BMN
Building Metrication News

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This section appears in the second and fourth issues of 'Building' each month, and gives current news and information on metrication, as well as providing a forum in which the ramifications of the change to metric can be freely discussed. It is published in association with the Modular Society.

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Demonstrating D.C.

For anyone intelligently interested in understanding and solving the problems involved in co-ordinating dimensions, products, joints and tolerances, a visit to the MPBW test-rig at BRS will be a worthwhile occasion. This rig, which consists of a series of building frames representing the five main types of construction used in Ministry buildings, has been put up primarily so that the MPBW can see what sort of problems it will be meeting as it conforms to dimensional co-ordination in practice. At the present moment, for the lack of practical examples, it is all too easy to chase theories. Even when the examples are reality it will be difficult to compare problems between buildings. But the rig provides an opportunity to study different components, different materials and different forms of construction side by side on a 300 mm grid. It is an unpretentious effort, deliberately employing average skills to simulate site conditions, all the more welcome in the chaste atmosphere of BRS where fundamentals are usually more important than time.

If you want to see what a joint width of one millimetre looks like or what happens when adjoining components are undersized, go and have a look. Take a metric rule, you will need it. All dimensions accord with BS 4330 and examples are given of both face and axial planning.

A small matter of labels

It is going to be quite difficult to recognise metric products when we see them. A reinforcement bar looks pretty much the same, irrespective of how it has been sized. We have got used to recognising a four by two, a nine inch brick and so on and we don't have to take out a tape and check our eyesight. Many people have drawn attention to the need to indicate that a product is metric. Certainly manufacturers recognise the need but so far no one has suggested how it should be done. Perhaps it could be left to the individual, but there does seem to be a case for some easily recognisable label which could be used by all. This is not just a problem for products; for example drawings need to show the scale and units of measurement used. If Letraset are not already thinking about it perhaps they could produce lettering giving different scales.

Then there is the distinction between basic sizes and work sizes. BSI's committee B/94/4 is preparing a PD document on this and they could suggest a standard method for presenting the information. Already a few draft British Standards, which were started prior to the metric programme, show metric sizes without clearly showing this distinction between basic and work size. Those that do give the information are not consistent one with another. This can readily be sorted out at BSI, but a convention is needed that can be used in technical information and on drawings.

The metric symbol, whose appearance doesn't satisfy everyone, does have the advantage that it shows up and clearly indicates that something is happening which is in metric. This is not one of the bigger problems of change, but mistakes could be avoided if techniques were agreed and standard labels made available. It would appear to be a small but very constructive job which the Construction Industry Metric Change Liaison Group might well undertake, since it implies liaison between designers, manufacturers and contractors and also some liaison with commercial organisations that could produce the goods.

NEWS from the industry

Liaison between sectors

In a recent statement, the Construction Industry Metric Change Liaison Group says that additional design and administrative costs will be incurred by the building industry during the period of change to metric unless each section of the industry understands the problems of the other sectors. The statement draws the attention of manufacturers of building materials and components to the problems which the change will bring for the design and contracting sections of the industry.

'Drawings are done many months before orders are placed for materials and components or before the materials and components are required on site. If designers are to incorporate metric-sized components into their designs with confidence, they must know a long time ahead that the products they propose to use are going to be available when required.'

Because of this time-lag, design work using imperial dimensions is now in hand for jobs for which components will not be required for a considerable time. The Liaison Group hopes that imperial-sized components will be available for these jobs when required if difficulty for designers and contractors is to be avoided.

The Group also says that to avoid confusion between imperial and metric sized products it is essential, at least during the changeover period, that products should be clearly marked, if possible in such a way as to be unaffected by on-site cutting. Before completing their programmes for changing to metric, material and component manufacturers are advised to consult authoritative bodies representing other sectors of the industry. 'Once programmes have been decided it is essential that they should be disseminated widely through the professional and trade associations and all Building Centres,' says the Liaison Group.

Doubts on costs

Doubts as to whether the cost to the country of going metric was worthwhile were expressed by J. F. Bradford, president of the British Precast Concrete Federation, at the Federation's annual luncheon last week.

'It will cost our industry alone many hundreds of thousands of pounds, and I am sure that one of the main advantages claimed, modular co-ordination, could have been achieved without this enormous cost,' said Mr. Bradford. However, good progress is being made in the industry and some sectors have already decided on their metric measurements.

