Assay—

Dilute phosphoric acid—Prepare a mixture of water and phosphoric acid (4:1).

Buffer solution—Dissolve 68 g of monobasic potassium phosphate in water, dilute with water to 1000 mL, and mix. Dilute 100 mL of this solution with water to 1000 mL, add 5 mL of triethylamine, mix, and adjust with *Dilute phosphoric acid* to a pH of 3.0.

Mobile phase—Prepare a filtered and degassed mixture of *Buffer solution* and acetonitrile (79:21). Make adjustments if necessary (see *System Suitability* under *Chromatography* ⟨621⟩).

Standard preparation—Dissolve an accurately weighed quantity of USP Guanfacine Hydrochloride RS in a mixture of acetonitrile and water (3:1) to obtain a solution having a known concentration of about 1 mg of USP Guanfacine Hydrochloride RS per mL. Transfer 2.0 mL of this solution to a 50-mL volumetric flask, dilute with *Mobile phase* to volume, and mix.

Assay preparation—Transfer an accurately weighed quantity of about 50 mg of Guanfacine Hydrochloride to a 50-mL volumetric flask, dissolve in and dilute with a mixture of acetonitrile and water (3:1) to volume, and mix. Transfer 2.0 mL of this solution to a 50-mL volumetric flask, dilute with *Mobile phase* to volume, and mix.

Chromatographic system (see *Chromatography* ⟨621⟩)—The liquid chromatograph is equipped with a 220-nm detector and a 4.6-mm × 15-cm column that contains packing L1. The flow rate is about 1 mL per minute. Chromatograph the *Standard preparation*, and record the responses as directed for *Procedure:* the capacity factor, *k′*, is between 2 and 5; the column efficiency is not less than 1500 theoretical plates; the tailing factor is not more than 2; and the relative standard deviation for replicate injections is not more than 2.0%.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard preparation* and the *Assay preparation* into the chromatograph, record the chromatograms, and measure the areas for the major peaks. Calculate the quantity, in mg, of $C_9H_9Cl_2N_3O \cdot HCl$ in the portion taken by the formula:

$$1.25C(r_U/r_S)$$

in which *C* is the concentration, in µg per mL, of USP Guanfacine Hydrochloride RS in the *Standard preparation;* and r_U and r_S are the guanfacine hydrochloride peaks obtained from the *Assay preparation* and the *Standard preparation*, respectively.

Guanfacine Tablets

» Guanfacine Tablets contain an amount of Guanfacine Hydrochloride ($C_9H_9Cl_2N_3O \cdot HCl$) equivalent to not less than 90.0 per cent and not more than 110.0 per cent of the labeled amount of guanfacine ($C_9H_9Cl_2N_3O$).

Packaging and storage—Preserve in tight, light-resistant containers.

USP Reference standards ⟨11⟩**—**
USP Guanfacine Hydrochloride RS

Identification—

A: The retention time of the major peak in the chromatogram of the *Assay preparation* corresponds to that of the *Standard preparation* as obtained in the *Assay.*

B: It responds to the *Thin-Layer Chromatographic Identification Test* ⟨201⟩, the test solution and the Standard solution being prepared at a concentration of 2 mg per mL in methanol, and a solvent system consisting of a mixture of ethyl acetate, glacial acetic acid, and water (5:2:2) being used.

Dissolution ⟨711⟩**—**

Medium: water; 500 mL.

Apparatus 2: 50 rpm.

Time: 45 minutes.

Procedure—Determine the amount of $C_9H_9Cl_2N_3O$ dissolved, employing the procedure set forth in the *Assay* and making any necessary modifications.

Tolerances—Not less than 75% *(Q)* of the labeled amount of $C_9H_9Cl_2N_3O$ is dissolved in 45 minutes.

Uniformity of dosage units ⟨905⟩**:** meet the requirements.

Assay—

pH 2.5 Diethylamine phosphate solution—Add 10.3 mL of diethylamine to about 70 mL of water. Adjust with phosphoric acid to a pH of 2.5, dilute with water to 100 mL, and mix.

Reagent solution—Dissolve an accurately weighed quantity of 2,6-dichlorophenylacetic acid in *Mobile phase*, and dilute quantitatively, and stepwise if necessary, to obtain a solution having a known concentration of about 18 µg per mL.

Mobile phase—Dissolve 600 mg of monobasic potassium phosphate and 3 mL of *pH 2.5 Diethylamine phosphate solution* in 480 mL of water, and mix. Adjust with 0.2 N sodium hydroxide to a pH of 4.0. While swirling, add 520 mL of acetonitrile. Filter and degas. Make adjustments if necessary (see *System Suitability* under *Chromatography* ⟨621⟩).

Internal standard solution—Prepare a solution of butylparaben in *Mobile phase* containing 0.5 mg per mL.

Standard preparation—Dissolve an accurately weighed quantity of USP Guanfacine Hydrochloride RS in *Mobile phase* to obtain a solution having a known concentration of about 0.23 mg per mL. Transfer 5.0 mL of this solution to a 25-mL volumetric flask, and add 5.0 mL each of the *Reagent solution* and the *Internal standard solution*. Dilute with *Mobile phase* to volume, and mix.

Assay preparation—Weigh and finely powder not fewer than 20 Tablets. Transfer an accurately weighed portion of the powder, equivalent to about 10 mg of guanfacine, to a 100-mL volumetric flask. Add 50 mL of *Mobile phase*, and heat on a steam bath for 5 minutes. Cool to room temperature, dilute with *Mobile phase* to volume, and mix. Transfer 10.0 mL of this solution to a 25-mL volumetric flask, add 5.0 mL of *Internal standard solution*, dilute with *Mobile phase* to volume, and mix.

Chromatographic system (see *Chromatography* ⟨621⟩)—The liquid chromatograph is equipped with a 220-nm detector and a 3.9-mm × 30-cm column that contains packing L1. The flow rate is about 1 mL per minute. Chromatograph the *Standard preparation,* and record the peak responses as directed for *Procedure:* the relative retention times are about 0.4 for guanfacine, 0.6 for 2,6-dichlorophenylacetic acid, and 1.0 for butylparaben; the resolution, *R,* between guanfacine and 2,6-dichlorophenylacetic acid is not less than 1.5, and the resolution, *R,* between 2,6-dichlorophenylacetic acid and butylparaben is not less than 1.5; and the relative standard deviation for replicate injections is not more than 2.0%.

Procedure—Separately inject equal volumes (about 20 µL) of the *Standard preparation* and the *Assay preparation* into the chromatograph, record the chromatograms, and measure the responses for the major peaks. Calculate the quantity, in mg, of guanfacine ($C_9H_9Cl_2N_3O$) in the portion of Tablets taken by the formula:

$$(246.09/282.55)(0.25C)(R_U / R_S)$$

in which 246.09 and 282.55 are the molecular weights of guanfacine and guanfacine hydrochloride, respectively; *C* is the concentration, in µg per mL, of USP Guanfacine Hydrochloride RS in the *Standard preparation;* and R_U and R_S are the peak response ratios of guanfacine to butylparaben obtained from the *Assay preparation* and the *Standard preparation,* respectively.

Gutta Percha

» Gutta Percha is the coagulated, dried, purified latex of the trees of the genera *Palaquium* and *Payena* and most commonly *Palaquium gutta* (Hooker) Baillon (Fam. Sapotaceae).

Packaging and storage—Preserve under water in well-closed containers, protected from light.

Residue on ignition ⟨281⟩: not more than 1.7%.