

Hex Nut Weight Chart · Flat & Spring Washer Weight Chart

Grams per piece and kg per 1,000 pcs on the GB/T 6170 basis, with width across flats and nut height; kg/1000 pcs ↔ lb/100 pcs toggle, in-stock flags. Flat washers (GB/T 97.1) and spring washers (DIN 127) side by side: OD, thickness and unit weight; kg/1000 pcs ↔ lb/100 pcs toggle.

M6–M36 · hex nut · flat washer · spring washer · g per piece · kg/1000 pcs · carbon steel 7.85 g/cm³

Hex Nut Weight Chart

Values above are carbon steel (7.85 g/cm³); for other materials multiply by the density factor.

Nut Dimensions	Nominal diameter d mm	Width across flats s mm	Nut height m mm	Weight per piece (g) g / piece	Bulk weight (kg/1000 pcs)
M6	6	10	5	2	2
M8	8	13	6.5	5	5
M10	10	16	8	10	10
M12	12	18	10	14	14
M14	14	21	11	22	22
M16	16	24	14.8	37	37
M18	18	27	15	48	48
M20	20	30	16	63	63
M22	22	34	18	94	94
M24	24	36	19	110	110
M27	27	41	22	160	160
M30	30	46	24	230	230
M33	33	50	26	290	290
M36	36	55	29	390	390

All values are computed as geometric volume × density (carbon steel 7.85 g/cm³, base metal, coating excluded) — no copyrighted standard tables are reproduced. Hex nut = hexagonal prism (across flats s) minus the tapped hole (effective diameter d – 0.5×pitch: the mean of thread major/minor diameters with face-chamfer allowance, calibrated family-wide against public per-1,000-pcs weight tables) — identical formula and parameters as the online weight calculator.

Width across flats s follows GB/T 6170 (≈ ISO 4032) style-1 hex nuts; nut height m is our library's modeled dimension (ISO 4032:1999 / GB/T 6170-2000 series), identical to the catalog SKU and calculator parameters. Fine-thread nuts (GB/T 6171) share the same envelope, so this table approximates their unit weight.

Flat & Spring Washer Weight Chart

Values above are carbon steel (7.85 g/cm³); for other materials multiply by the density factor.

Flat Washers (GB/T 97.1, ≈ ISO 7089)

Size	OD D mm	Thickness t mm	Weight per piece (g) g / piece	Bulk weight (kg/1000 pcs)
M6	12	1.6	1	1
M8	16	1.6	2	2
M10	20	2	4	4
M12	24	2.5	7	7
M14	28	2.5	9	9
M16	30	3	12	12
M18	34	3	15	15
M20	37	3	18	18
M22	39	3	19	19
M24	44	4	34	34
M27	50	4	44	44
M30	56	4	55	55

Size	OD D mm	Thickness t mm	Weight per piece (g) g / piece	Bulk weight (kg/1000 pcs)
M33	60	5	77	77
M36	66	5	94	94

Spring Lock Washers (DIN 127 series, modeled dims)

Size	OD D mm	Thickness t mm	Weight per piece (g) g / piece	Bulk weight (kg/1000 pcs)
M6	11.8	1.6	1	1
M8	14.8	2	2	2
M10	18.1	2.2	3	3
M12	21.1	2.5	4	4
M14	24.1	3	6	6
M16	27.4	3.5	9	9
M18	30.4	3.5	11	11
M20	33.5	4	15	15
M22	35.5	4	16	16
M24	39	5	24	24
M27	44	5	31	31
M30	49	6	46	46
M33	53	6	53	53
M36	57	6	60	60

All values are computed as annular geometric volume $\pi/4 \cdot (D^2 - d^2) \cdot t \times$ density (carbon steel 7.85 g/cm³, base metal, coating excluded; spring lock washers carry an additional $\times 0.83$ effective-section allowance for the split gap and section chamfers, regressed on published DIN 127 per-1,000-pcs weights) — no copyrighted standard tables are reproduced. The bore is taken at the nominal diameter d (the actual clearance hole is slightly larger, so no unmodeled ID column is shown); flat-washer dimensions follow the GB/T 97.1 (= ISO 7089) basis and spring lock washers use DIN 127-series library modeled dimensions — identical parameters as the online weight calculator and catalog SKUs.

Material Density Conversion

Values above are carbon steel (7.85 g/cm³); for other materials multiply by the density factor.

Material	Density (g/cm³) g/cm³	Factor
Carbon / Alloy Steel	7.85	$\times 1.000$
Stainless 304	7.93	$\times 1.010$
Stainless 316	7.98	$\times 1.017$
Brass	8.5	$\times 1.083$

Basis of Calculation & Disclosed Assumptions

Boundary: theoretical geometric estimates for quotation, freight and packing budgets. Actual piece weight varies with thread tolerance, chamfer and coating (hot-dip galvanizing $\approx +4.5\%$); use measured values for trade settlement. Note the standards difference: withdrawn DIN 934 gave M12 a width across flats of 19 mm, while GB/T 6170 / ISO 4032 specify 18 mm — weights differ slightly. This chart uses GB/T 6170 across-flats with the library modeled nut height (ISO 4032:1999 / GB/T 6170-2000 series, same parameters as our catalog SKUs).

References

- GB/T 6170-2015 — Style 1 hexagon nuts (CN, official full text; dimension series identical to ISO 4032:1999 / GB/T 6170-2000) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%206170-2015
- Hex nut dimensions (ISO 4032 series)
- GB/T 192-2003 — General purpose metric screw threads: basic profile (CN, official full text; ISO 68-1 equivalent) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%20192-2003
- Metric thread basic profile (ISO 68-1)
- Dimensions cross-checked against industry fastener data libraries; densities are common industry values

Disclaimer: This chart is an engineering estimation for selection, quotation and freight estimation only. It does not constitute design or acceptance criteria.

Basis of Calculation & Disclosed Assumptions

Boundary: theoretical geometric estimates for quotation, freight and packing budgets. Actual piece weight varies with chamfer, split-ring geometry and coating (hot-dip galvanizing $\approx +4.5\%$); use measured values for trade settlement.

References

- GB/T 97.1-2002 — Plain washers, product grade A (CN, official full text; aligns with ISO 7089/7090 series) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%2097.1-2002
- Plain washer dimensions (ISO 7089/7090 series)
- GB/T 192-2003 — General purpose metric screw threads: basic profile (CN, official full text; ISO 68-1 equivalent) — https://openstd.samr.gov.cn/bzgk/gb/std?std_no=GB%2FT%20192-2003
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