

PRODUCT INFORMATION FILE – PECTIN

Contents

1	Product Information	3
1.1	Product Description	3
1.2	Production Process	3
1.3	Ingredient Declaration	4
1.4	Country of Origin / Harmonized Tariff System (HTS)	4
1.5	Chemical Abstract Services (CAS) Number	4
1.6	International Numbering System (INS) Number / E Number (European Union)	4
1.7	Lot Numbering System	4
1.8	Packaging Compliance	4
1.9	Residual Solvents	4
1.10	Chlorpyrifos	4
1.11	Heavy Metal Analysis	5
1.12	Melamine	5
1.13	Palm Oil	5
1.14	Partially Hydrogenated Oils	5
2	Regulatory / Legal Requirements	5
2.1	Regulatory Compliance	5
2.2	Allergen & Sensitizing Agent Information	6
2.3	Gluten	6
2.4	Natural Status	7
2.5	Bioengineered (BE) Status	7
2.6	Organic Status / Organic Compliant Status	7
2.7	Irradiation/ Sewage Sludge	7
2.8	Ethylene Oxide	7
2.9	Animal Derivatives	8
2.10	Dietary Fiber Source	8
2.11	BSE /TSE Statement	8
2.12	Nanotechnology	8

2.13	Proposition 65.....	8
2.14	WADA, NFL/ NFLPA and NSF Prohibited Ingredients.....	9
2.15	Animal Testing	9
2.16	California Transparency in Supply Chains Act 2010.....	9
2.17	Conflict Minerals.....	9
2.18	FDA Facility Registration	9
2.19	FSMA (Food Safety Modernization Act) Compliance.....	9
3	Food Safety Programs	10
3.1	Food Safety Programs.....	10
3.2	Foreign Supplier Verification Program (FSVP)	10
3.3	Recall Policy / Traceability Exercises.....	10
3.4	Supplier Approval Program.....	11
4	Other	11
4.1	Business Continuity.....	11
4.2	Statement of Code of Conduct	12
4.3	Sustainability.....	12
4.4	Document Control Program.....	12

1 PRODUCT INFORMATION

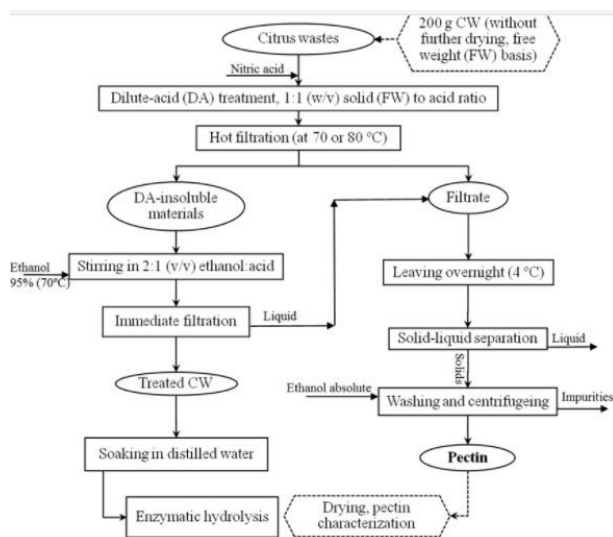
1.1 PRODUCT DESCRIPTION

This document applies to single ingredient pectin products

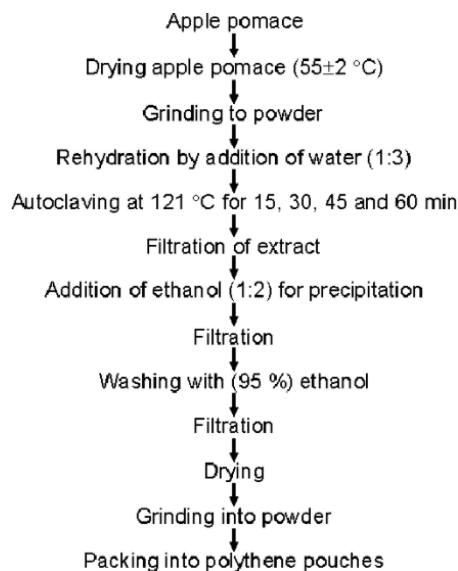
Pectins occur as white, yellow, light gray, or light brown powders. They consist mainly of the partial methyl esters of polygalacturonic acid and their sodium, potassium, calcium, and ammonium salts. They are obtained by extraction in an aqueous medium of appropriate edible plant material, usually citrus fruits or apples. No organic precipitants shall be used other than methanol, ethanol, and isopropanol. In some types of Pectins, a portion of the methyl esters may have been converted to primary amides by treatment with ammonia under alkaline conditions. Pectins dissolve in water, forming an opalescent, colloidal dispersion. They are practically insoluble in ethanol. The commercial product is normally diluted with sugars for standardization purposes. In addition to sugars, Pectins may be mixed with suitable food-grade salts required for pH control and desirable setting characteristics.

