

Net Tonn	100 tons Ore @	Recover %	Total metal Recover. in Pb Conc. + Zn Conc.	Net Recover. to Pb Conc.	Net Recover. to Zn Conc.
0.196 oz/ton	Ag, 19.6 oz/ton	88%	17.25 oz.	14.3 oz	2.95 oz
6.2 oz/ton	Pb, 6.20 oz/ton	92%	570 oz	460.0 oz	110.0 oz.
6.5%	Pb, 6.5 Tons	95%	6.2 Tons	6.0 Tons	0.2 Tons
6.1%	Zn, 6.1 Tons	90%	5.5 Tons	0.29 Tons	5.21 Tons
0.12%	Cd, 0.12 Tons	90%	= 0.11 Tons		0.11 Tons

Pb Conc: 6.5 T. Pb in ore, 6.0 T. Pb in Pb Conc to 64% (0.64 T) Pb Conc = 6
 or 100 tons Ore → 6.0 T. Pb to Pb Conc, yielding $\frac{6.0}{0.64} = 9.37$ Tons Pb Conc

Zn Conc: 6.1 T. Zn in ore → 5.21 T. Zn in Zn Conc to 54% (0.54 T) Zn Conc
 or 100 tons Ore → 5.21 T. Zn to Zn Conc $\frac{5.21}{0.54} = 9.65$ Tons Zn Conc

Total Pb Conc + Total Zn Conc = 19.02 Tons Pb Conc + Zn Conc

Ratio of Concentration = $\frac{100}{19.02} = 5.26 : 1$

Cd Conc @ 1.1% of the Zn Conc's
 9.65 tons Zn Conc. contains 9.65×0.11 T. 0.106 Tons Cd. metal
 100 tons ore contains $\frac{0.106}{90\%} = 0.118$ T. or 0.12% Cd

or 100 tons ore contains 9.65% of Cd in 100 tons Ore
 ∴ 100 Tons ore contains 0.11 = 0.12 Tons
 1 Tons ore " " = 0.0012 Tons
 ∴ Cd. concn of ore = 0.12%

and, Cd. in ore to Zn Conc. = 0.11% (recovered)

Ore Conc. Balancing Calc.

Metal in
100 Tons Ore

Recov. %

Total metal
Recovered in
Resulting
Pb Conc + Zn Conc.

Assumed
Grade of
Pb Conc.

Tons of
Pb Conc.
@ 6.6%

Theor.
metal
in
Pb Conc.

Assumed
Grade of
Zn Conc.

Theoretical
Metal in
Zn Conc.

(B)

Ag, 19.6 oz.

88%

17.25 oz.

~~1.35~~
1.50

(C) $\frac{14.12}{12.69} = 1.11$

x 9.4 =
(B) x 1.11 = 14.12 oz

~~12.69 oz~~
0.28
0.31

12.69 + 2.80 = 15.49
(A) Bal. Factor = $\frac{17.25}{15.49} = 1.11$

x 10.0 =
(B) x 1.11 = 3.18 $\epsilon = 17.25$

Ag, 620 oz.

92%

5.70 oz.

x 0.96 ±
~~50%~~
48.1

x 9.4 =

x 0.96
~~470.9 oz~~
455
11.5

470.9 + 120.0 = 591
Bal. Factor = $\frac{570}{591} = 0.96$

x 10.0 =
~~120.0 oz~~
115

Pb, 6.5 Tons

95%

6.2 Tons

x 0.95 ±
~~66%~~
64%

x 9.4 =

x 0.95 ±
~~6.2 tons~~
6.0 tons
2.0%

6.2 + 0.3 = 6.5
Bal. Factor = $\frac{6.2}{6.5} = 0.95$

x 10.0 =
~~0.30 tons~~
0.20 tons

Zn, 6.1 Tons

90%

5.5 Tons

~~5%~~
3%

x 9.4 =

x 0.921 ±
~~0.47 tons~~
0.43 tons
55%
54%

0.47 + 5.5 = 5.97
Bal. Factor = $\frac{5.5}{5.97} = 0.921$

x 10.0 =
~~5.5 tons~~
5.07

Cd, incl Zn conc.

90%

Adjustment Steps in sequence (A), (B), (C)

SUMMARY CONCENTRATE GRADES ADJUSTED TO TOTAL METAL RECOVERED IN Pb CONC. + Zn CONC.

LEAD CONCENTRATE

Ag	1.50 oz/ton
Ag	48.1 oz/ton
Pb	64.0%
Zn	3.0%

ZINC CONCENTRATE

Ag	0.31 oz/ton
Ag	11.5 oz/ton
Pb	2.0%
Zn	54%
Cd	1.1%