### **Micro metric measurements in everyday products, *article by Ronnie Cohen reproduced from Metric Views***

SI is capable of measuring anything from the tiniest particles to the largest objects in the universe. While it may sound technical and scientific, there are practical benefits of tiny measurements in some everyday products. Here, Ronnie Cohen takes a look.

The thickness of laminated sheets is described and marketed in microns, an obsolete term for micrometres (millionths of a metre). Similarly, one thing to look for in quality office paper is its thickness. On the ZX printer website, for example, they give the thickness of printing paper in grams per square metre and in millimetres (Source: <https://www.zxprinter.com/support/paper-thickness.html>). I suspect the reason for their use of millimetres rather than micrometres is that millimetres are a more familiar to the general public. Familiarity comes with usage and millimetres are a lot more common. For our readers, I am converting the millimetres to micrometres. I give you a few of the tiny measurements to show how versatile the metric system in measuring the extremely small. On the conversion tables on their website, 80 g/m<sup>2</sup> art paper = 65 micrometres, 60 g/m<sup>2</sup> matt coated paper = 60 micrometres and 30 g/m<sup>2</sup> bible paper = 40 micrometres.

Tiny medical doses and ingredients are often expressed in micrograms (millionths of a gram). Micrograms are also used in medical advice to the general public. For example, the NHS advises "Babies up to the age of 1 year need 8.5 to 10 micrograms of vitamin D a day.". You can find vitamin D tablets on sale containing doses as small as 10 micrograms.



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**Bone Health\* guidelines** (NOS, 2018)  
for regular maintenance intake, providing 25µg of vitamin D3. Alongside magnesium, calcium, zinc, plus four additional supporting nutrients.

Nutritional Information	Av. per 2 tablets	%EC NRV†
Vitamin D (as D3 1000 IU)	25 µg	500
Calcium	800 mg	100
Magnesium	300 mg	80
Zinc	10 mg	100
Copper	500 µg	50
Manganese	0.5 mg	25
Selenium	55 µg	100
Boron	0.6 mg	—

†NRV – Nutrient Reference Value  
µg – microgram, mg – milligram,  
IU – International Units  
Energy, protein, fat and carbohydrate content negligible

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**TWO TABLETS PER DAY WITH YOUR MAIN MEAL.** Swallow with water or a cold drink. Not to be chewed. Do not exceed the recommended intake.  
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**For further information contact:**  
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Semiconductor manufacturers compete to make increasingly sophisticated computer chips. The transistor gate lengths of computer chips are measured in nanometres (billionths of a metre). The Wikipedia page for Semiconductor Device Fabrication shows that manufacturers used a 10 micrometre manufacturing process in 1971. This figure has come down to 7 nanometres by 2018 and is predicted to come down further to 5 nanometres in 2020 and to 3 nanometres in 2022.

Solar cells are made using silicon wafers that are between 180 and 350 micrometres thick. Solar cells can be found in products such as solar panels and many solar-powered products such as calculators, watches, radios and lamps. You can find a more comprehensive list of solar-powered products on Wikipedia (Source: [https://en.wikipedia.org/wiki/List\\_of\\_solar-powered\\_products](https://en.wikipedia.org/wiki/List_of_solar-powered_products)).

In the field of nanotechnology, nanoparticles are manipulated to produce better, stronger and more durable products. Nanoparticles are tiny microscopic particles and typically sized between 1 and 100 nanometres. Carbon nanotubes, a product of nanotechnology, have diameters measured in nanometres with some as little as 1 nanometre across (Source: <https://www.britannica.com/science/carbon-nanotube>).

Carbon nanotubes are used in sports products, batteries and medical applications. They are used in a range of other common products as well. Nanotechnology has practical applications and has been applied to many products in the clothing, electronics, materials, healthcare, energy, transport and environment sectors. And this is not a comprehensive list.  
Sources:

- <https://www.zxprinter.com/support/paper-thickness.html>
- <https://www.nhs.uk/conditions/vitamins-and-minerals/vitamin-d/>
- <https://en.wikipedia.org/wiki/Nanotechnology>