Examinations in metric

For the most part, City and Guilds examinations in the construction field will be based on SI units from the summer of 1970. Reference to imperial dimensions will only be made where the appropriate metric equivalents have not been published. According to the Council of Technical Examining Bodies, craft and technician courses in engineering, where the situation is more complex, should be able to complete the change to SI by summer 1972. The Council's Metrication Committee is also preparing a handbook for teachers in construction, with examples of drawings and calculations typical of those likely to be encountered in the various trades. This handbook will be published this month and will be on sale through the members of the Council.

Metric softwood

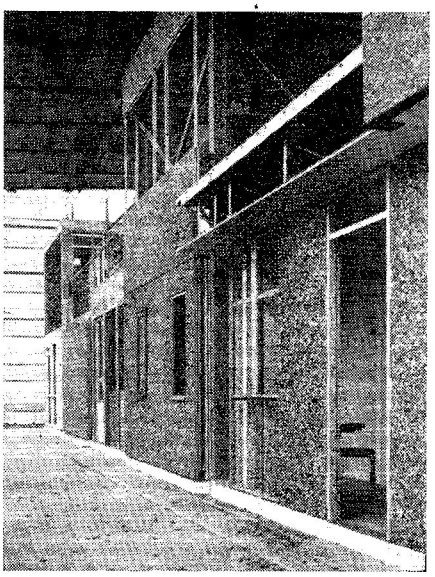
In a circular to its members, the Timber Trade Federation expresses disappointment that the BSI is including 36 mm and 40 mm thicknesses in the BS for softwood metric dimensions which is to be published shortly. The circular points out that these two additional measurements result in three thicknesses being provided in the space of 4 mm—at 36, 38 and 40 mm. The British Standard will carry a note to the effect that in regard to 40 mm, specifiers and users should check its availability. But no similar mention is made of 36 mm.

'Shippers, for the most part, will be geared to the shorter list which excludes both 36 mm and 40 mm thicknesses,' the TTF points out. 'They have warned that any sizes which diverge from those agreed should not be regarded as readily available.'

Plasterboard going metric

Details of new metric sizes for plasterboard, which will be available from 1 April 1970, have been announced by British Gypsum Ltd. These will be in addition to the current standard range of imperial sizes but, in order to lessen the pressure on the production line, widths will be in metric. Since metric widths of board are only 1.6% narrower than the existing imperial widths, and as the bulk of all board is fixed across joists, studs or purlins, the actual board width is not critical providing the lengths correspond to existing support centres. An exception is made for Gypsum wallboard of 3ft. and 4ft. widths in 7ft. 6in. and 8ft. lengths, the sudden cessation of which could cause difficulties to builders of industrialised and other framed systems where the main grid supports are placed in 18in. or 24in. centres. These sizes will be maintained, if required, until 31 March 1971. As regards standard imperial lengths, these will be progresively withdrawn both before and after this date depending on the demand situation.

The new metric sizes are as follows:
Gypsum Wallboard: widths— 600 mm, 900 mm, 1 200 mm; lengths—1 800 mm, 2 350 mm, 2 400 mm, 2 700 mm, 3 000 mm.



The test rig at BRS in which the five main types of construction used in MPBW buildings have been built up side by side to illustrate some of the problems that will be met with when applying dimensional co-ordination.

Gypsum Plank: width—600 mm; lengths —2 350 mm, 2 400 mm, 2 700 mm, 3 000 mm. Imperial sizes will cease.
Industrial plastic-faced board: widths— 600 mm; lengths— 1 800 mm, 2 400 mm, 2 700 mm, 3 000 mm.
Sarking Board: width—600 mm; length —1 800 mm.

Gypsum lath and baseboard: lath length—1 200 mm; baseboard length— 800 mm, 1 200 mm. Widths will probably be changed to an absolute metric dimension and a decision on this will be announced no later than September 1969.

Dry partition: as for Gypsum Wallboard.
Plasterboard partition thicknesses: Detailed information will be progressively released on plasterboard partition systems satisfying the 50 mm and 100 mm partition zones. At present information is available on 50 mm site laminated plasterboard partitions and 100 mm metal stud partitions.

All plasterboard and dry partition, will be invoiced in square metres from 1 April 1970. Building and industrial plasters, jointing compounds and gypsum mineral will be packed in metric measure from 1 February 1971.

Window's future

Britain's glass and window manufacturers have combined for the first time to discuss the future of the window in the building industry. A one-day conference on 24 April held at the Pilkington Research and Development Laboratories, Lathom, Lancashire, was attended by 70 delegates from Pilkington, the British Woodwork Manufacturers' Association, the Metal Window Federation and the Flat Glass Association.

