# Scientific Documentation

## **CA128**, Calcium Acetate, Powder, FCC

Not appropriate for regulatory submission. Please visit www.spectrumchemical.com or contact Tech Services for the most up-to-date information contained in this information package.

**Spectrum Chemical Mfg Corp**
769 Jersey Avenue
New Brunswick, NJ 08901
Phone 732.214.1300

Ver4.03 22.September.2017

Dear Customer,

Thank you for your interest in Spectrum's quality products and services.

Spectrum has been proudly serving our scientific community for over 45 years. It is our mission to manufacture and distribute fine chemicals and laboratory products with Quality and delivery you can count on every time.

To accomplish our mission, Spectrum utilizes our sourcing leverage and supplier qualification expertise in offering one of the industry's most comprehensive line of fine chemical products under one brand, in packaging configurations designed to meet your research and production requirements. Our product grades include: USP, NF, BP, EP, JP, FCC, ACS, KSA, Reagent grade, as well as DEA controlled substances. We operate facilities in the United States on the East Coast, West Coast, as well as in Shanghai, China in order to provide the best logistical support for our customers.

At Spectrum, Quality is priority number one. Suppliers with the best qualifications are preferred and we employ full-functioning in-house analytical laboratories at each of our facilities. Our facilities and systems are USFDA registered and ISO certified. We frequently host customer audits and cherish opportunities for improvements. Quality is engrained into our culture. Quality is priority number one.

In the following pages, we have designed and prepared documented scientific information to aid you in your initial qualification or your continual use of our products. Please do not hesitate to contact us if further information or the most up-to-date documentation is desired from any of the covered areas.

We appreciate your business and we look forward to hearing from you.

Sincerely,

Alan Wang, MSQA, ASQ CQA
Director of Technical Services
techservices@spectrumchemical.com

22.September.2017

# Specification for Calcium Acetate, Powder, FCC (CA128)

| | |
|---|---|
| Item Number | CA128 |
| Item | Calcium Acetate, Powder, FCC |
| CAS Number | 62-54-4 |
| Molecular Formula | $C_4H_6CaO_4$ |
| Molecular Weight | 158.17 |
| MDL Number | |
| Synonyms | |

| Test | Specification | |
|---|---|---|
| | Min | Max |
| ASSAY [$Ca(C_2H_3O_2)_2$] | 99.0 - 100.5 % | |
| WATER | | 7.0 % |
| CHLORIDE (Cl) | | 0.05 % |
| FLUORIDE | | 0.005 % |
| LEAD (Pb) | | 2 mg/kg |
| SULFATE | | 0.1 % |
| IDENTIFICATION | | TO PASS TEST |
| EXPIRATION DATE | | |


***Spectrum Chemical Mfg Corp***

***Corporate Headquarters:***
769 Jersey Ave.
New Brunswick, NJ 08901
732.214.1300

***West Coast Facility:***
14422 S. San Pedro St.
Gardena, CA 90248
310.516.8000

# SAFETY DATA SHEET

**Preparation Date:** No data available **Revision Date:** 07/02/2015 **Revision Number:** G1

**Product identifier**

**Product code:** CA128
**Product Name:** CALCIUM ACETATE, POWDER, FCC

**Other means of identification**

**Synonyms:** Brown acetate; Calcium diacetate; Gray acetate; Lime acetate; Lime pyrolignite; Sorbocalcion; Teltozan; Vinegar salts
**CAS #:** 62-54-4
**RTECS #** AF7525000
**CI#:** Not available

**Recommended use of the chemical and restrictions on use**

**Recommended use:** No information available.
**Uses advised against** No information available

**Supplier:** Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000
**Order Online At:** https://www.spectrumchemical.com

**Emergency telephone number** Chemtrec 1-800-424-9300
**Contact Person:** Martin LaBenz (West Coast)
**Contact Person:** Ibad Tirmiz (East Coast)

## 2. HAZARDS IDENTIFICATION

**Classification**

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

**Label elements**

**Not classified**

**Hazards not otherwise classified (HNOC)**
Not Applicable

**Other hazards**
Not available

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Components | CAS-No. | Weight % | Trade Secret |
|---|---|---|---|
| Calcium Acetate<br>62-54-4 | 62-54-4 | 100 | * |

## 4. FIRST AID MEASURES

**First aid measures**

**General Advice:** Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

**Skin Contact:** Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention if irritation develops. Consult a physician if necessary.

