



<b>Product Name:</b> L-Citrulline DL-malate 2 to 1 powder [FO]	
<b>Synonym:</b> L-Ornithine N5-(aminocarbonyl)- mono(+)-hydroxybutanedioate; L-Citrulline malate (salt)	
<b>CAS number:</b> 54940-97-5	<b>EC number:</b> 221-678-6
<b>Molecular formula:</b> C10H19N3O8	<b>Molecular weight:</b> 309.27 g/mol
<b>Standard:</b> Corporation In-house standard	<b>Specification ref.:</b> R2_V2
<b>Issue number:</b> 3	<b>Date of Issue:</b> 06/09/2018
<b>Preparation type:</b> Synthesis	<b>Starting materials:</b> L-Citrulline [Origin: Fermentation] and malic acid
<b>Extraction solvent:</b> Not applicable	<b>Other solvents used in manufacturing:</b> None
<b>Suitable for Vegetarians:</b> Yes	<b>Suitable for Vegans:</b> Yes
<b>Compound Ingredients [descending order]:</b> None	<b>Principle ref.:</b> BPM118 [Country of Origin: China]
<b>Analysis</b>	<b>Specification</b>
Appearance	White to almost white crystalline powder
State of Solution (Transmittance)	Colourless, Not less than 98%
Specification rotation	16.5° to 18.5°
Assay [HPLC]	NLT 98.0% (Typically, more than 99.0%)
L-Citrulline [HPLC]	62.5% to 74.2%
DL-malate [HPLC]	26.4% to 36.4%
Loss on drying	NMT 0.3%
Residue on ignition	NMT 0.1%
Chloride [Cl]	NMT 0.02% [200 ppm]
Ammonium (NH4)	NMT 0.02% [200 ppm]
Sulphate [SO4]	NMT 0.02% [200 ppm]
Iron [Fe]	NMT 10 ppm
Sieve analysis*	NLT 70.0% through 60 mesh
Bulk density [Loose]*	0.4 g/ ml to 0.7 g/ ml
Bulk density [Tapped]*	0.6 g/ ml to 0.9 g/ ml
Heavy Metals (Pb)	NMT 10 ppm
Lead (Pb)	NMT 3 ppm
Arsenic (As)	NMT 1 ppm
Cadmium (Cd)*	NMT 1 ppm
Mercury (Hg)*	NMT 0.1 ppm
Total plate count	NMT 1000 CFU/ g
Yeast & mould	NMT 100 CFU/ g

Coliforms	NMT 10 CFU/ g
E. Coli	Negative/ g
Salmonella	Negative / 25 g
Pseudomonas*	Negative/ g
Staphylococcus aureus*	Negative / 10 g

\*These parameters may not be tested for every batch and are usually tested on a periodic basis.

**Shelf life:** Recommended to retest after 3 years from the date of manufacture.

**Storage conditions:** Store at room temperature, away from heat, light and moisture.

**Remarks:** L-Citrulline DL-malate 2 to 1 powder is hygroscopic in nature, Vita Actives has optimised the particle size of the material to minimise water adsorption however, it is advised to use controlled humidity environment [RH<55%] to process this material.

**Regulatory Statements:**

**GMO Status:** This product is GMO FREE in accordance with EU Regulations 1829/2003 and 1830/2003.

**Irradiation Status:** This product has NOT been irradiated OR treated with ETO in accordance with EU directive 1999/2/EC of 22 February 1999 concerning foods and food ingredients treated with ionisation radiation.

**TSE / BSE Statement:** This product does not contain, nor manufactured with any animal products OR any materials of animal origin and does not present any risk of cross contamination by TSE/BSE causing organisms.

**Nano materials:** This material is not produced using Nanotechnology and is free from Nano-particles, and so complies with EU regulations 1169/2011 and 2015/2283.

Does the raw material CONTAIN or is it DERIVED from or could it be cross-contaminated by any of the following			
INGREDIENT	YES	NO	QUANTITY/ADDITIONAL INFO
BHA/BHT/Related compounds	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Bovine products or by-products	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Celery or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Cereals containing Gluten (Wheat, rye, barley, oats, spelt, kamut or their hydrolysed strains) or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Crustaceans/Shellfish or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Eggs or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Fish or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Milk or Milk products (including lactose)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Mustard seed or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Nuts or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Peanuts or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Sesame seeds or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
SO2 or Sulphites at concentration over 10mg/kg	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Soya beans or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Molluscs or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Lupin or products thereof	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

<p><i>Signature:</i> <i>Name: Ms. EAKTA</i> <i>Position: Technical Support Manager</i></p>	<p><i>Edition number: 03</i> <i>Date of Issue: 06/09/2018 [supersedes specifications issued previous to this date]</i> <i>Reason for amendment: Change in Assay MOA to HPLC, added Ammonium content, LOD content</i></p>
--	--

*This is a computer generated report therefore it is valid without signatures.*

The information provided in the document is based on our current knowledge and experience, however, without any obligation and without any assumption of liability on our part. The information may be used at your discretion and risk. It does not relieve you from carrying out your own precautions and tests. You must comply with all the applicable laws, rules and regulations and observe all third party rights.