Group discussions were held on window standardisation and design, the climate of opinion affecting window markets, materials and their use, amongst other types. A working party is to pursue the conclusions of the discussion groups.

Key components

Rooflights

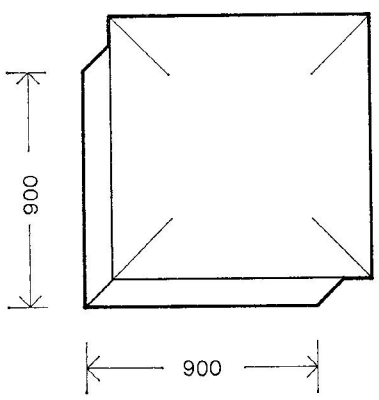
This is the 5th of a series of data sheets prepared by The Modular Society under the editorship of Brian Jolly, ARIBA, published monthly in BMN.

The purpose of this fifth data sheet is to present the proposals of the Modular Society for the Key rooflight which should be included in any manufacturer's range of these components, to justify its choice as a Key Component and to demonstrate its use in current building practice. These proposals are put forward as a basis for discussion—see introductory article in 'Building,' 10 January 1969. Comments will be welcomed. The Society wish to thank correspondents who have already submitted their views on earlier data sheets.

The term rooflight is very broad in its application. Rooflight types vary from the simple translucent or transparent sheet set flush with the roof finish to the more complex unit placed above or through the roof with ventilation control, automatic fire opening mechanisms, etc. Plan forms include square, rectangular, circular and polygonal shapes. This data sheet will be concerned with square rooflight units which are located on or above the structural flat roof level.

Key rooflight

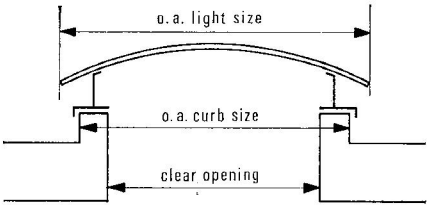
A rooflight consists of a perimeter frame or curb and a transparent or translucent panel.



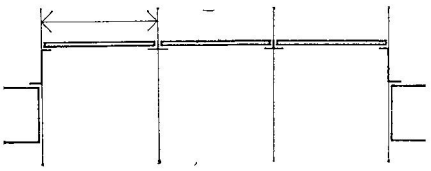
Key rooflight dimensions

Three dimensions are commonly quoted for sizing rooflights on plan. These are:

1 the overall light dimension.
2 the overall curb dimension.
3 the clear roof opening dimension.



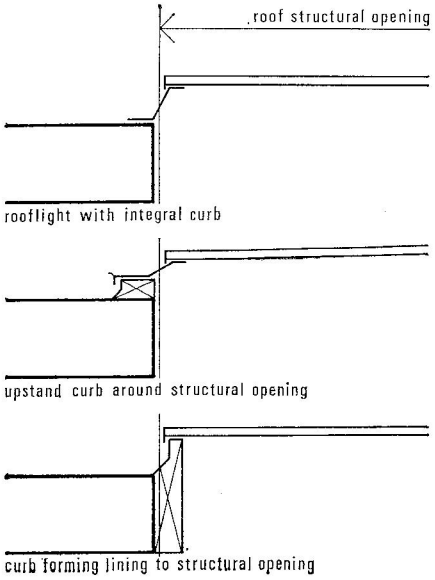
In terms of dimensional co-ordination, the overall light size is of significance when the lights are intended for use in larger composite assemblies. The light should then be contained within its basic space with due allowance made for the joint between lights. Where the rooflight is designed to be used as an independent unit, this dimension is of secondary significance.



Many rooflight units are designed to be fitted to a curb raised above the general finished roof level. The dimension between the external vertical curb surfaces is significant since, in this type of rooflight, the roof finish is usually dressed up the curb and covered by a downstand.

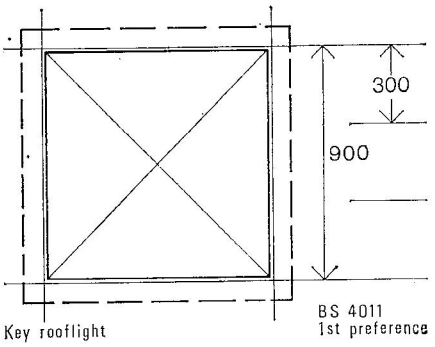
The clear roof opening is a significant dimension, when the rooflight design includes a curb.