**Eye Contact:** Flush eye with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

**Inhalation:** Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

**Most important symptoms and effects, both acute and delayed**

**Symptoms** Health injuries are not known or expected under normal use.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician:** Treat symptomatically

**Protection of first-aiders**

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

## 5. FIRE-FIGHTING MEASURES

### Extinguishing Media

**Suitable Extinguishing Media:** Carbon dioxide ($CO_2$). Dry chemical. Water spray mist or foam.

**Unsuitable Extinguishing Media:** No information available.

### Specific hazards arising from the chemical

**Hazardous Combustion Products:** Carbon oxides, Metallic oxides

**Specific hazards:** May be combustible at high temperatures
When heated to decompositon it emits acrid smoke and irritating fumes

### Special Protective Actions for Firefighters

**Specific Methods:** No information available.

**Special Protective Equipment for Firefighters:** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

**Personal Precautions:** Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Keep people away from and upwind of spill/leak. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Remove all sources of ignition.

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

### Methods and material for containment and cleaning up

**Methods for containment** Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

**Methods for cleaning up** Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

**Technical Measures/Precautions:**
Provide sufficient air exchange and/or exhaust in work rooms. Keep away from incompatible materials.

**Safe Handling Advice:**
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not ingest. Do not breathe vapours/dust. Handle in accordance with good industrial hygiene and safety practice.

### Conditions for safe storage, including any incompatibilities

**Technical Measures/Storage Conditions:**
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials. Hygroscopic.

**Incompatible Materials:**
Oxidizing agents.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

**National occupational exposure limits**

**United States**

| Components | OSHA | NIOSH | ACGIH | AIHA WHEEL |
|---|---|---|---|---|
| Calcium Acetate<br>62-54-4 | None | None | None | None |

**Canada**

| Components | Alberta | British Columbia | Ontario | Quebec |
|---|---|---|---|---|
| Calcium Acetate<br>62-54-4 | None | None | None | None |

**Australia and Mexico**

| Components | Australia | Mexico |
|---|---|---|
| Calcium Acetate<br>62-54-4 | None | None |

**Appropriate engineering controls**

**Engineering measures to reduce exposure:** Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Individual protection measures, such as personal protective equipment**

**Personal Protective Equipment**

**Eye protection:** Safety glasses Safety glasses with side-shields

**Skin and body protection:** Chemical resistant apron. Gloves. Long sleeved clothing.

**Respiratory protection:** Effective dust mask Wear respirator with dust filter.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical state:**
Solid.