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- [https://en.wikipedia.org/wiki/Semiconductor\\_device\\_fabrication](https://en.wikipedia.org/wiki/Semiconductor_device_fabrication)
- [https://en.wikipedia.org/wiki/Solar\\_cell](https://en.wikipedia.org/wiki/Solar_cell)
- [https://en.wikipedia.org/wiki/List\\_of\\_solar-powered\\_products](https://en.wikipedia.org/wiki/List_of_solar-powered_products)
- <https://www.britannica.com/science/carbon-nanotube>
- <https://www.understandingnano.com/nanotubes-carbon.html>
- <https://www.microscopemaster.com/nanotechnology-products.html>
- <http://trynano.org/>

*In the comments on Metric News, Robert pointed out the following*

You missed the opportunity to mention a couple of hot topics. My covid-19 face mask came complete with a PM2.5 filter, ie one that filters out particulates down to 2.5  $\mu\text{m}$ . Pollution in the form of particulates are a big concern at the moment, the two key measurements being PM2.5 and PM10 (PM10 being 10  $\mu\text{m}$ ). Maximum values for these have been set by both the EU and the WHO. In addition to be used to define air quality, they also form part of the European emissions standards for cars (Euro1, Euro2 etc). The quantity of each is measured in  $\mu\text{g}/\text{m}^3$ .

Ed: converting these numbers to inches and grains per cubic foot are left as an exercise for the reader!

### **E-scooter speed muddle, article by MartinWard, reproduced from Metric views**



From 4 July 2020, the use of electric scooters became legal in Great Britain, albeit on a limited trial basis. The use of privately owned e-scooters will remain illegal, and e-scooters will not be permitted on pavements. E-scooter design speeds are limited to 15.5 miles per hour. The rather odd maximum design speed of 15.5 mph is presumably an attempt to accommodate the use of e-scooters already in use in other countries, many of which have a maximum design speed of 25 km/h (15.53 mph).

Unfortunately, when converting the km/h value to mph for the relevant [legislation](#), the value was rounded down to the nearest 0.1 mph instead of it being rounded up. The legislation therefore seems to prohibit the use of the very e-scooters that it was probably intended to permit.

The maximum speed was decided after [consultation](#), where respondents were asked to reason whether 12.5 mph or 15.5 mph should be the maximum design speed allowed. Again, these seemingly odd values are approximations of 20 km/h and 25 km/h. Wouldn't it have been more sensible just to use metric values throughout?

<https://www.bbc.co.uk/news/uk-53219331>

Ed: This item provided a spirited debate on MetricViews which covered a range of issues including the power rating of the devices. Overall, the legality of some e-scooters seems to be a grey area which is in need of legal clarification. This is brought upon ourselves in the UK by the need to refer to imperial measurements.

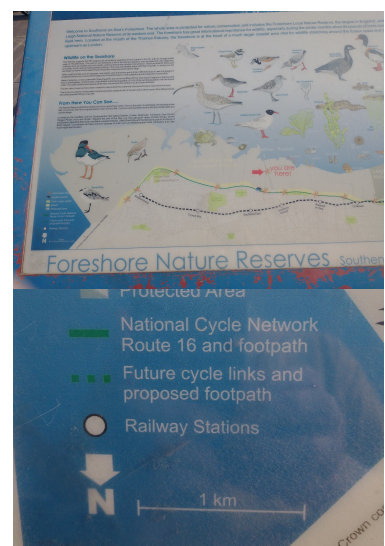


### Some Recent Horror Stories



From RC: Can you believe that a British retailer is using US fluid ounces on its products (above, left)? Is it using US fluid ounces to enable it to sell its own-brand liquid soap in the USA? It certainly gives British shoppers a hint that US fluid ounces are different from UK fluid ounces, hence the use of "US" on the label. Even when the units are right there are often errors in the way they are presented, such as the image on the right indicating a maximum tow speed of 4 km/h erroneously written as 4 Kph (kelvins pico hours?). But at least Barnet council are making an effort.

Editor's comment: As many of you will know, the imperial volume measurement is a muddle and differs according to your side of the Atlantic, as we see here. The UK Fluid ounce is about 28.41 ml, whereas the US Fluid ounce is about 29.57 ml. Differences in volume measures propagate through all the measurements so the US gallon is 3.785 litres approx compared with the imperial gallon of 4.546 litres. Car manufacturers have to be careful to quote the proper fuel economy (miles per gallon) for the country they are selling in. This is not as trivial as it sounds!