The structural opening may be considered to be of the most significance in the sizing of dimensionally co-ordinated components. Accordingly, this dimension will be adopted in this data sheet as the horizontal co-ordinating dimension. No vertical dimension is relevant to dimensional co-ordination since the Key rooflight does not penetrate below the roof finish level.

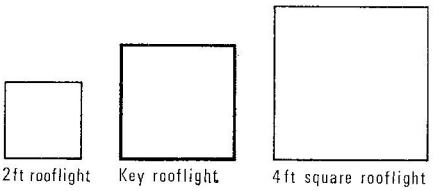


Key rooflight size

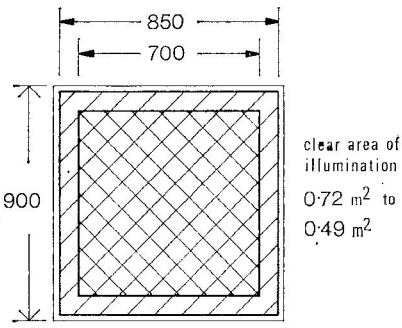
The key rooflight is square on plan, to fit over a 900 mm square structural opening. This is a BS 4011 first preference metric size being a simple multiple of the International basic module size of 100 mm. This size also conforms directly to the BS 4330 planning grid increment of 300 mm.



The range of rooflight sizes currently on the market is very large and varies considerably between the different types. Sizes between 2ft. (610 mm) and 4ft. (1 219 mm) square are common to most of the rooflight types. The Key rooflight size of 900 mm falls within this range.

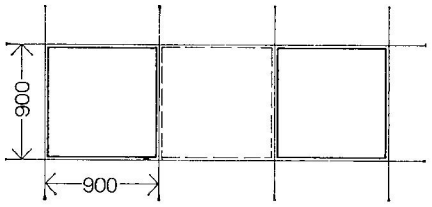


The clear area of illumination attainable with the Key rooflights will depend on the thickness of the perimeter frame or curb. From current rooflight details, the clear glazing width is seen to vary from 50 mm to 200 mm less than the structural opening size. Thus the clear area of the Key rooflight should vary between 0.72 m^2 and 0.49 m^2.

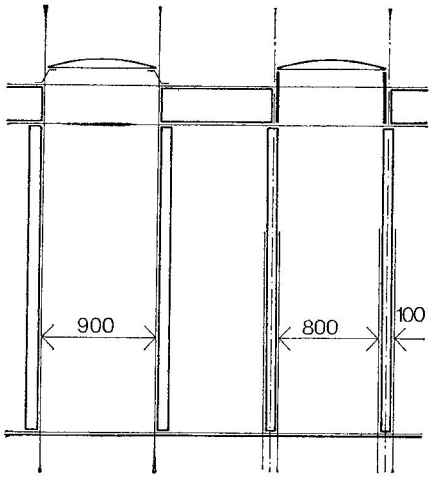


Planning with Key rooflights

The rooflight is shown below related, for convenience, to a planning grid of 900 mm. In certain cases rooflights will be required to be placed adjacent to one another on special curb units, shown dotted on the diagram, or immediately adjacent to a change in roof level.

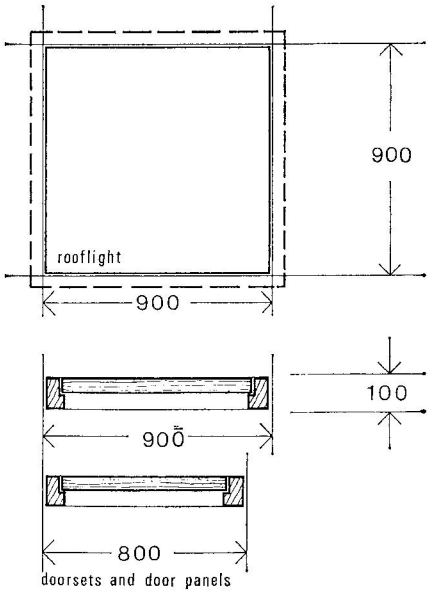


In the section below the Key rooflight position is shown related to that of partitioning, 100 mm in width, placed alternatively at 900 mm between faces and also at 900 mm centres. In the second example the roof structural opening is shown fitted with an internal apron reducing the clear opening width to 800 mm.