1.2 PRODUCTION PROCESS

Pectin is derived from the peel of citrus fruit including oranges, lemons and limes, or from apples. The pectin is extracted, precipitated to remove impurities and converted to the finished powdered form.



Process Flow Chart Citation: Satari, Behzad & Palhed, Jonny & Karimi, Keikhosro & Lundin, Magnus & Taherzadeh, Mohammad & Zamani, Akram. (2017). Process Optimization for Citrus Waste Biorefinery via Simultaneous Pectin Extraction and Pretreatment. *Bioresources*. 12. 1706-1722. 10.15376/biores.12.1.1706-1722. https://www.researchgate.net/publication/312586894_Process_Optimization_for_Citrus_Waste_Biorefinery_via_Simultaneous_Pectin_Extracti



Process Flow Chart Citation: Chandel, Vinay & Vaidya, Devina & Kaushal, Manisha & Gupta, A. & Verma, Anil. (2016). Standardization of eco-friendly technique for extraction of pectin from apple pomace. 7. 69-73. https://www.researchgate.net/publication/301727031_Standardization_of_eco-friendly_technique_for_extraction_of_pectin_from_apple_pomace/citation/download

1.3 INGREDIENT DECLARATION

Pectin

1.4 COUNTRY OF ORIGIN / HARMONIZED TARIFF SYSTEM (HTS)

See Country of Origin Statement for COO / HTS code

1.5 CHEMICAL ABSTRACT SERVICES (CAS) NUMBER

Pectin: 9000-69-5

1.6 INTERNATIONAL NUMBERING SYSTEM (INS) NUMBER / E NUMBER (EUROPEAN UNION)

INS: 440

E*: 440

*E number is provided for informational purposes only and does not imply all pectin Ingredion sells conforms to EU regulations. If you need product that conforms to EU regulations, please reach out to your account owner, and make a request.

1.7 LOT NUMBERING SYSTEM

Each production batch is assigned a unique identifying 8-digit lot number. The lot number is randomly generated and is printed on the product label and/or bag.

1.8 PACKAGING COMPLIANCE

We are pleased to affirm that all packaging material used by Ingredion Incorporated complies with U.S. Food, Drug, and Cosmetic Act regulations for food contact packaging.

1.9 RESIDUAL SOLVENTS

We The International Conference on Harmonization (ICH) has made available guidance relating to residual solvents in medicinal products and their components (commonly referred to as Q3C). Our pectin products fully comply with USP . We have thoroughly reviewed the manufacturing process with our suppliers and can confirm that Pectin contains less than 0.1 % Isopropyl alcohol, a Class 3 solvent in accordance with USP. No class one, two or other solvents have been used or are produced during the manufacture of this product

1.10 CHLORPYRIFOS

Ingredion Inc. companies, at our global manufacturing operations, perform routine analyses on either in-coming raw materials or finished products on an audit basis. Chlorpyrifos is included in these residue surveys and results are historically not detected (using <0.01 ppm as Limit of Detection).

Further, we have been working with our supply chain partners to ensure our raw material and purchased ingredient suppliers are aware of the new USA EPA guidance revoking the tolerance limits for chlorpyrifos and are aware that

this pesticide is banned for use in products sold into the US effective February 22, 2022. Based on this analysis we can advise that food products supplied to you by Ingredion Inc. will meet the 2021 USA EPA Final Tolerance Rule for Chlorpyrifos.

