Ceramic Slip Solids from Pint Weight (Brongniart Formula)

Dry solids and water per litre of a ceramic slip or glaze from its weight per litre and the specific gravity of the dry material, by Brongniart's formula.

Method: Brongniart's formula for dry content of a slip

Input parameters

Unit system: SI

Parameter	Value	Unit
Slip weight per litre	1,800.0	kg/m³
Specific gravity of the dry material	2.6000	

Calculated results

Parameter	Value	Unit
Dry solids per litre	1,300.0	g/L
Water per litre	500.00	g/L
Solids content by mass	72.222	%
Solids content by volume	50.000	%

Notes for this case

• A litre of slip is solids plus water: W = m_s + 1000(1 − m_s/(1000 SG)). Solving gives the dry solids per litre, (W − 1000) × SG/(SG − 1), with W in grams per litre. Potters weigh a known volume of slip to control casting slips and glazes this way; the specific gravity of the dry clay or glaze is usually 2.5–2.7.

Formula and method

$$m_s = (W - 1000)\frac{SG}{SG - 1} \quad \text{(g per litre)}$$

Variables

W	Slip weight per litre	kg/m³
SG	Specific gravity of the dry material	-
m_s	Dry solids per litre	kg/m³
m_w	Water per litre	kg/m³
x_s	Solids content by mass	-
ϕ_s	Solids content by volume	-

Method and standards

Brongniart formula.

Assumptions and limits

- No entrained air; solids insoluble.

References

Brongniart's formula for dry content of a slip

Report details

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Release checks	3 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/ceramics-glass/brongniart-slip-solids

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.