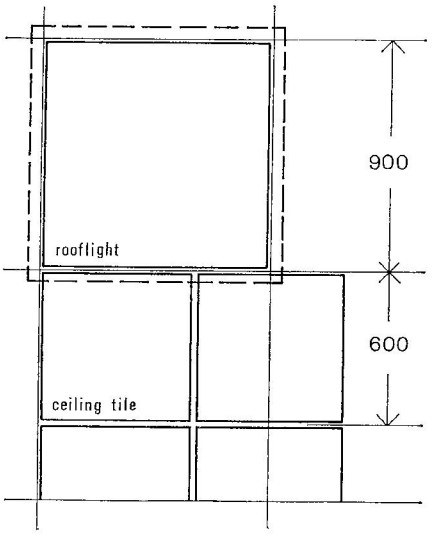


Co-ordination with other key components

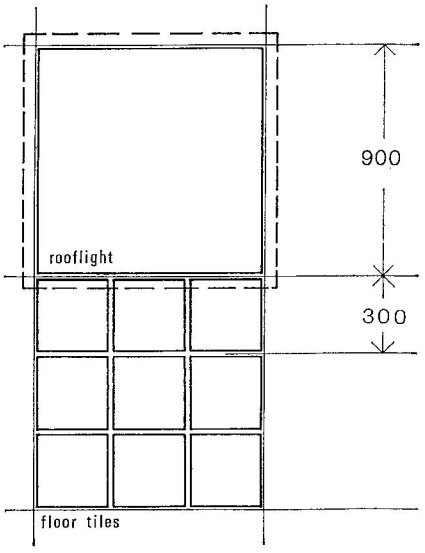
Internal doorsets and doorpanels



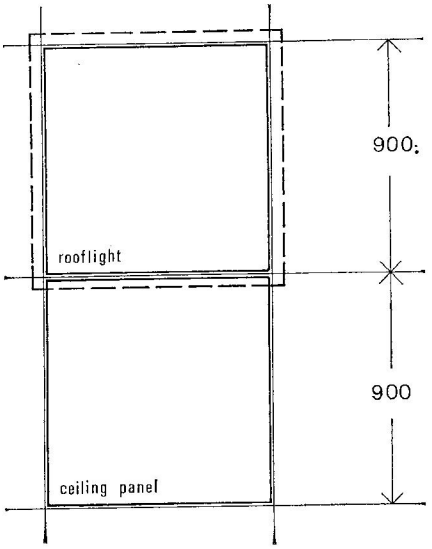
Ceiling tiles



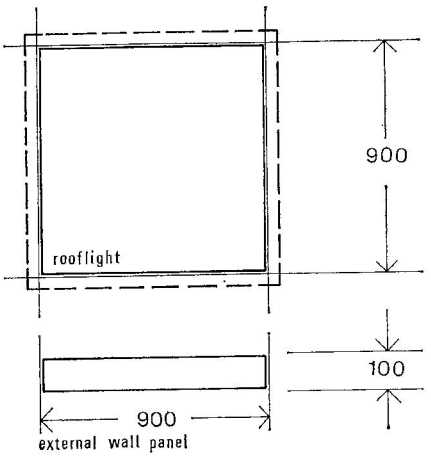
Floor tiles



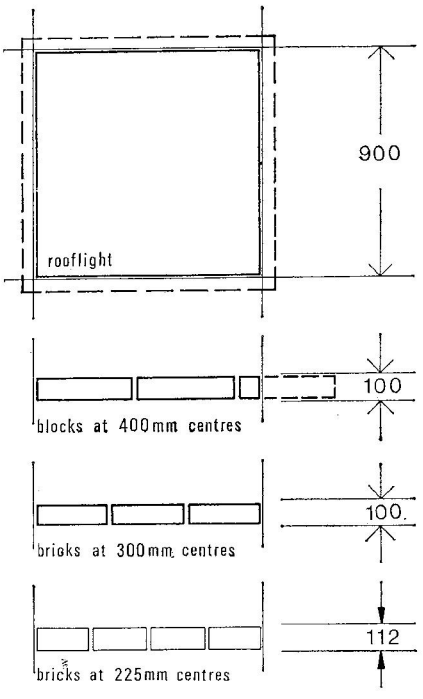
Ceiling panels



External wall panels



Blocks and bricks



Metric Building Regulations

Discussion with MHLG

There have been many expressions of concern by various sectors of the building industry about the nature and timing of Ministerial action on the metrication of the Building Regulations.

