



MR40 APPLICATION NOTE NO. 1

MR40 Material Conversion Table

To convert the nominal MR40 reading value (Group 9) to other material groups, reference the look up table and material groups listed below. *Example: If the MR40 (Group 9) Reads 22% MC, then the corresponding Red Pine (Group 2) value would be 25%*

| | Group 9 | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 | Group 7 | Group 8 | Group 10 | Group 11 | |
|----------------------------|----------------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|----|
| Absolute Measurement Range | 5 | 5 | 6 | 6 | 6 | 4 | 5 | 8 | 7 | 1 | 1 | |
| | 6 | 6 | 7 | 7 | 7 | 5 | 6 | 9 | 8 | 1 | 1 | |
| | 7 | 7 | 8 | 8 | 8 | 6 | 6 | 10 | 9 | 1 | 1 | |
| | 8 | 8 | 10 | 10 | 9 | 7 | 7 | 11 | 11 | 1 | 1 | |
| | 9 | 9 | 11 | 11 | 10 | 8 | 8 | 12 | 12 | 1 | 1 | |
| | 10 | 10 | 12 | 12 | 11 | 9 | 9 | 13 | 13 | 1 | 1 | |
| | 11 | 12 | 13 | 14 | 12 | 10 | 10 | 14 | 14 | 1 | 1 | |
| | 12 | 13 | 14 | 15 | 13 | 11 | 11 | 15 | 15 | 1 | 1 | |
| | 13 | 14 | 15 | 16 | 14 | 12 | 12 | 15 | 16 | 1 | 1 | |
| | 14 | 15 | 16 | 17 | 15 | 13 | 13 | 16 | 17 | 2 | 1 | |
| | 15 | 17 | 17 | 19 | 15 | 14 | 14 | 17 | 19 | 2 | 1 | |
| | 16 | 18 | 18 | 20 | 16 | 15 | 15 | 18 | 20 | 2 | 2 | |
| | 17 | 19 | 20 | 21 | 17 | 16 | 15 | 19 | 21 | 3 | 2 | |
| | 18 | 20 | 21 | 23 | 18 | 17 | 16 | 20 | 22 | 3 | 2 | |
| | 19 | 22 | 22 | 24 | 19 | 18 | 17 | 20 | 23 | 4 | 2 | |
| | 20 | 23 | 23 | 25 | 20 | 19 | 18 | 21 | 24 | 4 | 3 | |
| | 21 | 24 | 24 | 26 | 21 | 20 | 19 | 22 | 25 | 5 | 3 | |
| | 22 | 26 | 25 | 28 | 22 | 22 | 20 | 23 | 26 | 7 | 4 | |
| | 23 | 27 | 26 | 29 | 23 | 23 | 21 | 23 | 27 | 8 | 4 | |
| | 24 | 28 | 27 | 30 | 24 | 24 | 22 | 24 | 28 | 9 | 5 | |
| | 25 | 30 | 28 | 32 | 25 | 25 | 23 | 25 | 29 | 11 | 6 | |
| | 26 | 31 | 29 | 33 | 26 | 26 | 23 | 25 | 30 | 13 | 7 | |
| | 27 | 33 | 30 | 34 | 26 | 27 | 24 | 26 | 31 | 16 | 8 | |