1.11 HEAVY METAL ANALYSIS

Pectin has been demonstrated to conform to current Food Chemical Codex (FCC) requirements, and will therefore meet FCC's heavy metal standards for

- Lead – no more than (NMT) 5 mg/kg

1.12 MELAMINE

Ingredion Incorporated does not intentionally add melamine or melamine-related compounds during the manufacturing process for our gum pectin products.

1.13 PALM OIL

We are pleased to affirm that our pectin products are not manufactured using palm oils.

1.14 PARTIALLY HYDROGENATED OILS

We can confirm that no partially hydrogenated oils are used in the production of our pectin products.

2 REGULATORY / LEGAL REQUIREMENTS

2.1 REGULATORY COMPLIANCE

We are pleased to affirm that our pectin products are food grade products and meet the applicable current Food Chemical Codex standards. Our pectin products are produced under Good Manufacturing Practices (GMPs.)

Pectin conforms to the following regulations

USA: 21 CFR 184.1588

2.2 ALLERGEN & SENSITIZING AGENT INFORMATION

The table below provides information concerning the presence of allergens and sensitizing agents in pectin products:

Material	Contained as ingredient?
Milk ^{1,2,3}	No
Eggs ^{1,2,3}	No
Fish ^{1,2,3}	No
Crustacean shellfish ^{1,2,3}	No
Molluscs ^{2,3}	No
Tree Nuts ^{1,2,3}	No
Peanuts ^{1,2,3}	No
Legumes	No
Soybeans ^{1,2,3}	No
Wheat ^{1,2}	No
Gluten-containing Grains ^{2,3,4}	No
Sesame seeds ^{1,2,3}	No
Celery ³	No
Mustard ^{2,3}	No
Lupin ³	No
Sulfites ^{2,3}	No
Monosodium glutamate (MSG)	No
Hydrolyzed vegetable protein (HVP)	No
Butylated hydroxyanisole (BHA)	No
Butylated hydroxytoluene (BHT)	No
Tertiary butylhydroquinone (TBHQ)	No
Colorings ⁵	No

¹Allergens identified by the FDA as causing serious allergic reactions in some individuals

²Priority Food Allergens identified by Health Canada

³Allergenic foods identified in Annex IIIa of the EU Labeling Directive

⁴Gluten-containing grains include barley, oats, rye, triticale, wheat, kamut, spelt, or their hybridized strains.

⁵FD&C certified (including Yellow 5 & 6), titanium dioxide, carmine, artificial colorings

All facilities have Allergen Control Programs in place to manage the risks associated with allergens.

2.3 GLUTEN

We are pleased to affirm that our products do not contain gluten containing grains^{2,3,4}

2.4 NATURAL STATUS

The FDA has not established a regulatory standard for what is considered natural outside of flavors, synthetic substances, and colors. Rather, it follows a policy that the term “natural” may be used provided it is not false and misleading. The FDA’s policy states:

“The agency will maintain its current policy not to restrict the use of the term ‘natural’ except for added color, synthetic substances and flavors as provided in 21 CFR 101.22. Additionally, the agency will maintain its policy regarding the use of ‘natural’ as meaning that nothing artificial or synthetic (including all color additives regardless of source) has been included in, or has been added to, a food that would not normally be expected to be in the food.” (58 Federal Register 2302, January 6, 1993).

Due to the lack of regulatory standard from the FDA regarding hydrocolloids, food additives and other ingredients that may be used in systems; it is up to the customer to determine if the product they purchase meets their internal requirements for natural. In addition, each customer is solely responsible for compliance with all pertinent legal requirements worldwide; this includes decision making regarding the use of "natural" or "all natural" in product claims.

2.5 BIOENGINEERED (BE) STATUS

Pectin does not require Bioengineered Food Disclosure Labelling.

Under the National Bioengineered Food Disclosure Standard (NBFDS,) the USDA Agricultural Marketing Service has developed a List of Bioengineered Foods to identify crops that are commercially available in a bioengineered form. Pectin is not produced from crops on this list and does not require Bioengineered Food Disclosure Labelling.