The point has been made that the metric programme envisaged fully metric dimensionally co-ordinated design work beginning in January this year and building up to complete metric working by 1972. Site work is related to this in that it is planned to begin next year and will be fully metric by 1973. Against this background, although the metric equivalents to the Regulations are already available,[1] amendment to some of these dimensions will be inevitable. The rounded-off metric version of the Regulations is not to be published until late 1971 or 1972.

Outline of problems

For some time it has been felt that this situation created a number of serious problems:—

1. It is common practice to design and construct down to the statutory minima expressed in the regulations and the rounding off process will necessarily involve a dimension marginally lower than the present mandatory imperial minimum.

2. Designers are being asked to design metric co-ordinated buildings and components now, although amended regulations are not at present available and will not be until the end of the change period for designers.

3. Components designed now according to present imperial minima may well be excessive for or conflict with later metric minima and thereby require redesign.

4. Components or buildings designed now to accord with current dimensional thinking likely to be incorporated in the amended regulations, may not be acceptable under present imperial regulations.

5. The precise roundings to be adopted will in some cases need very careful consideration in an overall component co-ordination context. Ill-chosen dimensions, for example, could make it difficult to conform to the recently published BS 4330 'Controlling Dimensions' or the principles of BS 4011 on Preferred increments of size.

A number of representations on these aspects were made by the industry to the Ministry of Housing and Local Government as the body responsible. These led on the 27 March to a meeting at the Ministry with CIMCLG[2] representatives to discuss the matter.

It was evident from the papers circulated prior to the meeting that the Ministry view was that while problems of the kind previously outlined were anticipated, there would, in practice, be very few places where conflict in the Regulations would occur, the point being that by far the larger majority of dimensions quoted in the Building Regulations are contained in the 'deemed to satisfy' clauses and schedules. It was felt that this made such conflicts much easier to deal with, because the important thing was the functional requirement which could be satisfied in many ways—not necessarily by the 'deemed to satisfy' provision.

In the discussion at the meeting it was made clear by Mr. Oliver Lawn, who was in the chair for the Ministry, that they were preparing proposals for the rounded metric dimensions eventually to be included in the metric Regulations. These proposals would be circulated for comment later this year, perhaps during the summer, which would be part of the statutory consultation to which the Ministry is committed before making or amending Building Regulations.

In the intermediary period until the metric Regulations were available, the Ministry expected the responsible local authorities to take a reasonable view in their interpretations. In certain cases it would be appropriate to grant waivers to permit work which conformed to the proposed metric dimensions but conflicted with the imperial regulations. The Ministry proposed to issue a circular of guidance to local authorities about the administration of the Building Regulations during the transitional period.

If it were found that certain dimensions were causing particular difficulties of the kind described under points 3 and 4 above, the Ministry was willing to consider an ad hoc amendment of the appropriate regulations well in advance of the 1972 change-over. These measures, it was hoped, would avoid most of the difficulties foreseen by industry.

The meeting's discussion ranged over many detailed matters concerning the rounding off of dimensions. The Ministry representatives repeatedly expressed their interest in any detailed suggestions or comments about particular rounded dimensions. It was agreed that CIMCLG would form a small working group to consult with the Ministry about their proposals.

In concluding a useful meeting it was agreed that any views on which dimensions in the regulations were in any way 'critical' would be very useful. Thus if any professional, industrial or private body has suggestions as to the precise roundings which are thought appropriate either from the point of view of component co-ordination or manufacturer's sizing, they should be sent either to CIMCLG or to the Ministry.

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[1]The Building Regulations 1965 Metric Equivalents of dimensions—HMSO, 7s. 6d.

[2]Construction Industry Metric Change Liaison Group.

Publications

Copper and copper alloys

Four of the British Standards relating to copper and copper alloys have been published in metric editions. These are:

BS 2872 : 1969 Specification for copper and copper alloys—forging stock and forgings.

BS 2873 : 1969 Specification for copper and copper alloys—wire.

BS 2874 : 1969 Specification for copper and copper alloys—rods and sections (other than forging stock).

BS 2875 : 1969 Specification for copper and copper alloys—plate.

In preparing the metric standards only materials for general engineering purposes have been included and all references to electrical properties have been deleted.

Prices of these standards are: BS 2872, 10s. each (12s.); BS 2873, 12s. each (14s.); BS 2874, 12s. each (14s.); BS 2875, 14s. each (17s.).

Copies of these standards may be obtained from the BSI Sales Branch at 101-113 Pentonville-road, London E1. Figures in brackets show the charge to non-subscribers.