| | 28 | 34 | 32 | 36 | 27 | 28 | 25 | 27 | 32 | 19 | 9 | |
| | 29 | 35 | 33 | 37 | 28 | 29 | 26 | 28 | 33 | 22 | 10 | |
| | Relative Range | 30 | 37 | 34 | 38 | 29 | 30 | 27 | 28 | 34 | 26 | 12 |
| | | 31 | 38 | 35 | 40 | 30 | 31 | 28 | 29 | 35 | 30 | 13 |
| | | 32 | 40 | 36 | 41 | 31 | 33 | 29 | 30 | 36 | 35 | 15 |
| | | 33 | 41 | 37 | 42 | 32 | 34 | 30 | 30 | 37 | 41 | 17 |
| 34 | | 43 | 38 | 44 | 33 | 35 | 31 | 31 | 38 | 47 | 19 | |
| 35 | | 44 | 39 | 45 | 33 | 36 | 31 | 32 | 39 | 54 | 21 | |
| 36 | | 45 | 40 | 46 | 34 | 37 | 32 | 32 | 40 | 61 | 23 | |
| 37 | | 47 | 41 | 48 | 35 | 38 | 33 | 33 | 41 | 70 | 26 | |
| 38 | | 48 | 42 | 49 | 36 | 39 | 34 | 33 | 42 | 79 | 29 | |
| 39 | | 50 | 43 | 50 | 37 | 40 | 35 | 34 | 43 | 90 | 32 | |
| 40 | | 51 | 44 | 52 | 38 | 42 | 36 | 35 | 44 | | 35 | |
| 41 | | 53 | 45 | 53 | 39 | 43 | 37 | 35 | 45 | | 39 | |
| 42 | | 54 | 46 | 54 | 40 | 44 | 38 | 36 | 46 | | 42 | |
| 43 | | 56 | 48 | 56 | 40 | 45 | 39 | 37 | 47 | | 47 | |
| 44 | | 57 | 49 | 57 | 41 | 46 | 39 | 37 | 48 | | 51 | |
| 45 | | 59 | 50 | 58 | 42 | 47 | 40 | 38 | 49 | | 56 | |
| 46 | | 60 | 51 | 60 | 43 | 49 | 41 | 38 | 50 | | 61 | |
| 47 | | 62 | 52 | 61 | 44 | 50 | 42 | 39 | 51 | | 66 | |
| 48 | | 63 | 53 | 62 | 45 | 51 | 43 | 40 | 52 | | 72 | |
| 49 | | 65 | 54 | 64 | 45 | 52 | 44 | 40 | 53 | | 78 | |
| 50 | | 66 | 55 | 65 | 46 | 53 | 45 | 41 | 54 | | 85 | |
| 51 | | 68 | 56 | 66 | 47 | 54 | 46 | 41 | 55 | | 92 | |
| 52 | | 69 | 57 | 68 | 48 | 56 | 46 | 42 | 56 | | 99 | |
| 53 | | 71 | 58 | 69 | 49 | 57 | 47 | 43 | 57 | | | |
| 54 | | 73 | 59 | 70 | 50 | 58 | 48 | 43 | 58 | | | |
| 55 | | 74 | 60 | 72 | 51 | 59 | 49 | 44 | 59 | | | |
| 56 | | 76 | 61 | 73 | 51 | 60 | 50 | 44 | 59 | | | |
| 57 | | 77 | 62 | 74 | 52 | 61 | 51 | 45 | 60 | | | |
| 58 | | 79 | 63 | 76 | 53 | 63 | 52 | 45 | 61 | | | |
| 59 | | 80 | 64 | 77 | 54 | 64 | 53 | 46 | 62 | | | |
| 60 | | 82 | 65 | 79 | 55 | 65 | 53 | 47 | 63 | | | |

