Do-It-Yourself LCA Estimation From Lookup Tables
Purpose: Estimate biggest impacts to set design priorities
Boundaries: Scope 3 cradle to grave (materials & mfg, transport, & end of life)
Functional unit: impacts per 15-year lifetime
Impact unit: kg CO2 eq.
Uncertainty rubric: 10% for database perfect match, 30% for plausible substitution, 100% for wild guess

Design option:
Refrigerator baseline

Manufacturing	Eco-intensity (impacts/kg)	Mass per item (kg)	Items per func.unit (#)	Uncertainty %	Notes	Calculated Impact
Steel, primary	0.98	47.6	1	12%	Wasn't sure which s	46.8216025
Cast iron	1.99	4.5	1	40%	includes mfg proces	8.93276864
Aluminum, primary	7.27	2.1	1	30%	Exact data in IDEM/	15.2655321
Copper wire	2.99	2.7	1	30%	Data in IDEMAT, bu	8.06666873
Rubber, synthetic	3.47	0.2	1	30%	Most synthetic rubb	0.69489101
Polystyrene, primary	2.25	6.3	1	10%	Exact data in IDEM/	14.2019428
ABS	3.10	5.1	1	10%	Exact data in IDEM/	15.8318108
PVC	2.11	0.5	1	10%	Exact data in IDEM/	1.05413831
Polyurethane foam	2.74	5.6	1	10%	Exact data in IDEM/	15.3658009
Glass	1.10	2.9	1	10%	Exact data in IDEM/	3.17582975
Refrigerant	113.59	0.1	1	100%	Used proxy of penta	11.3589155
Other materials	2.74	7	1	100%	Estimated as electri	19.1547547
Steel mfg -- Cold rolling	0.49	47.6	1	10%	Exact data in IDEM/	23.4884633
PS & ABS mfg -- Injection molding	1.35	11.4	1	30%	Unclear if we shoulc	15.4340907
PVC mfg -- Injection molding	1.35	0.5	1	30%	Unclear if we shoulc	0.67693380
Aluminum mfg -- Extrusion	0.68	2.1	1	10%	Exact data in IDEM/	1.42043543
						0

Transport	Eco-Intensity (impacts/ ton-km)	Mass per item (ton)	Distance per item (km)	Items per func.unit (#)	Uncertainty %	Notes	Calculated Impact
Ocean freight, 10,000 km	0.00	0.0846	10000	1	50%	Probably overestima	4.05874990
Rail, 800 km	0.03	0.0846	800	1	10%	Exact data in IDEM/	1.79712180
Truck, 80 km	0.09	0.0846	80	1	10%	Exact data in IDEM/	0.57888651
							0

Use	Eco-Intensity (impacts/MJ or other)	Amount per item (MJ or other)	Items per func.unit (#)	Uncertainty %	Notes	Calculated Impact
Electricity Use (NL avg.)	0.12	2207.52	15	30%	Assumed Dutch ele	3930.83162
						0

End of Life	Eco-Intensity (impacts/kg)	Mass per item (kg)	Items per func.unit (#)	Uncertainty %	Notes	Calculated Impact
Steel - landfill	0.00	47.6	1	30%	Listed in IDEMAT, b	0
Iron - landfill	0.00	4.5	1	30%	Listed in IDEMAT, b	0
Aluminum - landfill	0.00	2.1	1	30%	Listed in IDEMAT, b	0
Copper - landfill	0.00	2.7	1	30%	Listed in IDEMAT, b	0
Rubber - landfill	0.00	0.2	1	30%	Listed in IDEMAT, b	0
Polystyrene landfill	0.00	6.3	1	30%	Listed in IDEMAT, b	0
ABS - landfill	0.00	5.1	1	30%	Listed in IDEMAT, b	0
PVC - landfill	0.00	0.5	1	30%	Listed in IDEMAT, b	0
Polyurethane foam - landfill	0.00	5.6	1	30%	Listed in IDEMAT, b	0
Glass - landfill	0.00	2.9	1	30%	Listed in IDEMAT, b	0
Refrigerant - landfill	0.00	0.1	1	30%	Listed in IDEMAT, b	0
Other materials - landfill	0.00	7	1	30%	Listed in IDEMAT, b	0