Screwed studs

BS 4439 : 1969, Screwed studs for general purposes (metric series), forms a parallel metric standard to BS 2693: Part 1, which relates to inch series screwed studs, and makes provision for what are generally termed 'transition fit' threads.

Since there are no ISO Recommendations or proposals in existence dealing with the complex problem of the screw thread limits and tolerances at the metal end of screwed studs, BSI has been liaising for some time with several other European standards authorities and has taken account of current European practice in drawing up this specification. A choice of thread classes on the metal end is given to satisfy the requirements of those who require an oversize thread.

Price of the standard is 12s. (14s.).

Copies of these standards may be obtained from the BSI Sales Branch at 101-113 Pentonville-road, London, E1.

Conversion guide

A useful metrication guide (no. 1) compiled by C. F. Anderson & Sons Ltd. is printed on a stiff white card to A4 size. It consists of a conversion table in imperial and metric covering all thicknesses, widths and lengths for timber, doors, and plywood and building boards that are likely to feature in the company's price lists over the transitional period of changeover, S' metric units to BS 3763 are indicated as also are new metric thicknesses and lengths for softwood as from FOW 1970. Copies of the guide are obtainable from the company's showroom at Islington Green, London, N1.

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Metrication the computer and SI

This series of conversion tables, compiled by R. M. E. Diamant and B. A. L. Hart, appears in this section periodically. They are to be used like logarithmic tables, using a ruler to ensure clear distinction of the horizontal lines. The tables have been set with the help of the English Electric KD9F computer at the University of Salford.

Table 15

Moisture penetration rate

1 g/hr m bar = 1.9114977 grains in/hr ft² in mercury

Note: diff signifies one thousandth of a unit so that the reading for any number required is taken at the intersection of the horizontal single unit line and the vertical one-thousandth unit columns.

