

Status: Currently Official on 16-Feb-2025
Official Date: Official as of 01-May-2017
Document Type: Reagents
DocId: GUID-8106C927-DC1E-463F-87EC-A579D71B40B9_2_en-US
DOI: https://doi.org/10.31003/USPNF_R3381_02_01
DOI Ref: 9xcx9

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0.1 N Perchloric Acid in Glacial Acetic Acid VS

HClO_4 , 100.46
10.05 g in 1000 mL

[NOTE—Where called for in the tests and assays, this volumetric solution is specified as “0.1 N perchloric acid.” Thus, where 0.1 N or other strength of this volumetric solution is specified, the solution in glacial acetic acid is to be used, unless the words “in dioxane” are stated. (See also [0.1 N Perchloric Acid in Dioxane VS.](#))]

Mix 8.5 mL of [perchloric acid](#) with 500 mL of [glacial acetic acid](#) and 21 mL of [acetic anhydride](#), cool, and add [glacial acetic acid](#) to make 1000 mL. Alternatively, the solution may be prepared as follows. Mix 11 mL of 60% [perchloric acid](#) with 500 mL of [glacial acetic acid](#) and 30 mL of [acetic anhydride](#), cool, and add [glacial acetic acid](#) to make 1000 mL.

Allow the prepared solution to stand for 1 day for the excess acetic anhydride to be combined, and determine the water content by *Method I* (see [Water Determination \(921\)](#)), except to use a test specimen of about 5 g of the 0.1 N perchloric acid that is expected to contain approximately 1 mg of water and the *Reagent* (see *Reagent* in [Water Determination \(921\), Method Ia](#)) diluted such that 1 mL is equivalent to about 1–2 mg of water. If the water content exceeds 0.5%, add more acetic anhydride. If the solution contains no titratable water, add sufficient water to obtain a content of between 0.02% and 0.5% of water. Allow the solution to stand for 1 day, and again titrate the water content. The solution so obtained contains between 0.02% and 0.5% of water, indicating freedom from acetic anhydride.

Standardization: Accurately weigh about 700 mg of [potassium biphthalate](#), previously crushed lightly and dried at 120° for 2 h, and dissolve it in 50 mL of [glacial acetic acid](#) in a 250-mL flask. Add 2 drops of [crystal violet TS](#), and titrate with the perchloric acid solution until the violet color changes to blue-green. Deduct the volume of the perchloric acid consumed by 50 mL of the [glacial acetic acid](#). Each 20.422 mg of potassium biphthalate is equivalent to 1 mL of 0.1 N perchloric acid.

$$N = \frac{\text{g KHC}_8\text{H}_4\text{O}_4}{0.20422 \times \text{mL HClO}_4 \text{ (corrected for the blank)}}$$

[NOTE—If this volumetric solution is used in a qualitative application such as pH adjustment, dissolution medium, or diluent, its standardization is not required.]

Auxiliary Information - Please [check for your question in the FAQs](#) before contacting USP.

Topic/Question	Contact	Expert Committee
0.1 N PERCHLORIC ACID IN GLACIAL ACETIC ACID VS	Margareth R.C. Marques Principal Scientific Liaison	HDQ Headquarters

Most Recently Appeared In:

Pharmacopeial Forum: Volume No. PF 41(6)

Current DocID: [GUID-8106C927-DC1E-463F-87EC-A579D71B40B9_2_en-US](#)

Previous DocID: [GUID-8106C927-DC1E-463F-87EC-A579D71B40B9_1_en-US](#)

DOI: https://doi.org/10.31003/USPNF_R3381_02_01

DOI ref: [9xcx9](#)