(i) Main container

Dimension = $(25.4 \times 11.43 \times 11.43)\ cm^3$

thickness = 0.4 cm

Vol(out) = $3318.38\ cm^3$

vol(in) = $(24 \times 11.03 \times 11.03)\ cm^3$

= $2919.86\ cm^3$

Vol of material = $398.55\ cm^3$

mass of material = $\rho \times v$ (density = $1.310\ g/cm^3$)

= $(1.31 \times 398.55)\ g$

= $522.1005\ g$

(ii) Face

dimension = $11.43 \times 11.43 \times 7.62\ cm$

Vol = $995.51\ cm^3$

Vol of 2 circular holes = $(\pi \times 2 \times 2 \times 7.62) \times 2$

= $191.414\ cm^3$

vol of rectangular hole = $2 \times 6.35 \times 7.62$

= $96.774\ cm^3$

Vol of material = 707.322

mass of face = (1.310 × 707.322) g

= 926.59 gm

(iii) Container

Dimension = (11.43 × 11.43 × 7.62) cm³

Thickness = 0.41 cm

Vol(o) = 995.51 cm³

vol (in) = (11.03 × 11.03 × 7.22) cm³

= 878.391 cm³

vol of material = 117.119 cm³

mass = (117.119 × 1.31) gm

= 153.425 gm

(iv) Handle

Dimension = (20.32 × 1.4 × 0.7) + (6.2 × 1.4 × 0.7) + (3.5 × 1.4 × 0.7)

Vol = 19.91 + 6.076 + 3.43

= 29.416

mass of 1 handle = (29.416 × 1.31) gm

= 38.53 gm

mass of 4 handle = (38.53 × 4) gm

= 154.13 gm.

(V) Gear 1.5 inch

Dimension = r = 3.81 cm, thickness = 1.75 cm

Vol = $\pi \times (3.81)^2 \times 1.75$

$\therefore 79.76\ cm^3$

mass = (79.76 × 1.31) gm

= 104.49 gm. × 4

= 417.96 gm

(VI) External circular gear

Dimension = r = 3.81 cm, T = 1 cm

Vol = $\pi r^2 h$ = 3.14 × 3.81 × 3.81 × 1

= 45.5

mass = (1.188 × 45.5) gm

= 54.14 gm × 4

= 216.56 gm

(VII) Gear holder

Dimension = 5.08 × 7.62 × 20.32

Vol out = (5.08 × 7.62 × 20.32) cm^3

= 786.57 cm^3

Vol in = 4.68 × 7.92 × 19.92

= 673.08 cm^3

Vol of material = 786.57 − 673.08

= 113.49 cm^3

mass = (113.49 × 8) gm

= 907.92 gm

● Total mass of material = 3298.685 gm