**Appearance:**
Crystals.

**Color:**
White.

**Odor:**
Acetic acid (vinegar) -like.

**Taste**
No information available

**Molecular/Formula weight:**
158.17

**Formula:**
C4H6CaO4

**Flammability:**
May be combustible at high temperatures

**Flash point (°C):**
No data available

**Flashpoint (°C/°F):**
93.3°C/200°F

**Flash Point Tested according to:**
Closed cup

**Lower Explosion Limit (%):**
No information available

**Upper Explosion Limit (%):**
No information available

**Autoignition Temperature (°C/°F):**
No information available

**pH:**
No information available

**Melting point/range(°C/°F):**
No information available

**Boiling point/range(°C/°F):**
No information available

**Decomposition temperature(°C/°F):**
No information available

**Bulk density:**
No information available

**Specific gravity:**
1.5

**Vapor pressure @ 20°C (kPa):**
No information available

**Density (g/cm3):**
No information available

**Evaporation rate:**
No information available

**Vapor density:**
No information available

**VOC content (g/L):**
No information available

**Odor threshold (ppm):**
No information available

**Partition coefficient (n-octanol/water):**
No information available

**Viscosity:**
No information available

**Miscibility:**
No information available

**Solubility:**
Soluble in cold water
Insoluble in Acetone

## 10. STABILITY AND REACTIVITY

**Reactivity**
Reactive with oxidizing agents

**Chemical stability**

**Stability:** Hygroscopic. Stable at normal conditions.

**Possibility of Hazardous Reactions:** Hazardous polymerization does not occur

**Conditions to avoid:** Heat. Ignition sources. Incompatible materials. Exposure to moisture.

**Incompatible Materials:** Oxidizing agents.

**Hazardous decomposition products:** Carbon oxides. Acetone. Calcium Carbonate.

**Other Information**

**Corrosivity:** No information available

**Special Remarks on Corrosivity:** No information available

## 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Principal Routes of Exposure:**
Ingestion. Inhalation.

**Acute Toxicity**

**Component Information**

*Calcium Acetate - 62-54-4*

**LD50/oral/rat =** 4280 mg/kg Oral LD50 Rat
**LD50/oral/mouse =** No information available
**LD50/dermal/rat =** No information available
**LD50/dermal/rabbit =** No information available
**LC50/inhalation/rat =** No information available
**LC50/inhalation/mouse =** No infomation available
**Other LD50 or LC50information =** No information available

**Product Information**

**LD50/oral/rat =**
**VALUE- Acute Tox Oral =** 4280mg/kg

**LD50/oral/mouse =**
**Value - Acute Tox Oral =** No information available

**LD50/dermal/rabbit**
**VALUE-Acute Tox Dermal =** No information available

**LD50/dermal/rat**
**VALUE -Acute Tox Dermal =** No information available

**LC50/inhalation/rat**
**VALUE-Vapor =** No information available
**VALUE-Gas =** No information available
**VALUE-Dust/Mist =** No information available

**LC50/Inhalation/mouse**
**VALUE-Vapor =** No information available
**VALUE - Gas =** No information available
**VALUE - Dust/Mist =** No information available

**Symptoms**

| | |
|---|---|
| **Skin Contact:** | May cause skin irritation |
| **Eye Contact:** | May cause eye irritation |
| **Inhalation** | May cause respiratory tract irritation. |
| **Ingestion** | Health injuries are not known or expected under normal use. |
| **Aspiration hazard** | No information available |

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

| | |
|---|---|
| **Chronic Toxicity** | No information available |
| **Sensitization:** | No information available |

**Mutagenic Effects:** No information available

**Carcinogenic effects:** Not considered carcinogenic

| Components | IARC | ACGIH - Carcinogens | NTP | OSHA HCS - Carcinogens | Australia - Prohibited Carcinogenic Substances | Australia - Notifiable Carcinogenic Substances |
|---|---|---|---|---|---|---|
| Calcium Acetate | Not listed | Not listed | Not listed | Not listed | Not listed | Not listed |

**Reproductive toxicity** No data is available

**Reproductive Effects:** No information available
**Developmental Effects:** No information available
**Teratogenic Effects:** No information available

**Specific Target Organ Toxicity**

**STOT - single exposure** No information available
**STOT - repeated exposure** No information available
**Target Organs:** No information available

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

**Ecotoxicity effects:** No data available.

**Persistence and degradability:** No information available

**Bioaccumulative potential:** No information available

**Mobility:** No information available

## 13. DISPOSAL CONSIDERATIONS

### Disposal Methods

**Waste from residues / unused products:**
Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**
Empty containers should be taken for local recycling, recovery or waste disposal

| Components | RCRA - F Series Wastes | RCRA - K Series Wastes | RCRA - P Series Wastes | RCRA - U Series Wastes |
|---|---|---|---|---|
| Calcium Acetate | None | None | None | None |

## 14. TRANSPORT INFORMATION

## 14. TRANSPORT INFORMATION

**DOT**

| | |
|---|---|
| **UN-No:** | Not Regulated |
| **Proper Shipping Name:** | No information available |
| **Hazard Class:** | No information available |
| **Subsidiary Risk:** | No information available |
| **Packing Group:** | None |
| **ERG No:** | No information available |
| **Marine Pollutant** | No data available |
| **DOT RQ (lbs):** | No information available |

**TDG (Canada)**

| | |
|---|---|
| **UN-No:** | Not Regulated |
| **Proper Shipping Name:** | No information available |
| **Hazard Class:** | No information available |
| **Subsidiary Risk:** | No information available |
| **Packing Group:** | No information available |
| **Description:** | No information available |

**ADR**

| | |
|---|---|
| **UN-No:** | Not Regulated |
| **Proper Shipping Name:** | No information available |
| **Hazard Class:** | No information available |
| **Packing Group:** | No information available |
| **Subsidiary Risk:** | No information available |
| **Classification Code:** | No information available |
| **Description:** | No information available |
| **CEFIC Tremcard No:** | No information available |

**IMO / IMDG**

| | |
|---|---|
| **UN-No:** | Not Regulated |
| **Proper Shipping Name:** | No information available |
| **Hazard Class:** | No information available |
| **Subsidiary Risk:** | No information available |
| **Packing Group:** | No information available |
| **Description:** | No information available |
| **IMDG Page:** | No information available |
| **Marine Pollutant** | No information available |
| **MFAG:** | No information available |
| **Maximum Quantity:** | No information available |

**RID**

| | |
|---|---|
| **UN-No:** | Not Regulated |
| **Proper Shipping Name:** | No information available |
| **Hazard Class:** | No information available |
| **Subsidiary Risk:** | No information available |
| **Packing Group:** | No information available |
| **Classification Code:** | No information available |
| **Description:** | No information available |

**ICAO**

| | |
|---|---|
| **UN-No:** | Not Regulated |
| **Proper Shipping Name:** | No information available |
| **Hazard Class:** | No information available |
| **Subsidiary Risk:** | No information available |
| **Packing Group:** | No information available |
| **Description:** | No information available |

## 14. TRANSPORT INFORMATION

### IATA

**UN-No:** Not Regulated
**Proper Shipping Name:** No information available
**Hazard Class:** No information available
**Subsidiary Risk:** No information available
**Packing Group:** No information available
**Description:** No information available

## 15. REGULATORY INFORMATION

### International Inventories

| Components | U.S. TSCA | KOREA KECL | Philippines (PICCS) | Japan ENCS | CHINA | Australia (AICS) | EINECS-No. |
|---|---|---|---|---|---|---|---|
| *Calcium Acetate* | Present | Present KE-04463 | Present | Present (2)-692 | Present | Present | Present 200-540-9 |

### U.S. Regulations

*Calcium Acetate*

**FDA - Food Additives Generally Recognized as Safe (GRAS):** 21 CFR 184.1185 21 CFR 182.6197

**FDA - 21 CFR - Total Food Additives** 175.300 181.29 182.6197 184.1185

**California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.**

**Chemicals Known to the State of California to Cause Cancer:**
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

**Chemicals Known to the State of California to Cause Reproductive Toxicity:**
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

| Components | Carcinogen | Developmental Toxicity | Male Reproductive Toxicity | Female Reproductive Toxicity: |
|---|---|---|---|---|
| Calcium Acetate | Not Listed | Not Listed | Not Listed | Not Listed |

### CERCLA/SARA

| Components | CERCLA - Hazardous Substances and their Reportable Quantities | Section 302 Extremely Hazardous Substances and TPQs | Section 302 Extremely Hazardous Substances and RQs | Section 313 - Chemical Category | Section 313 - Reporting *de minimis* |
|---|---|---|---|---|---|
| *Calcium Acetate* | None | None | None | None | None |

### U.S. TSCA

| Components | TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS) | TSCA 8(d) -Health and Safety Reporting |
|---|---|---|
| *Calcium Acetate* | Not Applicable | Not Applicable |

### Canada

**WHMIS hazard class:**
Non-controlled

**Calcium Acetate**
Uncontrolled product according to WHMIS classification criteria

**Calcium Acetate**

**Canada Controlled Products Regulation:**

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

**Inventory**

| Components | Canada (DSL) | Canada (NDSL) |
|---|---|---|
| Calcium Acetate | Present | Not Listed |

| Components | CEPA Schedule I - Toxic Substances | CEPA - 2010 Greenhouse Gases Subject to Manditory Reporting |
|---|---|---|
| Calcium Acetate | Not listed | Not listed |

**EU Classification**

**R-phrase(s)**

not determined (not applicable)

**S -phrase(s)**

none

| Components | Classification | Concentration Limits: | Safety Phrases |
|---|---|---|---|
| Calcium Acetate | | No information | |

**The product is classified in accordance with Annex VI to Directive 67/548/EEC**

**Indication of danger:**

None.

## 16. OTHER INFORMATION

## 16. OTHER INFORMATION

**Revision Date:** 07/02/2015
**Prepared by:** Sonia Owen

**Disclaimer:** All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

**End of Safety Data Sheet**

## Manufacturer

Product Covered: CA128, Calcium Acetate, Powder, FCC

Spectrum takes ownership as the manufacturer for the Spectrum product listed above and provides full quality assurance, customer service, and technical product support.

While information concerning the raw material manufacturer of our starting materials is considered proprietary, such information can be made available upon request contingent on demonstration of business volume justification and successful execution of confidential disclosure agreement (CDA).

Requests for disclosure of proprietary raw material manufacturer information may be submitted to the assigned account representative for consideration.

Sincerely,

Alan Wang, MSQA, ASQ CQA
Director of Technical Services
techservices@spectrumchemical.com

22.September.2017

intertek
Total Quality. Assured.

# CERTIFICATE OF REGISTRATION

**This is to certify that the quality management system of:**

## Spectrum Chemicals and Laboratory Products, Inc.

Main Site: 14422 South San Pedro Street, Gardena, California, 90248, USA,
Additional sites:13915 South Main Street, Los Angeles, California, 90061, USA
769 Jersey Avenue, New Brunswick, New Jersey, 08901, USA
755 Jersey Avenue, New Brunswick, New Jersey, 08901, USA
777 Jersey Avenue, New Brunswick, New Jersey, 08901, USA
400 N. Oracle, Suite 221, Tucson, Arizona, 85704, USA, USA

**has been assessed and registered by Intertek as conforming to the requirements of:**

## ISO 9001:2015

### The quality management system is applicable to:

Main Site: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for the laboratory, pharmaceutical, food, healthcare, cosmetic, fragrance, biotechnology, environmental and process industries.

**Certificate Number:**
94-316m-03

**Initial Certification Date:**
27 December 1994

**Certificate Issue Date:**
31 July 2017

**Certificate Expiry Date:**
28 January 2019

ANAB ACCREDITED ISO/IEC 17021 MANAGEMENT SYSTEMS CERTIFICATION BODY

**Authorized Signature**
**Calin Moldovean**
President Business Assurance

Intertek Testing Services NA, Inc. dba Intertek
900 Chelmsford Street, Lowell, MA, USA

In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with Intertek's requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone. The certificate remains the property of Intertek, to whom it must be returned upon request

intertek
Total Quality. Assured.

# APPENDIX TO CERTIFICATE OF REGISTRATION

**This appendix identifies the locations by the management system of**

# Spectrum Chemicals and Laboratory Products, Inc.

755 and 769 Jersey Avenue: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for the laboratory, pharmaceutical, food, healthcare, cosmetic, fragrance, biotechnology, environmental and process industries.

777 Jersey Avenue: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for Compounding Pharmacies.

7400 N. Oracle: The manufacture and distribution of specialty fine chemicals, solutions, equipment, supplies and products for the laboratory, pharmaceutical, food, healthcare, cosmetic, fragrance, biotechnology, environmental and process industries.

In the issuance of this certificate, Intertek assumes no liability to any party other than to the Client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with Intertek's requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone.

The certificate remains the property of Intertek, to whom it must be returned upon request.

# Certificate of Registration

This is to certify that the quality management system of

## Spectrum China Ltd.

**Building A20, No. 3802, Shengang Road, Songjiang District, Shanghai, China**

has been assessed and registered by Intertek as conforming to the requirements of

## ISO 9001: 2008

The quality management system is applicable to:

*Provision of service of purchase, testing and sales for chemical products, repacking of non-hazardous chemical products.*

| | |
|---|---|
| Organization Code: | 77762704-8 |
| Certificate Number: | 111310001-01 |
| Certificate Issue Date: | 17 November 2015 |
| Certificate Expiry Date: | 14 September 2018 |

UKAS MANAGEMENT SYSTEMS
014

*Authorised Signature: Calin Moldovean – President, Business Assurance*
*Intertek Certification Limited, 10A Victory Park, Victory Road, Derby DE24 8ZF, United Kingdom*

Intertek Certification Limited is a UKAS accredited body under schedule of accreditation no. 014.