diff	0.000	0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009
g/hr m bar				gr in/ hr ft^2 in Hg						
0.00		0.0019	0.0038	0.0057	0.0076	0.0096	0.0115	0.0134	0.0153	0.0172
0.01	0.0191	0.0210	0.0229	0.0248	0.0268	0.0287	0.0306	0.0325	0.0344	0.0363
0.02	0.0382	0.0401	0.0421	0.0440	0.0459	0.0478	0.0497	0.0516	0.0535	0.0554
0.03	0.0573	0.0593	0.0612	0.0631	0.0650	0.0669	0.0688	0.0707	0.0726	0.0745
0.04	0.0765	0.0784	0.0803	0.0822	0.0841	0.0860	0.0879	0.0898	0.0918	0.0937
0.05	0.0956	0.0975	0.0994	0.1013	0.1032	0.1051	0.1070	0.1090	0.1109	0.1128
0.06	0.1147	0.1166	0.1185	0.1204	0.1223	0.1242	0.1262	0.1281	0.1300	0.1319
0.07	0.1338	0.1357	0.1376	0.1395	0.1415	0.1434	0.1453	0.1472	0.1491	0.1510
0.08	0.1529	0.1548	0.1567	0.1587	0.1606	0.1625	0.1644	0.1663	0.1682	0.1701
0.09	0.1720	0.1739	0.1759	0.1778	0.1797	0.1816	0.1835	0.1854	0.1873	0.1892
0.10	0.1911	0.1931	0.1950	0.1969	0.1988	0.2007	0.2026	0.2045	0.2064	0.2084
0.11	0.2103	0.2122	0.2141	0.2160	0.2179	0.2198	0.2217	0.2236	0.2256	0.2275
0.12	0.2294	0.2313	0.2332	0.2351	0.2370	0.2389	0.2408	0.2428	0.2447	0.2466
0.13	0.2485	0.2504	0.2523	0.2542	0.2561	0.2581	0.2600	0.2619	0.2638	0.2657
0.14	0.2676	0.2695	0.2714	0.2733	0.2753	0.2772	0.2791	0.2810	0.2829	0.2848
0.15	0.2867	0.2886	0.2905	0.2925	0.2944	0.2963	0.2982	0.3001	0.3020	0.3039
0.16	0.3058	0.3078	0.3097	0.3116	0.3135	0.3154	0.3173	0.3192	0.3211	0.3230
0.17	0.3250	0.3269	0.3288	0.3307	0.3326	0.3345	0.3364	0.3383	0.3402	0.3422
0.18	0.3441	0.3460	0.3479	0.3498	0.3517	0.3536	0.3555	0.3575	0.3594	0.3613
0.19	0.3632	0.3651	0.3670	0.3689	0.3708	0.3727	0.3747	0.3766	0.3785	0.3804
0.20	0.3823	0.3842	0.3861	0.3880	0.3899	0.3919	0.3938	0.3957	0.3976	0.3995
0.21	0.4014	0.4033	0.4052	0.4071	0.4091	0.4110	0.4129	0.4148	0.4167	0.4186
0.22	0.4205	0.4224	0.4244	0.4263	0.4282	0.4301	0.4320	0.4339	0.4358	0.4377
0.23	0.4396	0.4416	0.4435	0.4454	0.4473	0.4492	0.4511	0.4530	0.4549	0.4568
0.24	0.4588	0.4607	0.4626	0.4645	0.4664	0.4683	0.4702	0.4721	0.4741	0.4760
0.25	0.4779	0.4798	0.4817	0.4836	0.4855	0.4874	0.4893	0.4913	0.4932	0.4951
0.26	0.4970	0.4989	0.5008	0.5027	0.5046	0.5065	0.5085	0.5104	0.5123	0.5142
0.27	0.5161	0.5180	0.5199	0.5218	0.5238	0.5257	0.5276	0.5295	0.5314	0.5333
0.28	0.5352	0.5371	0.5390	0.5410	0.5429	0.5448	0.5467	0.5486	0.5505	0.5524
0.29	0.5543	0.5562	0.5582	0.5601	0.5620	0.5639	0.5658	0.5677	0.5696	0.5715
0.30	0.5734	0.5754	0.5773	0.5792	0.5811	0.5830	0.5849	0.5868	0.5887	0.5907
0.31	0.5926	0.5945	0.5964	0.5983	0.6002	0.6021	0.6040	0.6059	0.6079	0.6098
0.32	0.6117	0.6136	0.6155	0.6174	0.6193	0.6212	0.6231	0.6251	0.6270	0.6289
0.33	0.6308	0.6327	0.6346	0.6365	0.6384	0.6404	0.6423	0.6442	0.6461	0.6480
0.34	0.6499	0.6518	0.6537	0.6556	0.6576	0.6595	0.6614	0.6633	0.6652	0.6671
0.35	0.6690	0.6709	0.6728	0.6748	0.6767	0.6786	0.6805	0.6824	0.6843	0.6862
0.36	0.6881	0.6901	0.6920	0.6939	0.6958	0.6977	0.6996	0.7015	0.7034	0.7053
0.37	0.7073	0.7092	0.7111	0.7130	0.7149	0.7168	0.7187	0.7206	0.7225	0.7245
0.38	0.7264	0.7283	0.7302	0.7321	0.7340	0.7359	0.7378	0.7397	0.7417	0.7436
0.39	0.7455	0.7474	0.7493	0.7512	0.7531	0.7550	0.7570	0.7589	0.7608	0.7627
0.40	0.7646	0.7665	0.7684	0.7703	0.7722	0.7742	0.7761	0.7780	0.7799	0.7818
0.41	0.7837	0.7856	0.7875	0.7894	0.7914	0.7933	0.7952	0.7971	0.7990	0.8009
0.42	0.8028	0.8047	0.8067	0.8086	0.8105	0.8124	0.8143	0.8162	0.8181	0.8200
0.43	0.8219	0.8239	0.8258	0.8277	0.8296	0.8315	0.8334	0.8353	0.8372	0.8391
0.44	0.8411	0.8430	0.8449	0.8468	0.8487	0.8506	0.8525	0.8544	0.8564	0.8583
0.45	0.8602	0.8621	0.8640	0.8659	0.8678	0.8697	0.8716	0.8736	0.8755	0.8774
0.46	0.8793	0.8812	0.8831	0.8850	0.8869	0.8888	0.8908	0.8927	0.8946	0.8965
0.47	0.8984	0.9003	0.9022	0.9041	0.9060	0.9080	0.9099	0.9118	0.9137	0.9156
0.48	0.9175	0.9194	0.9213	0.9233	0.9252	0.9271	0.9290	0.9309	0.9328	0.9347
0.49	0.9366	0.9385	0.9405	0.9424	0.9443	0.9462	0.9481	0.9500	0.9519	0.9538
0.50	0.9557	0.9577	0.9596	0.9615	0.9634	0.9653	0.9672	0.9691	0.9710	0.9730

Table 15. Moisture penetration rate. This table is to be used for calculation of moisture movement through building components.