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Southend Council seems a bit confused about units (information from Ronnie Cohen). It claims the largest pier in the world at 1.33 miles (or probably  $\frac{4}{3}$  miles), a very precise figure and equates to 7040 feet, yet they claim it to be 7080 ft (1.34 miles). So which is it? It seems that according to Wikipedia, the latter is the correct distance which equates to 2158 m, which is presumably the unit system in which it was measured. To confuse the punters (an appropriate term from horse racing?) they also throw in some measures with furlongs. Those of us over 60 actually remember that there are 8 furlongs in a mile, but probably very few other people do. Meanwhile the nature reserve and footpath along the foreshore have distances in km. I suppose walkers on the pier must be a different sort of person than those who go to the nature reserve.



Ronnie has also been busy finding more uses of mixed units. Here we have a report from the BBC, who should know better! The motorbike stunt rider Jonnie Davies has just set a world speed record for doing a wheelie and has been timed over a 200 m course but the record is quoted in mph. There's no mention of km/h in the video ([bbc.co.uk/news/av/newsbeat-53828187](https://www.bbc.co.uk/news/av/newsbeat-53828187)), but one would suppose that the official record (175.7 km/h) would have been in these units.

### A reversion of form for the Government

From JA: After all the success in the use of metric for safe social distancing due to the Covid-19 threat, the government has suggested that we should lose some weight to save the NHS some money as well as other things. <https://www.gov.uk/government/news/new-obesity-strategy-unveiled-as-country-urged-to-lose-weight-to-beat-coronavirus-covid-19-and-protect-the-nhs> The figure settled on was 5 lbs even though the NHS is supposed to be metric and the BMI is computed directly from metric. I could find no reference to an equivalent weight loss target in kg.

Our final horror story is a bit of relief indicating that the Canadians also suffer from measurement confusion (next page), possibly due to contamination from the South. I am indebted to David Pearl from the US Metric Association for this amusing diagram, although he didn't know the original source. It is surprisingly similar to the UK horror story. Does anyone care to produce one for the UK (at better resolution!) for publishing in the next newsletter?

### Website News

#### Facebook page

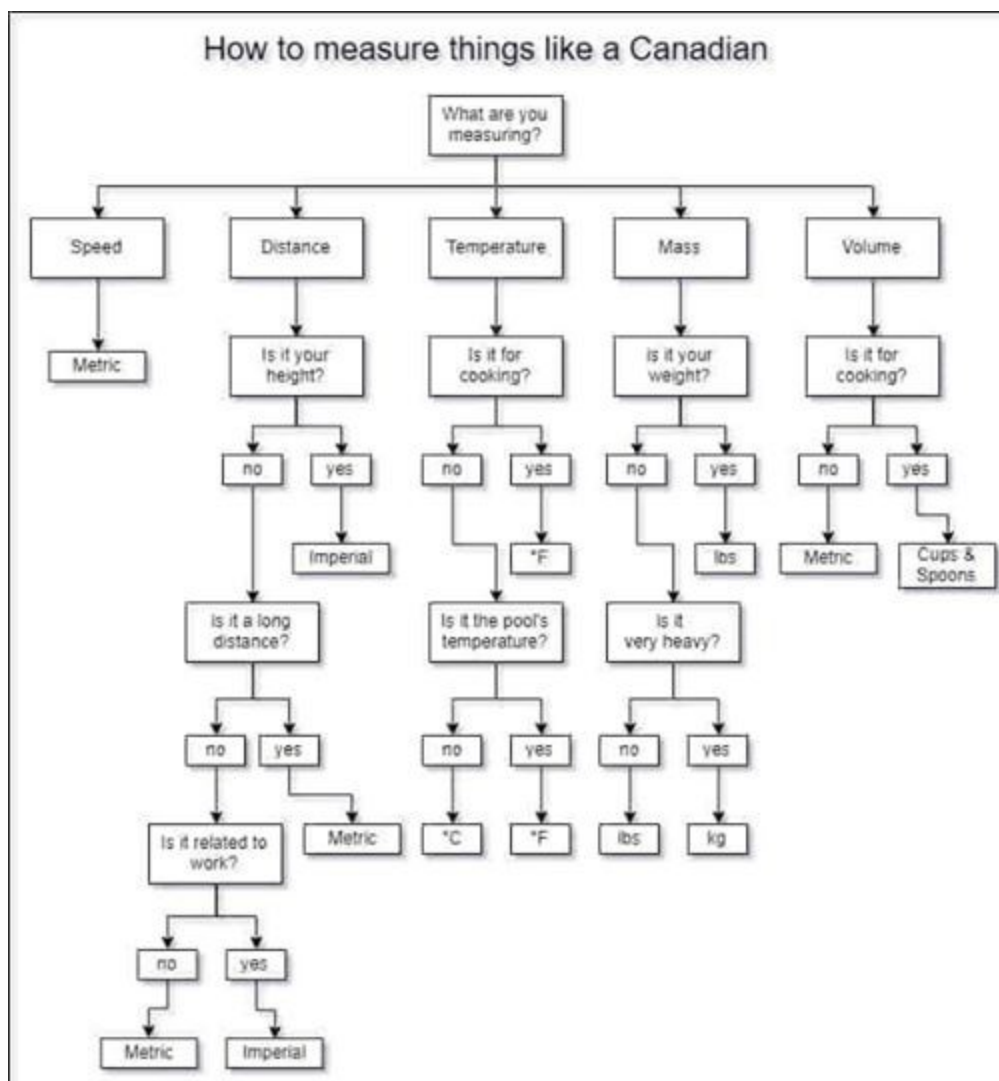
UKMA's Facebook page was set up in January 2012, and the number of likes has grown steadily since, reaching 300 at the end of 2015 and is now over 1000. You can find the page at <https://www.facebook.com/UKMetric/>. The page provides debate and commentary about metric issues. You do not have to be a member of UKMA to contribute, and all contributions are monitored.

