

Amvic™ ICF Rebar Sizes

Concrete alone is an excellent material in compression but when it comes to tension, the use of reinforcing bar (rebar for short) give the composite concrete material great tensile properties. The most common type of reinforcing of rebar is carbon steel but can sometimes be stainless steel, other composite materials (e.g. carbon fiber) or additional coatings. Steel and concrete have similar coefficient of thermal expansion reducing the amount of differential stress due to temperature changes.

Rebar comes in various sizes and is slightly different between the US and Canada. Although in many cases a #4 bar can be replaced with a 10M bar (and vice versa), there are differences between American and Canadian bar sizes

and strength, as well as code requirements. For example, American bars #4, #5, and #6 have a cross sectional areas of 129mm², 200mm², and 284mm² respectively while Canadian bars 10M, 15M, and 20M have a cross sectional areas of 100mm², 200mm², and 300mm² respectively. American bars are designed using a strength of 60ksi (414 MPa) while Canadian bars are designed using a strength of 58ksi (400MPa).

In addition there are some differences between ACI and CSA standards that result in different strengths. In general, these difference equate to slightly more conservative rebar design if using Canadian rebar for the same structural requirements. The chart below shows common rebar sizes for US and Canada and rough equivalence between them.

| US Bar Size | Nominal Diameter ¹ | CA Bar Size | Nominal Diameter ² |
|-------------|-------------------------------|-------------|-------------------------------|
| #3 | =3/8" | | 9.525mm |
| #4 | =4/8" | 10M | 0.445" 11.3mm |
| #5 | =5/8" | 15M | 0.630" 16.0mm |
| #6 | =6/8" | 20M | 0.768" 19.5mm |
| #7 | =7/8" | | 22.225mm |
| #8 | =8/8" | 25M | 0.992" 25.2mm |
| #9 | ≈9/8" | | 28.650mm |
| #10 | ≈10/8" | 30M | 1.177" 29.9mm |
| #11 | ≈11/8" | 35M | 1.405" 35.7mm |
| #14 | ≈14/8" | 45M | 1.720" 43.7mm |
| #18 | ≈18/8" | 55M | 2.220" 56.4mm |

¹ For US bar size, the nominal SI diameter was converted from the original imperial (inches) nominal diameter.

² For CA bar size, the nominal imperial (inches) diameter was converted from the original SI nominal diameter.