2.6 ORGANIC STATUS / ORGANIC COMPLIANT STATUS

Organic pectin is not commercially available at this time. Several of our pectin products however are organic compliant, and meet the NOP, EU and Canadian requirements for use in products labeled as “Organic” or “Made with Organic.” Our organic compliant products are non-amidated, Non-GMO, and may or may not be standardized.

2.7 IRRADIATION/ SEWAGE SLUDGE

Our sourcing and manufacturing processes do not include treatment with radiation nor do our pectin products contain sewage sludge.

2.8 ETHYLENE OXIDE

Ethylene Oxide (ETO) is not utilized in the production, storage, or transport of pectin.

Regarding presence of ETO due to other factors, such as creation of ethylene oxide during the processing or potential cross contamination, Ingredion Inc. has chosen to align with EU Regulation (EC) No. 2015/868 (Amending EU Reg. 396/2005 on pesticides) as regards the presence of ETO in food additives, to increase the MRL for ETO in additives, sum from 0.01ppm to 0.1ppm, with effect from August 2022.

2.9 ANIMAL DERIVATIVES

Based on information from our suppliers, our knowledge about the raw materials and the manufacturing process; we can confirm that no animal derivatives or by-products are used in the production of our pectin products.

2.10 DIETARY FIBER SOURCE

USA: Pectin qualifies as dietary fiber. The FDA will amend 21 CFR 101.9(c)(6)(i) to include pectin. Until such amendment takes place, the FDA is exercising enforcement discretion and will allow the labeling of pectin as dietary fiber.

2.11 BSE /TSE STATEMENT

Our pectin products are derived from botanical sources and are not manufactured using materials of bovine, sheep, goat, or human origin. These products do not come into contact with any animal origin material in which transmissible spongiform encephalopathies (TSE) or bovine spongiform encephalopathy (BSE) have been found.

2.12 NANOTECHNOLOGY

Nanotechnology is not used during the manufacture of our pectin products.

2.13 PROPOSITION 65

California Proposition 65: Safe Drinking Water and Toxic Enforcement Act of 1986 provides a chemical list of substances known to the State of California to cause cancer or reproductive toxicity.

Ingredion Inc. food systems and hydrocolloids business does not intentionally add any Proposition 65 Chemicals of Concern to pectin. Ingredion Incorporated complies with FCC requirements and the United States of America Food and Drug Administration Requirements. The finished food manufacturer should confirm that its products do not expose consumers to listed chemicals in amounts that exceed “safe harbor” levels.”

We have reviewed our pectin products and to our knowledge these products do not contain chemicals known to the State of California to cause cancer or toxicity at levels above the “no significant risk levels”.

2.14 WADA, NFL/ NFLPA AND NSF PROHIBITED INGREDIENTS

We are pleased to affirm our pectin products do not contain any substances that appear on the WADA, NFL/NFLPA or NSF prohibited lists. We do not handle any substances banned by these agencies and the risk that our products could come into contact with these prohibited substances is minimal.

2.15 ANIMAL TESTING

Please follow the link below to review Ingredion's Animal Testing Policy.

<https://www.ingredion.com/content/dam/ingredion/pdf-downloads/corporate/sustainability-documents/Animal-Testing-Policy-05-11-21.pdf>

2.16 CALIFORNIA TRANSPARENCY IN SUPPLY CHAINS ACT 2010

Ingredion Incorporated is committed to conducting business in compliance with all applicable laws and regulations, including the California Transparency in Supply Chain Act. Consistent with our Policies on Business Conduct and Core Values, we neither accept nor support the use of illegal or enforced labor.

2.17 CONFLICT MINERALS

Our pectin products do not originate in the Democratic Republic of the Congo (DRC) where minerals are mined in conditions of armed conflict and human rights abuses. Conflict minerals including tantalum, tin, gold, or tungsten are not used during the production of these products.

2.18 FDA FACILITY REGISTRATION

Ingredion Incorporated has registered all of our manufacturing facilities worldwide as required by the Public Health & Bioterrorism Preparedness & Response Act of 2002 and FSMA 2011 (Food Safety Modernization Act).

We consider the FDA registration number of each facility to be confidential information which will be shared only when required by law or on a case-by-case basis under a non-disclosure agreement.

