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## Phosphorus, Sulfur, and Silicon and the Related Elements

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### High-Temperature Interaction of Condensed Phosphates with Oxoacid Salts Oxides, Halogenides, Sulphides, Nitrides and Metals

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## HIGH-TEMPERATURE INTERACTION OF CONDENSED PHOSPHATES WITH OXOACID SALTS, OXIDES, HALOGENIDES, SULPHIDES, NITRIDES AND METALS

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Melted condensed phosphates (CP) having high chemical activity, interact with oxoacid salts, halogenides, sulphides, oxides and nitrides as well as with metals, steels and alloys. Lithium and sodium sulphate destruct CP evolving  $O_2$  and  $SO_2$  into a gaseous phase. In the reaction products di-, tri- and tetraphosphate solid and polymer anions have been revealed by paper-chromatography analysis. Increasing the temperature and the contact of sulphate, both the mean value of phosphate molecular mass and viscosity of metals decreased. Interacting with CP carbonates dissociated to form  $CO_2$ . Lithium nitrate dissociated at 443 K, sodium and potassium nitrates at 593 and 663 K respectively. Potassium sulphate decreases the mean molecular mass  $(KPO_3)_n$  less than twofold, potassium nitrate does it more than 10 times under similar conditions. In the series  $Li_6TeO_6$ - $Li_2SO_4$ - $Li_2CrO_4$  potassium chromate reacted actively with  $(LiPO_3)_n$  to form chromium (III) monophosphate, a valuable binding material and catalyst. Interacting with  $Cr_2S_3$ ,  $MnS$ ,  $NiS$ ,  $Cu_2S_4$ ,  $FeS$ , melted condensed phosphates stimulated the formation on sulphur,  $SO_2$  and  $P_4$ . In solid melts metal phosphides have been found as well a mono-, di- and tetrapolyphosphates. Condensed phosphate reactions with  $Mg_3N_2$ ,  $AlN$  and  $TiN$  resulted in evolving  $PN$ ,  $N_2$  and  $P_4$  into gaseous phase.