

Packaging material cheat sheet

Typical, rounded values. Use your supplier data sheet for real numbers

Material	Density	Melt or soften	Oxygen barrier	Moisture barrier	Typical use
PET	1.39	about 250 C	Medium	Medium	Bottles, films, trays
BOPP	0.91	about 160 C	Low	Good	Snack and label films
PP	0.90	about 160 C	Low	Good	Tubs, closures, films
HDPE	0.95	about 130 C	Low	Very good	Bottles, closures, bags
LDPE / LLDPE	0.92	105 to 125 C	Low	Good	Sealant layers, bags
PS	1.04 to 1.05	soft near 100 C	Low	Low	Cups, trays, foam
PVC	1.38	soft near 80 C	Medium	Medium	Blisters, shrink film
PA (nylon 6)	1.14	about 220 C	Good, dry	Low	Tough layer, vacuum bags
EVOH	1.17	160 to 190 C	Excellent, dry	Low	Thin barrier layer
PLA	1.25	150 to 160 C	Low to medium	Low	Cups, films, trays
Aluminium foil	2.70	about 660 C	Near zero	Near zero	Barrier layer, blisters
Glass	2.5	soft above 500 C	Near zero	Near zero	Bottles, jars, vials
Paperboard	0.6 to 1.0	burns, no melt	Poor	Poor, needs coating	Cartons, trays
Steel / tinplate	7.85	above 1400 C	Near zero	Near zero	Cans

Handy formulas

Grammage (g/m²) = thickness (micrometres) x density (g/cm³)

Film roll length (m) = $\pi \times (\text{OD squared} - \text{core squared}) / (4 \times \text{thickness in mm}) / 1000$

Yield (m² per kg) = 1000 / grammage (g/m²)

Layers in series: total transmission = $1 / (1/T_1 + 1/T_2 + \dots)$

Barrier words are relative. Barrier depends on thickness, grade, temperature and humidity. EVOH and nylon lose barrier when wet. The values here are typical, rounded figures for orientation only and are not specifications.