

24. CARBON AND CARBONATE ANALYSES, LEG 10

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The results of the carbon and calcium carbonate analyses are presented in Table 1. The carbon-carbonate data were determined by an induction Leco furnace combined with a Leco acid-base Semi-Automatic Carbon Determinator. Normally, the more precise 70-Second Analyzer is used in place of the Semi-Automatic Carbon Determinator, but it could not be used for these samples because it was being modified at the time these samples were run.

The sample was burned at 1600°C and the liberated carbon dioxide and oxygen volumetrically measured in a solution of dilute sulfuric acid and methyl red. This gas was then passed through a potassium hydroxide solution, which preferentially absorbs carbon dioxide, and the volume of the gas was measured a second time. The volume of carbon dioxide gas is the difference of the two volumetric measurements. Corrections are made to standard temperature and pressure.

The system has been empirically calibrated with reagent-grade calcium carbonate and 0 to 80 per cent calcium carbonate sediment standards. The standards were checked by independent commercial laboratories and confirmed at the DSDP by gravimetric determinations of carbon dioxide evolved from the "standard" sample after treatment with perchloric acid. The Leco methods are discussed in Volumes 4 and 9 of the *Initial Reports of the Deep Sea Drilling Project*.

Total carbon and organic carbon (carbon remaining after treatment with the hydrochloric acid) are determined in terms of percentage by weight, and the theoretical percentage of calcium carbonate is calculated as follows: $(\% \text{ total C} - \% \text{ C after acidification}) \times 8.33 = \text{per cent calcium carbonate (CaCO}_3\text{)}$.

However carbonate sediments may also include magnesium, iron, or other carbonates; this may result in "calcium" carbonate values greater than the actual content of calcium carbonate. In our determinations, all carbonate is assumed to be calcium carbonate.

Precision of the determinations is as follows:

Total carbon (within 1.2 to 12%) = ± 0.3 per cent absolute

Total carbon (within 0 to 1.2%) = ± 0.06 per cent absolute

Organic carbon = ± 0.06 per cent absolute

Calcium carbonate (within 10 to 100%) = ± 3.0 per cent absolute

Calcium carbonate (within 0 to 10%) = ± 1.0 per cent absolute.

TABLE 1
Total Carbon, Organic Carbon, and CaCO₃ Determinations,
Leg 10

Core, Section Top of Interval (cm)	Depth in Hole (m)	Carbon Total (%)	Organic Carbon (%)	CaCO ₃ (%)
DSDP 85				
1-5 (50.00)	25.50	2.4	0.3	18
2-2 (28.00)	49.78	2.9	0.7	18
3-2 (14.00)	100.64	2.5	0.8	14
3-4 (60.00)	104.10	4.0	0.7	28
DSDP 86				
3-1 (15.00)	161.15	8.8	0.2	72
4-1 (20.00)	257.20	9.6	0.2	78
5-2 (10.00)	372.60	10.7	0.1	89
7-2 (4.00)	499.54	10.0	0.1	83
8-2 (39.00)	509.89	9.0	0.1	75
9-1 (7.00)	551.07	9.0	0.0	74
DSDP 87				
1-2 (19.00)	649.69	1.4	0.2	10
DSDP 88				
1-1 (15.00)	0.15	4.4	0.3	34
2-1 (15.00)	51.15	3.9	0.4	29
4-1 (10.00)	104.10	4.5	0.3	35
DSDP 89				
1-1 (131.00)	1.31	4.3	0.4	33
4-1 (17.00)	220.17	6.3	0.2	50
6-3 (16.00)	379.16	2.7	0.4	19
DSDP 90				
1-1 (9.00)	0.09	2.6	0.4	18
2-1 (70.00)	70.70	5.3	0.3	41
2-2 (10.00)	71.60	3.3	0.3	25
3-2 (15.00)	131.65	5.2	0.2	42
4-2 (15.00)	189.65	3.5	0.3	26
5-1 (10.00)	236.10	1.7	0.5	10
6-1 (22.00)	293.22	1.7	0.5	10
11-6 (15.00)	682.65	2.7	0.4	19
13-3 (42.00)	766.42	0.8	0.1	5
DSDP 91				
1-5 (20.00)	66.20	3.2	0.6	22
2-2 (20.00)	124.70	2.3	0.7	13
2-3 (20.00)	126.20	2.5	0.5	16
3-1 (20.00)	159.20	2.9	0.7	18
4-1 (0.00)	177.00	3.3	0.7	22
5-1 (10.00)	186.10	2.6	0.4	18