Notes on Material Groups 1 through 8

The MR40 will display accurate pin probe readings in the 5% to 30% range, depending on the tested material. Moisture Content readings below 5% will display as 0% for all materials and the maximum specified range is dependent on the fiber saturation point for specific species. Use the reading as a relative reference value only, above the fiber saturation point. For more information on fiber saturation, please refer to ASTM D7438. For additional information on Pin moisture measurement accuracy, please see ASTM D4444, section 6.

Notes on Material Groups 10 and 11

Groups 10 and 11 provide basic moisture content estimations in the range of 0 ~ 20% (Group 10) and 0 ~ 9% (Group 11). Use these readings to identify problem areas but verify them using an RH-type concrete moisture meter per ASTM F2170. As such, even though the readings are presented in %MC by weight, they should be considered for reference only.

Key for Material Groups

Groups 1 ~ 8 are for timbers, refer to Table below.

Group 9 is for plywood, drywall, and oriented strand board (OSB)

Group 10 is for brick, cement screed, and concrete

Group 11 is for cement mortar, anhydrite screed, lime mortar, and plaster

Group 10 and 11 are not specified for accuracy and should be used for reference only

Common Names of Timbers (BS888/589:1973) with Group Numbers (1 ~ 8)

| | | | | | |
|------------------------|---|-----------------------|---|----------------------------|---|
| Abura | 4 | Gurjun | 1 | Pine, American Long Leaf | 3 |
| Afara | 1 | Hemlock, Western | 3 | Pine, American Pitch | 3 |
| Aformosa | 6 | Hiba | 8 | Pine, Bunya | 2 |
| Afzelia | 4 | Hickory | 5 | Pine, Caribbean Pitch | 3 |
| Agba | 8 | Hyedunani | 2 | Pine, Corsican | 3 |
| Amboyna | 6 | Iroko | 5 | Pine, Hoop | 3 |
| Ash, American | 2 | Ironbank | 2 | Pine, Huon | 2 |
| Ash, European | 1 | Jarrah | 3 | Pine, Japanese Black | 2 |
| Ash, Japanese | 1 | Jelutong | 3 | Pine, Kauri | 4 |
| Ayan | 3 | Kapur | 1 | Pine, Lodgepole | 1 |
| Baguacu, Brazilian | 5 | Karri | 1 | Pine, Maritime | 2 |
| Balsa | 1 | Kauri, New Zealand | 4 | Pine, New Zealand White | 2 |
| Banga Wanga | 1 | Kauri, Queensland | 8 | Pine, Nicaraguan Pitch | 3 |
| Basswood | 6 | Keruing | 5 | Pine, Parana | 2 |
| Beech, European | 3 | Kuroka | 1 | Pine, Ponderosa | 3 |
| Berlina | 2 | Larch, European | 3 | Pine, Radiata | 3 |
| Binvang | 4 | Larch, Japanese | 3 | Pine, Red | 2 |
| Birch, European | 8 | Larch, Western | 5 | Pine, Scots | 1 |
| Birch, Yellow | 1 | Lime | 4 | Pine, Sugar | 3 |
| Bisselon | 4 | Loliondo | 3 | Pine, Yellow | 1 |
| Bitterwood | 5 | Mahogany, African | 8 | Poplar, Black | 1 |
| Blackbutt | 3 | Mahogany, West Indian | 2 | Pterygota, African | 1 |
| Bosquiea | 1 | Makore | 2 | Pyinkado | 4 |
| Boxwood, Maracaibo | 1 | Mansonia | 2 | Queensland Kauri | 8 |
| Camphorwood, E African | 3 | Maple, Pacific | 1 | Queensland Walnut | 3 |
| Canarium, African | 2 | Maple, Queensland | 2 | Ramin | 6 |
| Cedar, Japanese | 2 | Maple, Rock | 1 | Redwood, Baltic (European) | 1 |
| Cedar, West Indian | 8 | Maple, Sugar | 1 | Redwood, Californian | 2 |

| | | | | | |
|------------------------------|---|---------------------------|---|-----------------------------|---|
| Cedar, Western Red | 3 | Matai | 4 | Rosewood, Indian | 1 |
| Cherry, European | 8 | Meranti, Red (dark/light) | 2 | Rubberwood | 7 |
| Chestnut | 3 | Meranti, White | 2 | Santa Maria | 7 |
| Coachwood | 6 | Merbau | 2 | Sapele | 3 |
| Cordia, American Light | 5 | Missanda | 3 | Sen | 1 |
| Cypress, E African | 1 | Muhuhi | 8 | Seraya, Red | 3 |
| Cypress, Japanese (18-28%mc) | 3 | Muninga | 6 | Silky Oak, African | 3 |
| Cypress, Japanese (8-18%mc) | 8 | Musine | 8 | Silky Oak, Australian | 3 |
| Dahoma | 1 | Musizi | 8 | Spruce, Japanese (18-28%mc) | 3 |
| Danta | 3 | Myrtle, Tasmanian | 1 | Spruce, Japanese (8-18%mc) | 8 |
| Douglas Fir | 2 | Naingon | 3 | Spruce, Norway (European) | 3 |
| Elm, English | 4 | Oak, American Red | 1 | Spruce, Sitka | 3 |
| Elm, Japanese Grey Bark | 2 | Oak, American White | 1 | Sterculia, Brown | 1 |
| Elm, Rock | 4 | Oak, European | 1 | Stringybark, Messmate | 3 |
| Elm, White | 4 | Oak, Japanese | 1 | Stringybark, Yellow | 3 |
| Empress Tree | 8 | Oak, Tasmanian | 3 | Sycamore | 5 |
| Erimado | 5 | Oak, Turkey | 4 | Tallowwood | 1 |
| Fir, Douglas | 2 | Obeche | 6 | Teak | 5 |
| Fir, Grand | 1 | Odoko | 4 | Totara | 4 |
| Fir, Noble | 8 | Okwen | 2 | Turpentine | 3 |
| Gegu, Nohor | 7 | Olive, E African | 2 | Utile | 8 |
| Greenheart | 3 | Olivillo | 6 | Walnut, African | 8 |
| Guarea, Black | 8 | Opepe | 7 | Walnut, American | 1 |
| Guarea, White | 7 | Padang | 1 | Walnut, European | 3 |
| Gum, American Red | 1 | Padauk, African | 5 | Walnut, New Guinea | 2 |
| Gum, Saligna | 2 | Panga Panga | 1 | Walnut, Queensland | 3 |
| Gum, Southern | 2 | Persimmon | 6 | Wandoo | 8 |
| Gum, Spotted | 1 | Pillarwood | 5 | Wawa | 6 |
| | | | | Whitewood | 3 |
| | | | | Yew | 3 |