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HYDROLYTIC PROPERTY OF IMIDODIPHOSPHATE IN SOLID AND AN AQUEOUS SOLUTION

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Sodium imidodiphosphate decahydrate was made by using phosphoryl chloride as a starting material. When the imidodiphosphate decahydrate was stirred in ethanol for two days at room temperature, most of the water of crystallization was removed and amorphous sodium imidodiphosphate was prepared without decomposition.

When sodium imidodiphosphate decahydrate was heated at about 200°C, it was dehydrated to anhydrous sodium imidodiphosphate. During the heating, a small part of the imidodiphosphate was decomposed to amido-, ortho-, and diphosphates at the same time. Upon heating amorphous sodium imidodiphosphate above 200°C in air, most of it was directly converted to diphosphate without taking a process of dehydration polymerization of orthophosphate which can be made by the decomposition of the imidodiphosphate. The following reaction can be written for the process:



The water in the equation can come from that remained in the imidodiphosphate and/or in air. At the same time, a small part of the amorphous imidodiphosphate was decomposed to amido- and orthophosphates. Imidodiphosphate was hydrolyzed to amido- and orthophosphates in an aqueous solution as follows:

