



PECTIN

Pectin (E 440) is a plant-derived hydrocolloid consisting mainly of the partial methyl esters of polygalacturonic acid and their ammonium, sodium, potassium and calcium salts. It is obtained by extraction in an aqueous medium from citrus peel or apple pomace; no organic precipitant other than methanol, ethanol and propan-2-ol is used. Supplied as a free-flowing powder in high methoxyl (HM, rapid and slow set) and low methoxyl (LM, including amidated) types, standardised to the agreed gel grade.

APPLICATIONS

Jams, jellies, marmalades and fruit preparations, where HM types gel at high soluble solids and low pH and govern setting temperature, spreadability and fruit suspension.

Fermented dairy, drinking yoghurt, acidified milk drinks, confectionery jellies and beverages, where LM and amidated types gel with calcium or stabilise protein at low pH.

CITRUS & APPLE PECTIN E 440 · HM RAPID / SLOW SET · LM / AMIDATED

Specification:

IDENTITY, PHYSICAL AND CHEMICAL CHARACTERISTICS

ITEM OF TEST	TEST RESULTS	METHOD / REFERENCE
APPEARANCE	Free-flowing fine powder, free from visible foreign matter	Visual; Reg. (EU) No 231/2012, E 440(i)
COLOUR , odour, taste	White, light yellow, light grey or light brown; practically odourless, neutral taste	Visual, organoleptic; Reg. (EU) No 231/2012, E 440(i)
SOLUBILITY	Soluble in water forming a colloidal, opalescent solution; insoluble in ethanol	Reg. (EU) No 231/2012, E 440(i), identification
RAW MATERIAL , origin	Citrus peel or apple pomace, aqueous extraction	Reg. (EU) No 231/2012, E 440(i), definition
TYPE , degree of esterification (DE)	HM above 50 % (typ. 60 – 75 %); LM below 50 % (typ. 20 – 40 %)	Titrimetry, JECFA Monograph 7 (2009); EFSA classification
DEGREE OF AMIDATION , amidated LM types, max.	25 % of total carboxyl groups	Reg. (EU) No 231/2012, E 440(ii); JECFA Monograph 7 (2009)
GALACTURONIC ACID , ash-free and anhydrous basis, min.	65 %	Reg. (EU) No 231/2012, E 440(i) and (ii); JECFA Monograph 7 (2009)
LOSS ON DRYING , 105 °C, 2 h, max.	12 %	Reg. (EU) No 231/2012, E 440(i) and (ii); JECFA Monograph 7 (2009)
ACID-INSOLUBLE ASH , max.	1 % (insoluble in approx. 3N hydrochloric acid)	Reg. (EU) No 231/2012, E 440(i) and (ii)
TOTAL INSOLUBLES , max.	3 %	Reg. (EU) No 231/2012, E 440(i); JECFA Monograph 7 (2009)
SULPHUR DIOXIDE (SO₂) , anhydrous basis, max.	50 mg/kg	Reg. (EU) No 231/2012, E 440(i) and (ii); JECFA Monograph 7 (2009)
NITROGEN CONTENT , after washing with acid and ethanol, max.	1.0 % (pectin E 440(i)); 2.5 % (amidated pectin E 440(ii))	Reg. (EU) No 231/2012, E 440(i) and (ii)
SOLVENT RESIDUES , methanol, ethanol, propan-2-ol, max.	1 % singly or combined, volatile matter-free basis	Reg. (EU) No 231/2012, E 440(i) and (ii); JECFA Monograph 7 (2009), Method I
pH , 1 % solution	HM types 2.5 – 3.8; amidated LM types 4.2 – 5.0	Potentiometry; producer technical data sheet
GEL GRADE , HM types, as agreed per order	Standard 150 ° USA-SAG (145 – 155); grades up to 160 ° USA-SAG available	USA-SAG (IFT) method; producer technical data sheet
PARTICLE SIZE , sieve residue	Max. 1 % on a 0.250 mm test sieve	Sieve analysis; producer technical data sheet

Identity and purity criteria are the statutory specifications for E 440(i) pectin and E 440(ii) amidated pectin in Commission Regulation (EU) No 231/2012 and in the FAO/WHO JECFA monograph for pectins (Monograph 7, 2009). Degree of esterification, gel grade, setting behaviour and standardisation are agreed per order.