2.19 FSMA (FOOD SAFETY MODERNIZATION ACT) COMPLIANCE

Ingredion Incorporated considers product safety to be of utmost importance and maintains robust quality, food safety, and food defense systems at all of our manufacturing facilities. Our facilities are GFSI certified.

Certified Preventive Control Qualified Individuals (PCQIs) are in place at all Ingredion manufacturing sites producing goods for sale to US and Canada customers. PCQIs have overseen the transition of our risk-based food safety management systems to align with the requirements of the Food Safety Modernization Act (FSMA) Preventive Control Rules. All have established GMP procedures and use a risk-based approach in our hazard analysis.

Food Defense Qualified Individuals (FDQIs) are in place at all Ingredion manufacturing sites producing goods for sale to US and Canada customers. FDQIs have developed robust food defense programs that comply with the requirements of the Food Safety Modernization Act (FSMA) Intentional Adulteration (IA) Rule.

3 FOOD SAFETY PROGRAMS

3.1 FOOD SAFETY PROGRAMS

Ingredion Incorporated is committed to the manufacture and sale of food, healthcare, nutritional, and pharmaceutical ingredients that are fit for use and safe to consume. All facilities owned or contracted by Ingredion Incorporated that manufacture, process, handle, or distribute food, healthcare, nutritional, or pharmaceutical ingredients for Ingredion have documented Food Safety and GMP procedures in place that provide for the safety of our products. Each facility's food safety management systems are comprehensive, and science based.

The food safety management systems drive continuous improvement and encompass a food safety risk assessment and preventive measures, good manufacturing practices, and employee training.

3.2 FOREIGN SUPPLIER VERIFICATION PROGRAM (FSVP)

Ingredion Inc. continues to enhance and support its Supplier Verification Program which includes foreign supplier verifications. For incoming raw materials or ingredients, our program identifies all known or reasonably foreseeable hazards with each food received/ imported. An evaluation of the risk is based on our hazard analysis and the supplier's performance. Reevaluation occurs at least every three years or when new information comes to light about a potential hazard or a change in supplier's performance. We conduct onsite audits of our foreign affiliates. Non-affiliate suppliers are audited when there is a reasonable probability that exposure to a hazard will result in an adverse health consequence.

Ingredion values its commitment to Food Safety and considers itself to be a strategic contributor to everyday products used in the food and beverage industries.

3.3 RECALL POLICY / TRACEABILITY EXERCISES

Ingredion Incorporated's "Product Recall Program" sets requirements for each Ingredion manufacturing facility regarding the procedures and training needed to effectively handle a potential recall situation. The index of the Standard includes the following topics:

- Introduction (Purpose, scope, responsibilities, definitions, references)
- Detection of a possible recall situation
- Notification of Corporate Quality Assurance
- Initial Investigation and Problem Assessment
- Recall Strategy
- Recall Notifications (authorities, customers, 3rd party auditors)

Issue Date: October 31, 2022

Next Review Date: October 31, 2025

Note: Nothing herein is intended as legal or regulatory advice, nor should you rely on the information contained in this position statement, which is presented solely for your independent consideration, review and verification. The information is presented in good faith as of the date set forth herein and Ingredion Incorporated assumes no obligation to update this position statement. Ingredion Incorporated makes no representations or warranties, and shall have no liability, regarding this position statement or your use of the information contained

- Recall Completion and Follow-Up Activities
- Product Recall Simulation (Traceability Exercises)

North America Quality Assurance initiates traceability exercises at each Ingredion facility at least annually. The results of the traceability exercises are reviewed by NA Quality for effectiveness and analyzed for improvement opportunities.

Any report related to food safety concern of any Ingredion product should be made to our 24-hour Customer Service line at 1-800-692-3417 or 1-800-859-8569.

3.4 SUPPLIER APPROVAL PROGRAM

Ingredion's Supplier Management Program is managed by multiple departments within Ingredion who are responsible for ensuring approved suppliers do not contribute to any risk and conform to all specified requirements.

Ingredion only uses approved suppliers who have been evaluated to conform to Ingredion's specifications. Throughout the year, Ingredion determines and applies criteria for the evaluation, selection, monitoring of performance, and the re-evaluation based on their ability to continuously provide such specified requirements. A risk-based analysis is performed on all suppliers to determine the depth of the evaluation and thus suppliers are categorized into tiers based on their ability to meet requirements, the effect on product realization, and the impact of food safety and/or product quality.

The Supplier Management Program also applies to outside contracted facilities, transportation and all other facilities which are not operated by Ingredion but are contracted to provide a service. In the absence of categorizing them by tiers, they are approved for use by meeting all the necessary documented requirements.

Supplier food safety preventative controls are evaluated by a PCQI trained individual. This determination is based on the assessment of the food safety risk from the material and from the supplier. The PCQI trained assessor verifies that there are adequate and sufficient programs, practices and procedures in place for food safety and food security.

4 OTHER

4.1 BUSINESS CONTINUITY

Ingredion Incorporated recognizes that an uninterrupted supply of purchased materials is a vital business issue for our customers. Ingredion Incorporated has an extensive network of manufacturing facilities that provide flexibility and redundancy in our ability to supply our customers. This network supports our goal which is to minimize the impact that an event might have on the supply of products to our customers. Our Business Continuity Management Program is comprised of three critical elements: Emergency Response Program, Crisis Management Program and Business Continuity Plans.

Ingredion Incorporated has conducted a general risk assessment of its operations, including the impact of natural disasters which may impact our ability to meet customer expectations. The details of this assessment are confidential and cannot be shared outside the company. The Company has robust programs to address developing and emerging issues including a crisis management program and emergency response procedures that are reviewed and exercised on a regular basis. On a regular basis each site conducts emergency response drills, reviews their crisis communication plans, and assesses potential business risks and, when appropriate, establishes plans designed to mitigate these risks.

While Ingredion Incorporated cannot guarantee that forces outside our control will never affect our ability to fulfill a supply agreement, we believe that we are well positioned to minimize the effect on major disruptions.

4.2 STATEMENT OF CODE OF CONDUCT

Please follow the link below to review Ingredion's Policies on Business Conduct (the "Policies"). The Policies are a statement of how Ingredion operates its business and lives its values. The Policies provide general guidance on legal or ethical choices our employees may face in the course of doing business and in interacting with one another.

<https://www.ingredion.com/content/dam/ingredion/pdf-downloads/corporate/code-of-conduct/COM-CODE-EN.pdf>

Our employees are all stewards of our company's culture and reputation. We are responsible for protecting the interests of the company by acting in accordance with laws, regulations, and our company values of safety, quality, integrity, respect, excellence, and innovation.

At Ingredion, nothing is more important to us than the trust of our customers. As a result, we operate and will continue to operate under these Policies in the future in all our business and community relationships.

4.3 SUSTAINABILITY

Please follow the link below to review Ingredion's latest sustainability report. <https://www.ingredion.com/na/en-us/company/meet-ingredion/sustainability.html>

4.4 DOCUMENT CONTROL PROGRAM

Ingredion North America maintains the documented Information necessary to operate an effective quality and food safety management system. Our program is documented in the standard operating procedure, Control of Documented Information, USCN-QA-SOP-003. The Ingredion Document Control Process contains controls to ensure that Documented Information is:

- Identified and formatted
- Reviewed and approved
- Available for use
- Protected

- Version and access controlled

Identification and Formatting: Documents are identified by title and where applicable by product name and product code. Documents are prepared on approved Ingredion templates. In the case of records such as certificates or audit reports these records are prepared by the issuer on their template.

Review and Approval: Documents are reviewed by identified Ingredion subject matter experts prior to being issued for use. The approver's name and approval date are recorded in the document metadata.

Review frequency is defined when a document is posted in the document database. Documents are reviewed and posted as changes occur or at the expiration date. Standard documents are reviewed every 3 years or as changes occur. The exception is the Safety Data Sheet (SDS) which does not expire and is updated only when changes occur. In the case of records such as certificates the review date is set according to the expiration date on the certificate.

Version control: Version control is maintained in the document database and document metadata. Electronic documents contain an effective date.

Available for use: Documents are posted to the document database for internal use. Documents which are approved for public view are available on our Technical Document website. Please press control + click on the link below to access our website or to submit a document request.

