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## Product Description Tricalcium Phosphate (TCP) Regular Grade

**Tricalcium Phosphate** (Regular Grade) is a fine, white, odorless, tasteless powder with a typical particle size range of 0.1 um to 100 um. The average particle size ranges from approximately 3.5 to 5.5 um.

Although it is called Tricalcium phosphate, commercial TCP is prepared by adding phosphoric acid to a lime slurry and drying the resulting precipitate which has the approximate chemical formula  $\text{Ca}_5(\text{PO}_4)_3\text{OH}$  (MW 502 amu), otherwise known as Calcium hydroxyapatite.

Following are some of the physical properties of TCP

C.A.S. Number:	1306-06-05
Melting Point:	1670 °C
Refractive Index:	1.63
Density:	3.18 g/cc
Moh's Hardness:	5 (diamond = 10)
Modified Moh's Hardness:	5 (diamond = 15)
Absolute Hardness:	48 (diamond = 1500)
% Calcium:	39.8 % (dry basis)
% Phosphorous:	18.5 % (dry basis)
% Phosphate:	56.7 % (dry basis)
pH (20 %)	7.0
Heat Capacity	0.182 cal/g K or 769.9 J/mol K
Solubility in water	Insoluble
Solubility in alcohol	Insoluble

The attached Specification Sheet for Regular Grade TCP includes specific chemical testing required either by the Food Chemical Codex, Volume 5 or the USDA, in addition to self-imposed limitations that ensure quality of the product both in its chemical and physical properties.

NEI's Tricalcium phosphate, in addition to being a good source of calcium and phosphate, may be useful for improving flowability of milled products. Tricalcium phosphate is also commonly added to table salt as a glidant.

Cargill may also find an interest in another specification that was designed at the Hutchinson Kansas Salt Plant in 2002. At Dan Pulis' invitation, we determined that coarse material with 0% held by a 30 mesh screen could be added to salt without having visually detectable white spots. The Certificate of Analysis for TA001258 has been added. On the COA, you will also find the specification ranges for this material.

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