

TABLE 1. Ni AND Pb CONCENTRATIONS AND Pb AND S ISOTOPIC COMPOSITIONS OF IN-SITU SULFIDES IN DIAMOND

Diamond*	Inclusion spot	Position in diamond	Coexisting phases§	Ni wt%	$\delta^{34}\text{S}$	Pb (ppm)	$^{207}\text{Pb}/^{206}\text{Pb}$	$1\sigma$	$^{208}\text{Pb}/^{206}\text{Pb}$	$1\sigma$
Peridotitic										
U-3648	5-1.1†	Rim		22	0	6510	0.810	0.002	2.030	0.005
	5-2.1†	Rim		27	0	7740	0.813	0.002	2.020	0.004
	5-3.1†	Rim		33	4	3674	0.850	0.003	2.042	0.006
	8-1.1	Rim		28	2	23320	0.831	0.004	2.062	0.009
	8-1.2	Rim				19980	0.838	0.004	2.047	0.009
	7-1.1	Interior		29	0	6	0.616	0.084	1.67	0.15
	7-1.2	Interior				3	0.851	0.124	1.50	0.18
	7-1.3	Interior				4	0.784	0.122	1.93	0.22
	6-1.1	Core	Ol, wü	26	-1	11	0.990	0.070	2.47	0.14
	6-3.1	Core	Ol, wü	25	2	17	1.031	0.057	2.18	0.10
U-3629	1.1	Core		31	-1	73				
	2.1	Core		28	0	95	0.972	0.025	2.265	0.049
	3.1	Core		25	-1	94	1.032	0.027	2.450	0.050
	Eclogitic									
	M-1594	1.1	Rim	1.0	2	13	0.966	0.061	2.30	0.12
M-1591	1.1	Rim		2.8	3	3	0.435	0.100	1.43	0.17
M-1153	1.1	Rim		5.0	0	187	0.881	0.016	2.20	0.03
M-1607	1.1	Core	Omph	1.2	4					
	4.1	Core	Omph	1.1	3	1	0.909	0.302	2.41	0.57
	23PC-4173	1.1	Interior	Coesite	9.1	2	8	0.836	0.073	2.25
	2.1	Interior	Coesite	8.4	-1	17	0.934	0.049	2.01	0.09

\*Pipe names: U = Udachnaya, M = Mir, 23PC = 23rd Party Congress.

§Coexisting phases: wü = wüstite, ol = olivine, omph = omphacite.

†Crack leads to surface.

Numbers after decimal point in "spot" refer to the analysis number for a given spot.

TABLE 2. Ni AND Pb CONCENTRATIONS AND Pb AND S ISOTOPIC COMPOSITIONS OF SULFIDES EXTRACTED FROM DIAMONDS FROM MIR AND UDACHNAYA PIPES