In the issuance of this certificate, Intertek assumes no liability to any party other than to the client, and then only in accordance with the agreed upon Certification Agreement. This certificate's validity is subject to the organization maintaining their system in accordance with Intertek's requirements for systems certification. Validity may be confirmed via email at certificate.validation@intertek.com or by scanning the code to the right with a smartphone.
The annual validity of the certificate can also be checked through the website http://www.cnca.gov.cn of CNCA in China.

The certificate remains the property of Intertek, to whom it must be returned upon request.

July 13, 2017

**Certification of Compliance with current Good Manufacturing Practices**

Dear Valued Customer:

Spectrum Chemical Mfg Corp certifies that our USP, NF, FCC, EP, BP, JP and food grade products are produced, processed, packaged and held in compliance with current Good Manufacturing Practices (cGMP) in accordance with the applicable parts of 21 CFR, parts 210 and 211 of the Code of Federal Regulations.

Spectrum is an FDA registered and inspected Drug Establishment. Our United States Food and Drug Administration (USFDA) Registration numbers are as follows:

| | |
|---|---|
| Spectrum-Gardena, CA: | 2020632 |
| Spectrum-New Brunswick, NJ: | 2246824 |
| Spectrum-Shanghai, China: | 3006174778 |

Thank you for your interest in Spectrum products. If we may be of further assistance, please feel free to contact the Quality Assurance department at 310-516-8000 or via email at qualityassurance@spectrumchemical.com

Sincerely,

Oralia Chavez
Quality Assurance Specialist

September 22, 2017

**Certification of Compliance with current Good Manufacturing Practices**

Dear Valued Customer:

Spectrum Chemical Mfg Corp certifies that the following product(s) is produced, processed, packaged and held in compliance with current Good Manufacturing Practices (cGMP) in accordance with the applicable parts of 21 CFR, parts 210 and 211 of the Code of Federal Regulations.

| Catalog Number | Product Name |
|---|---|
| CA128 | Calcium Acetate, Powder, FCC |

Spectrum is an FDA registered and inspected Drug Establishment. Our United States Food and Drug Administration (USFDA) Registration numbers are as follows:

Spectrum-Gardena, CA: 2020632
Spectrum-New Brunswick, NJ: 2246824
Spectrum-Shanghai, China: 3006174778

Thank you for your interest in Spectrum products. If we may be of further assistance, please feel free to contact the Quality Assurance department at 310-516-8000 or via email at qualityassurance@spectrumchemical.com

Sincerely,

Oralia Chavez
Quality Assurance Specialist

July 25, 2016

Re: Calcium Acetate, Powder, FCC- CA128

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfr. Corp. understand the concern regarding Bovine Spongiform Encephalopathy (BSE). Please be assured that the chemical

Calcium Acetate, Powder, FCC- CA128

is BSE/TSE free.

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag-Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature

July 25, 2016

Re: Calcium Acetate, Powder, FCC- CA128

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfr. Corp. understand the concern regarding the presence of allergens in raw materials. Please be assured that the following chemical does not contain (Milk; Egg; Fish; Shellfish; Sulfur dioxide and sulfites at concentrations of more than 10 mg/kg or 10 mg/liter expressed as $SO_2$; Lupin; Tree nuts; Mollusks; Wheat; Peanuts; Soy; Cereals containing Gluten; Celery; Mustard; Sesame Seed).

Calcium Acetate, Powder, FCC- CA128

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag-Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

This document has been produced electronically and is valid without a signature

July 25, 2016

Re: Calcium Acetate, Powder, FCC- CA128

To Whom It May Concern:

Thank you for your interest in Spectrum high quality chemicals.

We at Spectrum Chemical Mfg. Corp. understand the concern regarding Aflatoxins in raw materials. To the best of our knowledge, the product listed below is not contaminated with Aflatoxins. Aflatoxins are not used in production. The following product does not come in contact with Aflatoxins at any stage of production.

Calcium Acetate, Powder, FCC- CA128

If you have any further questions, please contact Tech Services at (310) 516-8000 Extension 5471, or by email at techservices@spectrumchemical.com.

Sincerely,

Darlene Dagdag-Lyudmirskiy
Technical Services
Spectrum Chemical Mfr. Corp.