TABLE 1 - Continued

Core, Section Top of Interval (cm)	Depth in Hole (m)	Carbon Total (%)	Organic Carbon (%)	CaCO ₃ (%)
DSDP 91				
5-5 (10.00)	192.10	8.3	0.6	64
6-1 (10.00)	301.10	11.3	0.3	92
12-3 (20.00)	782.40	1.3	0.4	8
14-2 (130.00)	800.40	.8	0.4	3
15-1 (30.00)	807.10	1.1	0.3	7
16-1 (10.00)	816.10	1.6	0.3	11
DSDP 92				
2-3 (75.00)	32.75	2.8	0.8	16
3-1 (110.00)	88.10	3.0	0.6	20
4-2 (30.00)	126.80	3.4	0.6	23
5-1 (20.00)	173.20	2.5	0.8	14
DSDP 94				
2-1 (20.00)	52.20	10.8	0.3	87
3-1 (40.00)	100.40	11.1	0.3	90
4-1 (20.00)	129.20	11.3	0.2	93
5-1 (10.00)	168.10	10.5	0.1	87
6-1 (20.00)	207.20	10.8	0.2	88
7-2 (20.00)	243.70	9.2	0.3	75
8-2 (20.00)	252.70	10.5	0.2	85
9-1 (20.00)	292.20	9.7	0.2	79
10-1 (90.00)	331.90	10.4	0.2	86
12-4 (30.00)	373.80	10.1	0.1	84
13-3 (30.00)	381.30	10.3	0.1	85
15-4 (80.00)	417.30	9.1	0.1	75
16-3 (30.00)	421.30	10.0	0.1	83
17-5 (30.00)	430.30	9.9	0.1	81
18-4 (30.00)	437.80	9.8	0.1	80
19-5 (30.00)	448.30	8.6	0.1	70
20-2 (20.00)	452.70	9.4	0.1	77
21-2 (30.00)	461.80	10.2	0.1	85
22-4 (30.00)	473.80	9.8	0.1	81
23-2 (20.00)	479.70	9.3	0.2	76
24-3 (40.00)	490.40	7.6	0.1	62
25-3 (20.00)	499.20	9.0	0.2	73

TABLE 1 - Continued

Core, Section Top of Interval (cm)	Depth in Hole (m)	Carbon Total (%)	Organic Carbon (%)	CaCO ₃ (%)
DSDP 94				
26-3 (20.00)	503.20	6.9	0.3	56
28-5 (20.00)	538.20	7.3	0.2	59
30-1 (0.00)	571.00	5.7	0.2	46
34-1 (70.00)	616.70	11.0	0.2	90
DSDP 95				
1-5 (30.00)	6.30	10.3	0.1	85
2-2 (30.00)	83.80	10.7	0.1	89
3-1 (30.00)	121.30	10.3	0.1	85
4-4 (20.00)	163.70	11.0	0.2	90
6-1 (20.00)	236.20	11.3	0.1	94
7-1 (20.00)	274.20	10.5	0.1	87
7-6 (30.00)	281.80	9.3	0.1	77
8-1 (30.00)	332.30	8.3	0.1	68
10-1 (45.00)	363.45	11.5	0.1	95
11-2 (24.00)	378.74	10.3	0.1	84
12-4 (20.00)	390.70	10.5	0.1	86
14-1 (86.00)	400.86	11.8	0.1	97
15-6 (20.00)	415.70	11.0	0.3	89
16-6 (20.00)	424.70	12.4	0.3	100
17-6 (20.00)	433.70	11.6	0.3	94
DSDP 96				
1-2 (20.00)	102.70	3.1	1.0	18
3-1 (25.00)	301.25	9.6	0.1	79
DSDP 97				
2-1 (30.00)	105.30	8.1	0.2	65
3-2 (20.00)	143.70	9.0	0.2	73
4-2 (80.00)	202.30	10.7	0.2	88
5-1 (131.00)	251.31	10.6	0.1	88
6-1 (78.00)	294.78	9.8	0.4	79
7-2 (61.00)	307.11	10.6	0.3	86
8-3 (71.00)	311.71	12.4	0.3	100
12-1 (57.00)	333.57	12.9	1.2	97