IMPURITIES

• **ORGANIC IMPURITIES**

Diluent: Prepare as directed in the *Assay*.

Buffer: 6.8 g/L of monobasic potassium phosphate in water. Adjust with phosphoric acid to a pH of 3.0.

Solution A: Acetonitrile, methanol, and *Buffer* (25:20:55)

Solution B: Acetonitrile, methanol, and *Buffer* (40:5:55)

Mobile phase: See *Table 1*.

Table 1

Time (min)	Solution A (%)	Solution B (%)
0	100	0
12	100	0
15	0	100
60	0	100
65	100	0
70	100	0

Standard solution: 0.6 µg/mL of USP Alprazolam RS in *Diluent*

Sample solution: Nominally 200 µg/mL of alprazolam in *Diluent*. Prepare using 10 Tablets, and pass through a suitable filter.

Chromatographic system

(See *Chromatography* ⟨621⟩, *System Suitability*.)

Mode: LC

Detector: UV 240 nm

Column: 4.6-mm × 15-cm; 5-µm packing L7

Column temperature: 30°

Flow rate: 1.2 mL/min

Injection volume: 25 µL

System suitability

Sample: *Standard solution*

Suitability requirements

Theoretical plates: NLT 2000

Tailing factor: NMT 1.5

Relative standard deviation: NMT 6.0%

Analysis

Samples: *Standard solution* and *Sample solution*

Calculate the percentage of each impurity in the portion of Tablets taken:

$$\text{Result} = (r_U/r_S) \times (C_S/C_U) \times (1/F) \times 100$$

r_U = peak response of each impurity from the *Sample solution*

r_S = peak response of alprazolam from the *Standard solution*

C_S = concentration of USP Alprazolam RS in the *Standard solution* (µg/mL)

C_U = nominal concentration of alprazolam in the *Sample solution* (µg/mL)

F = relative response factor (see *Table 2*)

Acceptance criteria: See *Table 2*. Disregard any peaks less than 0.05%.

Table 2

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Alprazolam related compound A[a,b]	0.8	—	—
Alprazolam	1.0	—	—
2-Amino-5-chlorobenzophenone	2.9	1.9	0.5
Any other unknown impurity	—	1.0	0.5
Total impurities	—	—	2.0

[a] 2-(2-Acetylhydrazino)-7-chloro-5-phenyl-3*H*-1,4-benzodiazepine.

[b] Disregard the peak due to alprazolam related compound A, because it is a process impurity in alprazolam.

ADDITIONAL REQUIREMENTS

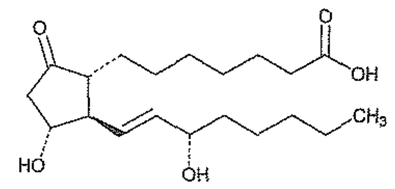
• **PACKAGING AND STORAGE:** Preserve in tight containers, and store at controlled room temperature.

• **LABELING:** When more than one *Disintegration* test is given, the labeling states the *Disintegration* test used only if *Test 1* is not used. When more than one *Dissolution* test is given, the labeling states the *Dissolution* test used only if *Test 1* is not used.

• **USP REFERENCE STANDARDS** ⟨11⟩

USP Alprazolam RS

Alprostadil



$C_{20}H_{34}O_5$ 354.48

Prost-13-en-1-oic acid, 11,15-dihydroxy-9-oxo-, (11α,13*E*,15*S*)-;

(1*R*,2*R*,3*R*)-3-Hydroxy-2-[(*E*)-(3*S*)-3-hydroxy-1-octenyl]-5-oxocyclopentaneheptanoic acid [745-65-3].

DEFINITION

Alprostadil contains NLT 95.0% and NMT 105.0% of alprostadil ($C_{20}H_{34}O_5$), calculated on the anhydrous basis.

[**CAUTION**—Great care should be taken to prevent inhaling particles of Alprostadil and exposing the skin to it.]

IDENTIFICATION

• **A. INFRARED ABSORPTION** ⟨197M⟩

ASSAY

• **PROCEDURE**

Use freshly prepared solutions.

Mobile phase: Methanol, acetonitrile, and 0.1 M monobasic potassium phosphate (2:1:2). Adjust with phosphoric acid to a pH of 3.0.

Diluent: Methanol and water (90:10)

Internal standard solution: 0.05 mg/mL of ethylparaben in *Diluent*

Standard stock solution: 0.3 mg/mL of USP Alprostadil RS in *Diluent*

Standard solution: 0.2 mg/mL of USP Alprostadil RS prepared by combining 2.0 mL of *Standard stock solution* with 1.0 mL of *Internal standard solution*

System suitability stock solution: 4.5 µg/mL of USP Prostaglandin A_1 RS in *Standard solution*

System suitability solution: Combine 2.0 mL of *System suitability stock solution* with 1.0 mL of *Internal standard solution*.

Sample stock solution: 0.3 mg/mL of Alprostadil in *Diluent*

Sample solution: 0.2 mg/mL of Alprostadil prepared by combining 2.0 mL of *Sample stock solution* and 1.0 mL of *Internal standard solution*