SS 304 nut and bolt weights

Theoretical geometry estimates in kg. Not measured product weights.

A M Steel & Metal Company | Chennai | Prepared 1 November 2026

Use for rough planning only. The dimensions below are explicit illustrative model inputs, not a DIN/ISO dimension table, stock list or certificate. Use actual measured batch weights for freight, invoicing and piece counting.

d	L	s	k	m	Bolt kg	Nut kg	Pair kg
6	20	10	4	5	0.00720	0.00230	0.00951
8	30	13	5.3	6.5	0.01804	0.00493	0.02298
10	40	17	6.4	8	0.03747	0.01085	0.04833
12	50	19	7.5	10	0.06320	0.01576	0.07896
16	60	24	10	13	0.13471	0.03058	0.16529
20	80	30	12.5	16	0.27552	0.05881	0.33433

All dimensions are mm. d = nominal shaft diameter and model nut bore; L = shaft length under head; s = width across flats of model head and nut; k = head height; m = nut height. Pair = one bolt plus one nut, without washers.

Method and assumptions

Density = 7.9 kg/dm3 = 0.0000079 kg/mm3 for the SS 304 model. Bolt volume = pi x d2 x L / 4 + sqrt(3) x s2 x k / 2. Nut volume = [sqrt(3) x s2 / 2 - pi x d2 / 4] x m. Mass in kg = volume in mm3 x 0.0000079.

The shaft is a smooth cylinder and the head/nut are regular hexagonal prisms. Chamfers, thread grooves, thread runout, fillets and manufacturing tolerances are not modelled. The nut uses a simple nominal-diameter cylindrical bore. The result is neither a certified mass nor a guaranteed upper or lower bound.

Worked example: d = 10, L = 40

With s = 17, k = 6.4 and m = 8 mm, the bolt estimate is 0.03747 kg and the nut estimate is 0.01085 kg. The unrounded pair mass x 1,000 is 48.33 kg, excluding washers and packaging. Rounding displayed values before multiplying changes the answer slightly.

Density reference: Outokumpu Core range, Core 304/4301 physical-properties table (7.9 kg/dm3). Geometry and examples are explicitly stated calculations, not manufacturer mass data.

For a quotation: amfasteners.com/contacts/. Include grade, standard, dimensions, quantities and required documentation.