RESIDUE LIMITS

ITEM OF TEST	TEST RESULTS	METHOD / REFERENCE
LEAD (Pb) , max.	5 mg/kg	Reg. (EU) No 231/2012, E 440; ICP-MS / AAS
ARSENIC (As) , max.	3 mg/kg	Reg. (EU) No 231/2012, E 440; ICP-MS / AAS
CADMIUM (Cd) , max.	1 mg/kg	Reg. (EU) No 231/2012, E 440; ICP-MS / AAS
MERCURY (Hg) , max.	1 mg/kg	Reg. (EU) No 231/2012, E 440; cold vapour AAS
PESTICIDE RESIDUES	In accordance with the maximum residue levels for the citrus and apple raw material	Reg. (EC) No 396/2005; GC-MS / LC-MS-MS
RADIONUCLIDES , caesium-137, strontium-90	On request; determined per batch on customer agreement	Gamma / beta spectrometry, on request

Toxic element maxima are those of Commission Regulation (EU) No 231/2012 for E 440(i) pectin and E 440(ii) amidated pectin. Batch results are reported in the certificate of analysis.

MICROBIOLOGICAL CHARACTERISTICS

ITEM OF TEST	TEST RESULTS	METHOD / REFERENCE
TOTAL PLATE COUNT (TPC) , max.	1,000 CFU/g	ISO 4833-1; producer technical data sheet
YEASTS AND MOULDS IN TOTAL , max.	100 CFU/g	ISO 21527-2; producer technical data sheet
COLIFORMS / ENTEROBACTERIACEAE , max.	10 CFU/g	ISO 21528-2; producer technical data sheet
Escherichia coli	Absent in 1 g	ISO 16649-2; producer technical data sheet
Salmonella spp.	Absent in 25 g	ISO 6579-1

Neither Regulation (EU) No 231/2012 nor the JECFA monograph sets microbiological criteria for pectin; the limits above are the producer specification values, tested by the ISO reference methods stated. Absence of pathogens including Salmonella in 25 g is a producer specification requirement. Sample preparation according to ISO 6887-4.

INS / E number: E 440 – E 440(i) pectin, E 440(ii) amidated pectin

CAS No.: 9000-69-5

CN / HS code: 1302 20 (pectic substances, pectinates and pectates)

Regulatory status: food additive authorised under Reg. (EC) No 1333/2008; specifications per Reg. (EU) No 231/2012

Appearance: free-flowing powder, white to light brown

Applications: jams, jellies and fruit preparations, confectionery, fermented and acidified dairy, beverages

Packaging: uncoated four-ply kraft paper bags; woven polypropylene sacks 25 – 1,000 kg net

Storage & transport: dry, clean, well-ventilated premises, max. +25 °C, relative humidity max. 65 %, protected from sunlight and odours

Shelf life: 24 months from production in unopened original packaging

COMPLIANCE & DOCUMENTATION

- Pectin is authorised as a food additive (E 440) under Regulation (EC) No 1333/2008 and complies with the purity criteria of Commission Regulation (EU) No 231/2012 for E 440(i) pectin and E 440(ii) amidated pectin.
- Specifications are additionally consistent with the FAO/WHO JECFA monograph for pectins (INS 440, Monograph 7, 2009).
- Sulphur dioxide may be present as a residue up to 50 mg/kg; a content above 10 mg/kg triggers allergen labelling of the final consumer product under Regulation (EU) No 1169/2011.
- Standardisation with sugars, buffer salts or other permitted additives, the degree of esterification and the gel grade are agreed per order and declared on the label and in the certificate of analysis.
- Non-GMO within the meaning of Regulations (EC) No 1829/2003 and (EC) No 1830/2003; not irradiated.
- Halal and kosher certification, third-party audit certificates of the producing plant (FSSC 22000 / BRCGS) and allergen statements are available on request.
- Each consignment is accompanied by a certificate of analysis with batch-specific results.

References: Commission Regulation (EU) No 231/2012, specifications for E 440(i) pectin and E 440(ii) amidated pectin, faolex.fao.org; Regulation (EU) No 231/2012, E 440(ii), consolidated text, legislation.gov.uk; FAO/WHO JECFA, Pectins, FAO JECFA Monographs 7 (2009), fao.org; EFSA re-evaluation of pectin (E 440i) and amidated pectin (E 440ii), EFSA Journal 2017, pmc.ncbi.nlm.nih.gov; GENU pectin 150 USA-SAG type BA-KING product data sheet, floravita.hu.

This specification is issued for information purposes and does not constitute a warranty. Batch-specific values are confirmed in the certificate of analysis accompanying each consignment.