Oil Bleaching: Earth Dose and Oil Lost in Spent Earth

Bleaching earth to dose to an oil batch, the oil retained in the spent earth cake, and the bleaching loss as a share of the oil.

Method: Definitions and mass and energy balances

Input parameters

Unit system: SI

Parameter	Value	Unit
Oil	50,000	kg
Earth dose (share of oil)	1.0000	%
Oil retained per kg of fresh earth (not per kg of cake) If you have the oil content of the spent cake c (kg oil per kg cake), enter r = c/(1 − c): 31 % oil in the cake is 0.45 kg per kg of earth.	0.45000	kg/kg

Calculated results

Parameter	Value	Unit
Bleaching earth	500.00	kg
Oil lost in spent earth	225.00	kg
Oil loss share	0.45000	%
Spent earth cake	725.00	kg

Notes for this case

- Steam-blowing the filter cake recovers part of the retained oil.

Formula and method

$$m_e = dM, \quad m_l = r\,m_e$$

Variables

M	Oil	kg
d	Earth dose (share of oil)	-
r	Oil retained per kg of fresh earth (not per kg of cake)	kg/kg
m_e	Bleaching earth	kg
m_l	Oil lost in spent earth	kg
λ	Oil loss share	-
m_{cake}	Spent earth cake	kg

Method and standards

Mass definitions.

Assumptions and limits

- Spent earth cake = earth + retained oil.
- r is per kg of fresh earth; an oil content of the cake c converts as r = c/(1 − c).

References

- Definitions and mass and energy balances

Report details

Report reference	FCC-RQXC-2NTV (the same inputs always give the same reference)
Generated	17 November 2026, 19:36 UTC
Calculator	Oil Bleaching: Earth Dose and Oil Lost in Spent Earth
Method last reviewed	13 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	2 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/chemical/textile-rice-oil/bleaching-earth-dose

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.