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Possible Blast Furnace Phosphorous Reactions													$\Delta G^o = A + BT$		
													A (Kcal)	- B (cal/K)	Temperature Range, °C
1.		$Ca_3(P0_4)_{2\,(S)}$				=	3.0	$CaO_{\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	553.4	140.0	25 –
2.		$Ca_3(P0_4)_{2\,(5)}$	+	3.0	$SiO_{2\,(s)}$	=	3.0	$CaSiO_{3\,(S,\,L)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	489.5	139.6	25 – 1210
													493.7	142.5	1210 – 1543
3.		$Ca_4P_2O_{9\,(S)}$				=	4.0	$CaO_{\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	563.6	144.0	25 –
4.		$Ca_4P_2O_{9\,(S)}$	+	4.0	$SiO_{2\,(s)}$	=	4.0	$CaSiO_{3\ (S,\,L)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	478.4	143.5	25 – 1210
													484.0	147.3	1210 – 1543
5.		$Fe_3(PO_4)_{2\,(S)}$				=	3.0	$FeO_{\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	480.5	155.8	25 – 1238
6.		$Fe_3(PO_4)_{2\,(S,\,L)}$	+	1.5	SiO_2	=	1.5	$Fe_2SiO_{4\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	468.6	150.3	25 – 1217
													502.8	173.0	1217 – 1238
7.		$Mg_3(PO_4)_{2\,(S)}$				=	3.0	$MgO_{\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	501.6	144.0	25 –
8.		$Mg_3(PO_4)_{2\,(S)}$	+	3.0	$SiO_{2\,(S)}$	=	3.0	$MgSiO_{3\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	474.9	140.7	25 – 1300
9.		$Mn_3(PO_4)_{2\,(S)}$				=	3.0	$MnO_{\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	495.9	156.0	25 – 1119
10.		$Mn_3(PO_4)_{2\ (S)}$	+	3.0	$SiO_{2\,(S)}$	=	3.0	$MnSiO_{3\,(S)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	478.1	147.0	25 – 1119
11.	2	$Na_3PO_{4\,(S)}$				=	6.0	$Na_{\,(g)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	1106.2	366.3	925
12.	2	$Na_3PO_{4\,(S)}$	+	6.0	$SiO_{2(S)}$	=	3.0	$Na_2Si_2O_{5\,(L)}$	+	$P_{2\,(g)}$	+	2.5 $O_{2\,(g)}$	1779.0	1434.0	925
13.	2	$[\,\underline{P}\,]_{(1\ wt\%\ in\ Fe\ (L))}$				=				$P_{2\,(g)}$			101.6	6.6	
14.	2	$Fe_3P_{\,(S)}$				=	6.0	$Fe_{\,(S)}$	+	$P_{2\,(g)}$			102.0	22.6	
15.	2	$Fe_2P_{\,(S)}$				=	4.0	$Fe_{\,(S)}$	+	$P_{2\,(g)}$			100.0	22.6	
16.	4	$FeP_{\,(S)}$				=	2.0	$Fe_2P_{\,(S)}$	+	$P_{2\ (g)}$			37.8	22.0	
17.	2	$FeP_{2\ (S)}$				=	2.0	$FeP_{\,(S)}$	+	$P_{2\,(g)}$			58.7	43.0	

References

- K. L. Komarek, Trans TMS-AIME, 1963, vol. 227, pp. 136-145.
- U.S. Dept. of Commerce, MBS: JANAF Thermochemical Tables, 2 ed., U.S. Govt Printinq Office, Washington, D.C., 1971