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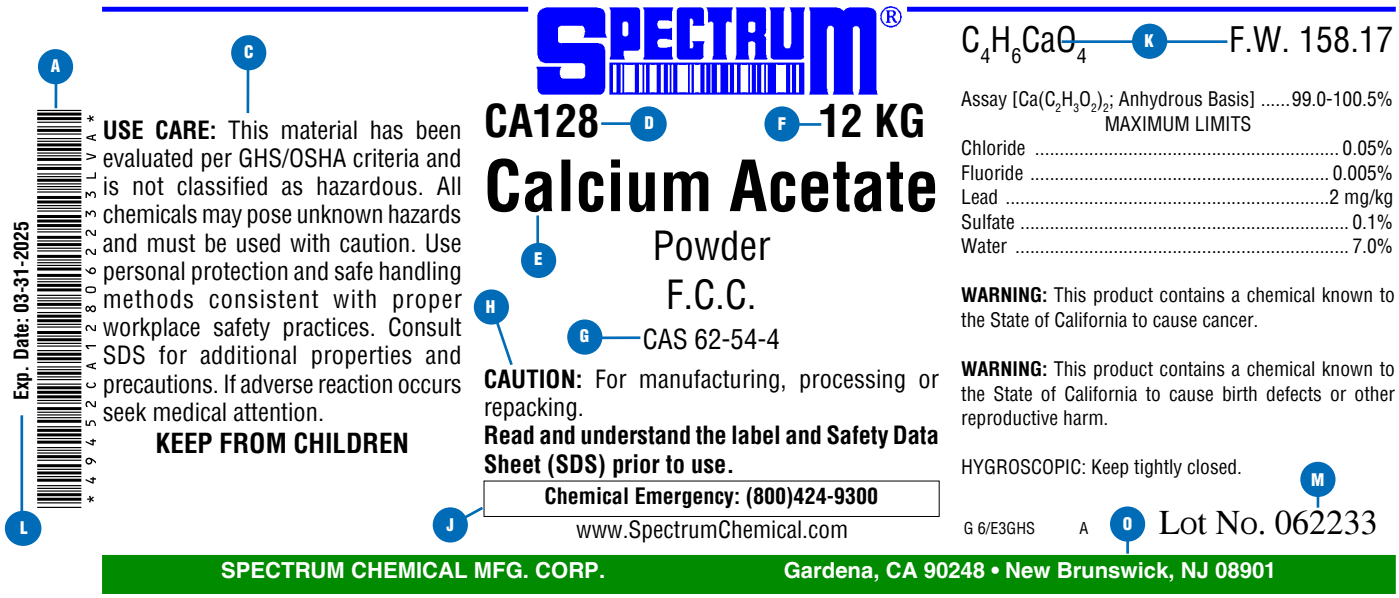
spectrum®
CHEMICAL MFG CORP

# Label Information

The Spectrum label presents technical and safety information in an easily understood format. Our technical specialists stay abreast of the latest requirements of the Globally Harmonized System for Classification and Labelling of Chemicals (GHS), as well as the Occupational Safety and Health Administration (OSHA), the Food and Drug Administration (FDA) and other government regulatory agencies in order to ensure compliance, accuracy and concise hazard communication.




- **A** Bar Code
- **B** GHS Hazard Pictograms
- **C** Warning, Safety Data and Precautionary Information
- **D** Product Catalog Number
- **E** Item Name, Form, Grade
- **O** Storage Color Band
- **F** Size/Quantity
- **G** Chemical Abstracts Service (CAS) Registry Number
- **H** Caution Information
- **I** DOT Shipping Information
- **J** Toll-Free 24-Hour Chemical Emergency Telephone Number
- **K** Empirical Formula, Formula Weight and Technical Specifications Panel
- **L** Expiration Information
- **M** Lot Number
- **N** Kosher Certified by Kosher Supervision of America (KSA).

This color-coded band indicates the hazard most likely to be posed by that material under storage conditions. The criteria used to assign band colors have been established by the Storage Code working group of the Society for Chemical Hazard Communication (SCHC). It is recommended that like colors be stored together, unless otherwise stated, based on the color codes indicated to the right. However, it is the responsibility of the customer to check with their local fire department for possible conflicts with our recommendations when storing hazardous chemicals.

