



DENSITAS DAN SPESIFIC GRAVITY

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SURAKARTA

...DENSITAS BAHAN PANGAN



- Data densitas diperlukan dalam proses pemisahan; pengendapan; sentrifugasi; dan transportasi

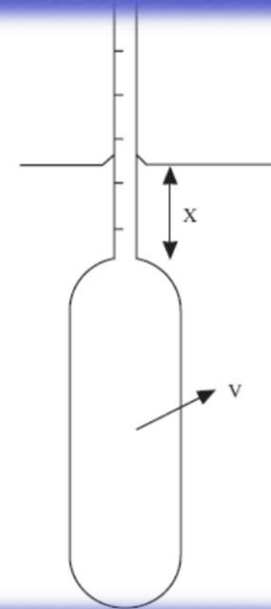
- Densitas dapat diukur dengan mengukur massa dan volume suatu obyek karena dinyatakan dalam satuan massa dibagi satuan volume (kg/m^3)

...DENSITAS CAIRAN

$$\rho_1 = \frac{W}{AX + V}$$

where

W = weight of hydrometer (kg),
 A = cross-sectional area of stem (m^2),
 X = the length of the stem immersed (m),
 V = Volume of the bulb (m^3).



- **Cara Pengukuran**
 - hidrometer / piknometer
- **Incompressible**
 - sulit dipengaruhi suhu dan tekanan

...DENSITAS PADATAN



- **Cara Pengukuran**
 - dapat diukur individual atau ruah (*bulk*)
- **Incompressible**
 - sulit dipengaruhi suhu dan tekanan

Table 2.4 — Densities of solid constituents.

Constituent	Density (kg m ⁻³)	Constituent	Density (kg m ⁻³)
Glucose	1560	Fat	900–950
Sucrose	1590	Salt	2160
Starch	1500	Citric acid	1540
Cellulose	1270–1610	Water	1000
Protein	1400		

Table 2.5 — Densities (or the specific gravity SG) of some foods.

Food	Density (kg m ⁻³)	Food	Density (kg m ⁻³)
Fresh fruit	865–1067	Fresh fish	967
Fresh vegetables	801–1095	Frozen fish	1056
Frozen fruit	625–801	Meat	1.07 (SG)
Frozen vegetables	561–977	Ice (0 °C)	916
		Ice (-10 °C)	933
		Ice (-20 °C)	948

...BULK DENSITY DAN POROSITAS



$$\text{Bulk Density} = \frac{\text{massa}}{\text{volume bulk}}$$

$$\text{Porositas } (\epsilon) = \frac{\text{Volume udara}}{\text{Volume bulk}}$$





Table 2.6 — Bulk densities of a variety of powders.

Powder	Bulk density (kg m ⁻³)	Powder	Bulk density (kg m ⁻³)
Oats ^a	513	Milk ^b	610
Wheat ^a	785	Salt (granulated) ^b	960
Flour ^a	449	Sugar (granulated) ^b	800
Cocoa ^b	480	Sugar (powdered) ^b	480
Coffee (instant) ^b	330	Wheat flour ^b	480
Coffee (ground and roasted) ^b	330	Yeast (bakers) ^b	520
Corn starch ^b	560	Egg (whole) ^b	340

^aFrom the data of Milson and Kirk (1980).

^bFrom the data of Peleg (1983).

...SPECIFIC GRAVITY

$$SG_{true} = \frac{\rho_{sample}}{\rho_{H_2O}} = \frac{(m_{sample}/V)}{(m_{H_2O}/V)}$$



...DENSITAS PRODUK TERAERASI



$$\begin{aligned} \text{over-run} &= \frac{\text{peningkatan volume}}{\text{volume asli}} \times 100 \\ &= \frac{\text{volume busa} - \text{volume asli cairan}}{\text{volume cairan}} \times 100 \end{aligned}$$

“Udara yang terperangkap akan menurunkan densitas bahan”

TERIMA KASIH