Formulation advice Ethyl Ascorbic Acid

Recommended dosage

0.1 – 3.0 % Ethyl Ascorbic Acid

0.5 – 3.0 % buffer solution

Recommended pH

The final pH of the formulation containing Ethy Ascorbic Acid is best to be around 6.5. The acceptable range of pH is between 5.5 and 7.0.

Recommended buffer systems

Citric acid buffer

Citric acid	1%
Trisodium citrate	15%
Water	84%

Citric acid/phosphate buffer

A.) Citric acid anhydrous	19,21 g filled up to 1000 ml with Aqua dest.
A.) Citric acid monohydrate	21,01 g filled up to 1000 ml with Aqua dest.
B.) Disodium hydrogenphosphate anhydrous	28,39 g filled up to 1000 ml with Aqua dest.
B.) Disodium hydrogenphosphate dihydrate	35,60 g filled up to 1000 ml with Aqua dest.
B.) Disodium hydrogenphosphate dodecahydrate	71,62 g filled up to 1000 ml with Aqua dest.

pH	**,0**	**,1**	**,2**	**,3**	**,4**	**,5**	**,6**	**,7**	**,8**	**,9**
2					10,8	13,2	15,6	18,1		
3	20,6	22,6	24,7	26,6	28,5	30,3	32,2	33,9	35,5	37,1
4	38,6	40,0	41,4	42,7	44,0	45,4	46,7	48,0	49,3	50,4
5	51,5	52,6	53,6	54,7	55,8	56,9	58,0	59,2	60,5	61,8
6	63,2	64,6	66,1	67,7	69,3	71,0	72,8	74,8	77,2	79,8
7	82,4	85,6	86,9	88,8	90,7	92,1	93,6	94,6	95,7	

For production of the wished buffer solution with the pH given in combination of the first row with first line:
Take the volume of solution B mentioned at the point of intersection and fill it up to 100 ml with solution A.

Formulation

Solution

Dissolve 2% Ethyl Ascorbic Acid (EAA) in 10 % water and add 2 % citric acid buffer and 3.75 % of a 10% KOH solution while stirring (pH 6.0). Then mix with water up to 100 %. Adjust the pH with KOH 10% solution until pH 6,5 is reached.

Emulsion

Dissolve 2 % Ethyl Ascorbic Acid (EAA) with 2 % buffer solution and 10% deionized water in advance. Add it to the paste below 55 °C. Then continue with the emulsifying process. Under stirring add 10% KOH solution until the final pH is reached.

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Formulations with polymer

It is recommended to us natural or nonionic polymers. Carbomer thickeners are not recommended or a careful way for formulation has to be found.

Following synthetic polymers might work

Carbopol ETD2050 (NOVEON) Acrlyates/C10-30 Alkyl Acrylate Crosspolymer

Carbopol Ultrez 10 (NOVEON) Carbomer

Aqupec HV505 Acrylic Acid Polymer

Formulations with stearic acid

Stearic acid might affect the composition of Ethyl Ascorbic Acid. Therefore the use of stearic acid is not recommended or a proper way for formulating it has to be found.

Stabilizing agents

To improve stability it is recommended to add an anti-oxidant like Tocopherol or Tocopherol acetate.

Also the addition of an UV absorber (like for example Benzophenon-3) can increase stability.

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