```
> V__CFK := h * Pi * (R^2 - (R - d)^2);
  h := (V__G - V__G__Sphere) / ( Pi * (R - d)^2);
```

$$V_{CFK} := h\,\pi\left(R^2 - (R-d)^2\right)$$

$$h := \frac{V_G - V_{G_{Sphere}}}{\pi\,(R-d)^2} \tag{1}$$

```
> R := 90 * Unit(mm);
  d := 3.5 * Unit(mm);
  d__alu := 2 * Unit(mm);
  rho__CFK := 1.6 * Unit(g) / Unit(cm)^3;
  rho__alu := 2.7 * Unit(g) / Unit(cm)^3;
  V__G__Sphere := 4/3 * Pi * (R-d-d__alu)^3;
  V__CFK__Sphere := 4/3 * Pi * ((R^3) - (R-d)^3);
  V__Alu__Sphere := 4/3 * Pi * ((R-d)^3 - (R-d-d__alu)^3);
  V__CFK;
```

$$90\ \text{mm}$$

$$3.5\ \text{mm}$$

$$2\ \text{mm}$$

$$\frac{1.6}{\text{cm}^3}\ \text{g}$$

$$\frac{2.7}{\text{cm}^3}\ \text{g}$$

$$2.527311283\ 10^6\ \text{mm}^3$$

$$342581.7777\ \text{mm}^3$$

$$183734.9992\ \text{mm}^3$$

$$0.08256206357\ V_G - 208660.0348\ \text{mm}^3 \tag{2}$$

```
> m__cylinder := combine(rho__CFK * V__CFK, 'units');
  m__sphere := combine(rho__CFK * V__CFK__Sphere + rho__alu *
  V__Alu__Sphere, 'units');
```

$$\left(132.0993017\ V_G - 3.338560557\ 10^8\ \text{mm}^3\right)\ \frac{\text{kg}}{\text{m}^3}$$

$$1.044215342\ \text{kg} \tag{3}$$

```
> m__gesamt := m__cylinder + m__sphere;
```

$$\left(132.0993017\ V_G - 3.338560557\ 10^8\ \text{mm}^3\right)\ \frac{\text{kg}}{\text{m}^3} + 1.044215342\ \text{kg} \tag{4}$$

```
> simplify( (4), 'symbolic' );
```

$$132.0993017\ V_G\ \frac{\text{kg}}{\text{m}^3} + 0.7103592863\ \text{kg} \tag{5}$$