- **YELLOW**: Oxidizer
- **RED**: Flammable
- **GREEN**: General Storage
- **BLUE**: Health Hazard
- **WHITE**: Corrosive


***Spectrum Chemical Mfg Corp***

***Corporate Headquarters:***
769 Jersey Ave.
New Brunswick, NJ 08901
732.214.1300

***West Coast Facility:***
14422 S. San Pedro St.
Gardena, CA 90248
310.516.8000

# Certificate Of Analysis

| | | | |
|---|---|---|---|
| Item Number | CA128 | Lot Number | 2GA0167 |
| Item | Calcium Acetate, Powder, FCC | | |
| CAS Number | 62-54-4 | | |
| Molecular Formula | $C_4H_6CaO_4$ | Molecular Weight | 158.17 |

| Test | Specification | | Result |
|---|---|---|---|
| | min | max | |
| ASSAY $[Ca(C_2H_3O_2)_2]$ | 99.0 - 100.5 % | | 99.7 % |
| WATER | | 7.0 % | 5.5 % |
| CHLORIDE (Cl) | | 0.05 % | <0.05 % |
| FLUORIDE | | 0.005 % | <0.005 % |
| LEAD (Pb) | | 2 mg/kg | <2 mg/kg |
| SULFATE | | 0.1 % | <0.06 % |
| IDENTIFICATION | | TO PASS TEST | PASSES TEST |
| EXPIRATION DATE | | | 15-JAN-2018 |
| DATE OF MANUFACTURE | | | 15-JAN-2016 |
| APPEARANCE | | | FINE, WHITE BULKY POWDER |

Spectrum Chemical Mfg Corp
755 Jersey Avenue
New Brunswick 08901 NJ

Certificate Of Analysis Results Certified by

Ibad Tirmizi
Director of Quality
Spectrum Chemical Mfg. Corp.

**All pharmaceutical ingredients are tested using current edition of applicable pharmacopeia.**

**Read and understand label and MSDS/SDS before handling any chemicals. All Spectrum's chemicals are for manufacturing, processing, repacking or research purposes by experienced personal only. The customer must ensure to provide its users adequate hazardous material training and appropriate protective gears before handling our chemicals.**

January 26, 2016

**RE: Lot Numbering System**

Dear Valued Customer:

This letter is to inform you of Spectrum Chemicals and Laboratory Products' Lot Numbering System. The system is based on an alpha-numerical sequence which provides the month, year and location of production.

The lot numbering system utilized until 2010 is a sequence of **six characters**, two letters followed by four numbers. The first letter represents the year, for example, Y denotes 2009 and Z denotes 2010. The second letter represents the month and site, for example, A-L denotes January through December at Spectrum's Gardena, CA facility, while M-X denotes January through December at the New Brunswick, NJ facility. The following four numbers are sequentially assigned.

**Example**: ZI0928 = The 928th material produced in California in September 2010

The lot numbering system utilized for 2011 and forward, is a sequence of **seven characters**. The first character, a number, represents the production facility:

1 = Gardena, CA Facility
2 = New Brunswick, NJ Facility
3 = China Facility

The second character, a letter, represents the year. For example, A denotes 2011 and B denotes 2012. The third character, a letter, represents the month, with A denoting January and L denoting December. The following four numbers are sequentially assigned.

**Example**: 2AA0706 = The 706th material produced in New Jersey in January 2011

Thank you for your interest with Spectrum products. Please feel free to contact us at 310-516-8000 or via email at qualityassurance@spectrumchemical.com if we may be of further assistance.

Sincerely,

Michael Dang
Manager, GMP Compliance

## Stability – Shelf Life Guidance

Product Covered: CA128, Calcium Acetate, Powder, FCC

Spectrum Chemical's manufacturing partner has assigned the following shelf life guidance for the product listed above.

The product, CA128, Calcium Acetate, Powder, FCC, is assigned a 24 months shelf life from date of manufacturing. The quality and integrity of the chemical depends on the handling and storage conditions. Please refer to the Safety Data Sheet for proper storage and handling procedures.

Adan R. Hernandez
Quality Control Manager

Corporate Headquarters
769 Jersey Avenue
New Brunswick, NJ 08901-3605

22.September.2017