Sample spot	Ni wt%	$\delta^{34}\text{S}$	Pb (ppm)	$^{207}\text{Pb}/^{206}\text{Pb}$	$1\sigma$	$^{208}\text{Pb}/^{206}\text{Pb}$	$1\sigma$
Peridotitic							
4-1.1	19-23	-	3	0.571	0.083	1.663	0.225
4-2.1	16	0	10	0.952	0.065	2.229	0.082
4-3.1	24	-2	21	0.815	0.036	2.089	0.076
4-5.1	24	-3	14600	0.865	0.001	2.201	0.003
4-8.1	14-21	3	11	0.929	0.057	2.167	0.109
4-10.1	21	1	17	0.841	0.042	2.019	0.080
4-15.1	17	1	13	0.979	0.056	2.199	0.078
4-16.1	22	0	3	0.740	0.089	2.165	0.199
4-17.1	23	-2	4	1.056	0.094	2.043	0.157
4-17.2	21	-	38	0.919	0.030	2.202	0.060
4-19.1	15-26	1	20	0.913	0.042	2.094	0.104
4-20.1	20	3	44	1.049	0.032	2.346	0.060
4-22.1	21	2	31	0.960	0.035	2.262	0.068
5-4.1	22	-1	14	0.899	0.049	1.865	0.083
5-5.1	24	-1	110	0.790	0.015	2.155	0.034
9-6.1	32	0	5866	0.837	0.002	2.039	0.004
9-8.1	34	-	31323	0.841	0.004	2.042	0.008
9-9.1	14	0	105	1.013	0.021	2.413	0.042
9-16.1	20	0	4	0.838	0.158	1.995	0.241
9-16/2.1	19	-2	2	0.761	0.192	1.332	0.257
9-16/2.2	19	-	2	0.635	0.151	1.616	0.253
10-1.1	43	2	1646	0.841	0.004	2.042	0.008
10-20.1	25	1	278	0.796	0.010	2.040	0.021
10-20.2 dj	25	-	3732	0.815	0.003	2.159	0.006
Eclogitic							
4-7/1.1	5	-3	4	0.691	0.091	1.873	0.178
4-7/2.1	4	-	4	0.876	0.080	1.868	0.139
4-9.1	0	0	2	0.414	0.090	1.333	0.158
4-11.1	10	-1	7	0.850	0.067	1.984	0.122
4-12.1	2	1	20	0.913	0.042	2.094	0.104
4-21.1	8	3	5	0.765	0.074	1.776	0.135
4-23.1	4	0	4	0.749	0.076	1.774	0.139
4-23.2	4	-	5	0.926	0.090	2.420	0.188
4-24.1	7	0	11	0.677	0.049	1.948	0.103
9-3/4.1	0.5	1	2	0.372	0.097	1.185	0.163
9-3/4.2	0.5	-	2	0.780	0.133	1.824	0.245
9-7.1	0.4	-2	27393	0.831	0.001	2.142	0.079
9-10.1	10	4	13402	0.817	0.001	2.022	0.042
9-10.2	10	4	-	-	-	-	-
9-15.1	0.7	2	-	-	-	-	-
10-6.1	15	-	9	0.691	0.048	1.508	0.082

TABLE 3. Ni AND Pb CONCENTRATIONS AND Pb AND S ISOTOPIC COMPOSITIONS OF SULFIDES IN ECLOGITE XENOLITHS FROM THE UDACHNAYA PIPE

Sample	Location	Coexisting Phases†	Inclusion spot	Ni wt%	$\delta^{34}\text{S}$	Pb (ppm)	$^{207}\text{Pb}/^{206}\text{Pb}$	$1\sigma$	$^{208}\text{Pb}/^{206}\text{Pb}$	$1\sigma$
N2263	Between silicates	Po + dj	1.1 Po	0	1	63	0.909	0.033	2.944	0.084
		Po + dj	1.2 Po	0		66	0.826	0.024	1.985	0.047
		Po + dj	1.1 Dj	0		105	0.807	0.019	2.047	0.039
2045	In garnet	Po + pn + ccp	1.1 Ccp	5-10		3	0.765	0.167	1.589	0.279
NY952*	In omph	Po+pn+ccp	1.1 Po	0	-1	79	1.086	0.032	2.881	0.071
		Po + pn + ccp	2.1 Po	0	0	53	0.872	0.029	2.249	0.061
N2253	In garnet	Po + dj	1.1 Po	0	0	43	0.771	0.029	2.044	0.060
	In omph	Po + dj	2.1 Po	0	2	58	0.832	0.026	2.076	0.053
	In omph	Po + dj	3.1 Po	0	1	5609	0.812	0.002	2.002	0.005
N2245	Between silicates	Po + pn + dj	1.1 Po	6	0	40	0.780	0.029	1.928	0.058
			1.2 Po	6		76	0.769	0.020	1.792	0.038

†Po = pyrrhotite, pn = pentlandite, ccp = chalcopyrite, and dj = djerfischerite.

\*diamondiferous.