BOD 5210 Calculations Explained

Final BOD results are reported as the average of all sample dilutions that meet the passing criteria.

1. When results meet criteria, DO final >1.0mg/L and DO depletion> 2.0mg/L:

- BOD = (D1-D2) – SVseed / P

D1 = DO of sample on day 1 (mg/L)
D2 = DO of sample on day 5 (mg/L)
S = seed correction = average DO depletion per mL of seed (ΔDO/mL)
Vseed = volume of seed in bottle (mL)
P = volumetric fraction of sample used = (Vsample/Vbottle)*PD
Vsample = volume of sample (mL)
Vbottle = volume of BOD bottle = 300mL (mL)
PD = predilution factor

Example:
Seed correction: 0.32

Sample	D1	D2	Depletion	Sample Vol	Seed Vol	PD	BOD	BOD Average
GGA_BOD	5.71	4.4	1.31	2	1	1	148.5	
GGA_BOD	7.29	5.1	2.19	4	1	1	140.25	
GGA_BOD	6.58	3.5	3.08	6	1	1	138	
GGA_BOD	6.83	2.7	4.13	8	1	1	142.875	140.37

2. When results fail final DO criteria, i.e. DO2 <1.0mg/L:

- Select the bottle with the highest DO2 value and report as:
- BOD > (D1-D2) – SVseed / P

Example:
Seed correction: 0.32

Sample	D1	D2	Depletion	Sample Vol	Seed Vol	PD	BOD	BOD Average
GGA_BOD	5.23	0.3	4.93	2	1	1	691.5	
GGA_BOD	5.11	0.4	4.71	4	1	1	329.25	
GGA_BOD	5.13	0.6	4.53	6	1	1	210.5	
GGA_BOD	5.14	0.9	4.24	8	1	1	147	>147

3. When results fail DO depletion criteria, i.e. D1-D2 < 2.0mg/L:

- Select the bottle with the least diluted sample.
- Typically, the bottle with the highest sample volume but watch out for pre-dilution values!
- Select the bottle with the least diluted sample volume, considering pre-dilution.
- BOD < (D1-D2) – SVseed / P

Example:
Seed correction = 0.32

Sample	D1	D2	Depletion	Sample Vol	Seed Vol	PD	BOD	BOD Average
GGA_BOD	5.71	4.8	0.91	2	1	1	88.5	
GGA_BOD	7.29	6.43	0.86	4	1	1	40.5	
GGA_BOD	6.58	6.04	0.54	6	1	1	11	<11
GGA_BOD	6.83	5.84	0.99	8	1	2	50.25	

Least diluted sample = largest number when sample volume/PD
GGA_BOD 1 = 2/1 = 2
GGA_BOD 2 = 4/1 = 4
GGA_BOD 3 = 6/1 = 6
GGA_BOD 4 = 8/2 = 4

Therefore, use GGA_BOD 3 to calculate BOD:

BOD < (6.58-6.04)-(0.32*1) / (6/300) *1
BOD < 11mg/L

All BOD average results that use failing dilutions, i.e. conditions 2. and 3. must be flagged in the report.

OPTIMIZE YOUR RESULTS. PROTECT OUR ENVIRONMENT.