联合国粮农组织FAO/世界卫生组织WHO食品添加剂专家委员会（JECFA）

# 亚铁氰化钙、亚铁氰化钾和亚铁氰化钠规格

在第17届JECFA(1973年)制定,发表在FNP4(1978年)和FNP52（1992年)。在第57届JECFA（2001）修订了污染物和砷的规格。在第18届JECFA（1974年）确定了ADI为0-0.025mg/kg bw。

**同义名** 黄血盐钙、黄血盐钾和黄血盐钠;
六氰铁酸钙、六氰铁酸钾和六氰铁酸钠;
INS编号.亚铁氰化钙538，亚铁氰化钾536，亚铁氰化钠535

**定义**

化学名称 亚铁氰化钙（或钾或钠），
六氰铁酸钙（或钾或钠）（II）

CAS编号 亚铁氰化钙1327-39-5,亚铁氰化钾 13943-58-3,
亚铁氰化钠 13601-19-9

化学式 $Ca_2Fe(CN)_6 \cdot 12H_2O$ $K_4Fe(CN)_6 \cdot 3H_2O$
$Na_4Fe(CN)_6 \cdot 10H_2O$

相对分子质量 亚铁氰化钙508.3，亚铁氰化钾422.4，
亚铁氰化钠 484.1

检验 不少于 99.0%的相应亚铁氰化物

**描述** 黄色晶体或结晶粉末

**功能用途** 抗结剂

**特性鉴定**

溶解度（第4卷） 溶于水；亚铁氰化钾和亚铁氰化钠不溶于乙醇。

亚铁氰化物测试 在10ml 1%样品溶液中加入1ml氯化铁TS,形成深蓝色沉淀（保留钙测试的混合物）

钙测试（第 4 卷）通过测试 测试亚铁氰化物中的混合物

钾测试（第 4 卷）通过测试

钠测试（第4 卷） 通过测试

**纯度**

氰化物 检测不到

# FERROCYANIDES of CALCIUM, POTASSIUM and SODIUM

*Prepared at the 17th JECFA (1973), published in FNP 4 (1978) and in FNP 52 (1992). Metals and arsenic specifications revised at the 57th JECFA (2001). An ADI of 0-0.025 mg/kg bw was established at the 18th JECFA (1974)*

**SYNONYMS** Yellow prussiate of lime, potash or soda; hexacyanoferrate of calcium, potassium or sodium; INS No. Calcium salt 538, Potassium salt 536, Sodium salt 535

## DEFINITION

Chemical names: Calcium (or Potassium or Sodium) ferrocyanide,
Calcium (or Potassium or Sodium) hexacyanoferrate (II)

C.A.S. number: 1327-39-5, Calcium salt
13943-58-3, Potassium salt
13601-19-9, Sodium salt

Chemical formula: $Ca_2Fe(CN)_6 \cdot 12H_2O$
$K_4Fe(CN)_6 \cdot 3H_2O$
$Na_4Fe(CN)_6 \cdot 10H_2O$

Formula weight: Calcium salt 508.3
Potassium salt 422.4
Sodium salt 484.1

Assay: Not less than 99.0% of the respective ferrocyanide

**DESCRIPTION** Yellow crystals or crystalline powder

**FUNCTIONAL USES** Anticaking agent

## CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4): Soluble in water; potassium and sodium salts are insoluble in ethanol

Test for ferrocyanide: To 10 ml of a 1% solution of the sample add 1 ml of ferric chloride TS. A dark blue precipitate is formed. (Retain the mixture for the Test for calcium).

Test for calcium (Vol. 4): Passes test
Test the mixture from the Test for ferrocyanide

Test for potassium (Vol. 4): Passes test

Test for sodium (Vol. 4): Passes test

PURITY

Cyanide: Not detectable

| | |
|---|---|
| | 将 10 毫克硫酸铜溶解在 8 毫升水和 2 毫升氨水的混合物中。用这种溶液湿润一片滤纸条将湿润的纸条放在硫化氢气流中。当将一滴 1%的样品溶液放在棕色试剂纸上时，不应产生白色圆圈 |
| 铁氰化物 | 检测不到<br>将约 10 mg 样品溶于 10 ml 水中，并将一滴该溶液滴在点板上。加入一滴 1% 硝酸铅溶液，然后加入几滴 饱和冷 2 N 乙酸制备的溶液，不应出现蓝色沉淀或蓝色。 |
| 砷(第 4 卷) | 不超过 3 mg/kg（方法 II） |
| 铅(第 4 卷) | 不超过 5 毫克/千克使用适合指定水平的原子吸收技术进行测定。样品量的选择和样品制备方法可基于第 4 卷“仪器方法”中描述的方法原理。 |
| **检测方法** | 称取 3 g 样品，精确至 0.1 毫克，然后转移到 400 ml 烧杯中。溶于 225 ml 水中，小心加入约 25 ml 硫酸 TS。在搅拌下加入 1 滴邻菲咯啉 TS，用 0.1 N 硫酸铈滴定，直到颜色从橙色急剧变为纯黄色。每 ml 0.1 N 硫酸铈相当于 50.83 毫克的 Ca2Fe(CN6 •12H2O；42.24 毫克的 K4Fe(CN)6 • 3H2O 或 48.41 毫克 Na4Fe(CN)6 • 10H2O。 |

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Dissolve 10 mg of copper sulfate in a mixture of 8 ml of water and 2 ml of ammonia TS. Wet a strip of filter paper with this solution, and place the wet paper in a stream of hydrogen sulfide. When one drop of a 1% solution of the sample is placed on the brown reagent paper, a white circle should not be produced.

Ferricyanide

Not detectable
Dissolve about 10 mg of the sample in 10 ml of water and place one drop of this solution on a spot plate. Add one drop of a 1% solution of lead nitrate, followed by a few drops of a solution prepared by saturating cold 2 N acetic acid with benzidine. No blue precipitate or blue coloration should appear.

Arsenic (Vol. 4)

Not more than 3 mg/kg (Method II)

Lead (Vol. 4)

Not more than 5mg/kg
Determine using an atomic absorption technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4, “Instrumental Methods.”

**METHOD OF ASSAY**

Weigh 3 g of the sample to the nearest 0.1 mg and transfer into a 400-ml beaker. Dissolve in 225 ml of water, and add cautiously about 25 ml of sulfuric acid TS. Add, with stirring, 1 drop of orthophenanthroline TS, and titrate with 0.1 N ceric sulfate until the colour changes sharply from orange to pure yellow. Each ml of 0.1 N ceric sulfate is equivalent to 50.83 mg of $Ca_2Fe(CN)_6 \cdot 12H_2O$; 42.24 mg of $K_4Fe(CN)_6 \cdot 3H_2O$ or 48.41 mg of $Na_4Fe(CN)_6 \cdot 10H_2O$.

Specification: COMPENDIUM ADDENDUM 9/FNP 52 Add.9/192 (METALS LIMITS) (2001). R; FAO JECFA Monographs 1 vol.2/59

规格：附录9/FNP 52 Add.9/192 （METALS LIMITS）（2001）。R;粮农组织 JECFA 专著 1 vol.2/59