#### Building Metrication News (BMN)

The whole series of BMN, published in the magazine *Building* between 1967 and 1969, is now available on our main web site: <https://ukma.org.uk/what-is-metric/uk-progress/building-industry/>

An introduction to BMN appears in the March 2020 edition of this newsletter.





## Recent articles posted on Metric Views

You may have missed the following articles posted on Metric Views, <http://metricviews.org.uk> , since the last newsletter:

“Early parliamentary debates on metrication”. Posted on 27 August. 8 comments.

“Legal position on metric social distance signs”. Posted on 20 August. 6 comments.

“Micro metric measurements in everyday products” (reproduced in this edition of UKMA News). Posted on 18 July. 9 comments.

“An unnatural foot”. Posted on 8 July. 14 comments.

“E-scooter speed muddle” (reproduced in this edition of UKMA News) . Posted on 2 July. 12 comments.

“International comparisons of social distancing measures”. Posted on 20 June. 30 comments.

Draft articles for Metric Views are welcome and should be e-mailed to:

[secretary@metric.org.uk](mailto:secretary@metric.org.uk)

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### Where to find UKMA on the internet

UKMA began as an internet forum, and the internet is our principal vehicle for carrying our message to the public. We now have:

The main UKMA web site, <https://ukma.org.uk>

A factual web site, <https://thinkmetric.uk>

A blog, <https://metricviews.org.uk>

A Twitter page, <https://twitter.com/UKMetric>

A YouTube channel, <https://www.youtube.com/user/UKMetric>

and a Facebook page, <https://www.Facebook.com/UKMetric>

There is also a Facebook group.

These are available to all, not just members.

### “A very British mess”

This report, published by UKMA in 2004, looked at the UK's measurement muddle. The Foreword was written by the late Lord Howe, then UKMA's Patron, and the report was drafted by a group of Committee members. The 62-page report includes chapters on “How did we get into this mess?” and how we can get out of it, with many illustrations in full colour. Hard copies of the report are still available, price £2.00 including p&p. Please email the Secretary if you would like a copy.

### Can you help?

The Committee is looking for volunteers who may be able to help in the following areas:

- Responding to technical consultations by ISO and BSI.
- Preparing web-friendly versions of UKMA News for PCs, i-pads, i-phones and android devices such as tablets and mobile phones.
- Reviewing printed media for stories to link to our Twitter and Facebook pages.
- Assisting with the production of material for uploading to YouTube.

If you think you may be able to help, please contact [secretary@metric.org.uk](mailto:secretary@metric.org.uk)

### About this newsletter

UKMA News is published by the UK Metric Association, the object of which is to promote the full adoption of the International System of Units (SI), commonly known as ‘the metric system’, as the legal and default system of weights and measures throughout society in the United Kingdom.

Your feedback and comments on UKMA News or on the UK's stalled metric upgrade are welcome.

To submit, or if you no longer wish to receive UKMA News, please e-mail [secretary@metric.org.uk](mailto:secretary@metric.org.uk)