Add the following:

▲Lamotrigine Tablets

DEFINITION
Lamotrigine Tablets contain NLT 90.0% and NMT 110.0% of the labeled amount of lamotrigine ($C_9H_7Cl_2N_5$).

IDENTIFICATION
- **A. ULTRAVIOLET ABSORPTION** ⟨**197U**⟩
  Standard solution: 0.02 mg/mL of USP Lamotrigine RS in 0.01 N hydrochloric acid
  Sample solution: 0.02 mg/mL of lamotrigine from crushed powdered Tablets in 0.01 N hydrochloric acid
  Acceptance criteria: The spectra of the *Standard solution* and *Sample solution* exhibit maxima and minima at the same wavelengths.
- **B.** The retention time of the lamotrigine peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.

ASSAY

Change to read:

- **PROCEDURE**
  Buffer: 0.8 g/L of ammonium acetate. Adjust with glacial acetic acid to a pH of 4.5.
  Mobile phase: Methanol and *Buffer* (60:40)
  Standard solution: 0.05 mg/mL of USP Lamotrigine RS in *Mobile phase*
  Sample solution: Transfer • an amount equivalent to 100 mg of lamotrigine from a portion of crushed Tablets (NLT 20) • (RB 1-May-2011) to a suitable volumetric flask to obtain a nominal concentration of lamotrigine of 1.0 mg/mL. Dissolve in 70% of the flask volume of *Mobile phase* by sonicating for 20 min. Dilute with *Mobile phase* to volume. Centrifuge the solution. Quantitatively dilute a suitable volume of centrifugate with *Mobile phase* to obtain a nominal concentration of 0.05 mg/mL of lamotrigine.
  Chromatographic system
  (See *Chromatography* ⟨621⟩, *System Suitability*.)
  Mode: LC
  Detector: UV 210 nm
  Column: 4.6-mm × 15-cm; 5-µm packing L1
  Flow rate: 1 mL/min
  Injection size: 10 µL
  System suitability
  Sample: *Standard solution*
  Suitability requirements
  Tailing factor: NMT 2.0 for lamotrigine
  Relative standard deviation: NMT 2.0% for lamotrigine
  Analysis
  Samples: *Standard solution* and *Sample solution*
  Calculate the percentage of the labeled amount of lamotrigine ($C_9H_7Cl_2N_5$) in the portion of Tablets taken:

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

r_U = peak response from the *Sample solution*
r_S = peak response from the *Standard solution*
C_S = concentration of USP Lamotrigine RS in the *Standard solution* (mg/mL)
C_U = nominal concentration of lamotrigine in the *Sample solution* (mg/mL)

Acceptance criteria: 90.0%–110.0%

PERFORMANCE TESTS

Change to read:

- **DISSOLUTION** ⟨**711**⟩
  Test 1
  Medium: 0.1 N hydrochloric acid; 900 mL
  Apparatus 2: 50 rpm
  Time: 30 min
  Determine the amount of lamotrigine ($C_9H_7Cl_2N_5$) dissolved by using one of the following methods:
  Spectrometric method
  Standard stock solution: 0.15 mg/mL of USP Lamotrigine RS in *Medium* prepared as follows. Dissolve a suitable quantity in 5% of the flask volume of methanol, and then dilute with *Medium* to volume.
  Standard solution: *L*/1000 mg/mL of USP Lamotrigine RS from the *Standard stock solution* in *Medium*, where *L* is the label claim in mg/Tablet
  Sample solution: Pass a portion of the solution under test through a suitable filter of 0.45-µm pore size. Dilute with *Medium* to obtain a final theoretical concentration of *L*/1000 mg/mL, where *L* is the label claim in mg/Tablet, assuming complete dissolution of the label claim.
  Instrumental conditions
  (See *Spectrophotometry and Light-Scattering* ⟨851⟩.)
  Mode: UV
  Analytical wavelength: 267 nm
  Blank: *Medium*
  Analysis
  Calculate the percentage of the labeled amount of lamotrigine ($C_9H_7Cl_2N_5$) dissolved:

$$\text{Result} = (A_U/A_S) \times (C_S/L) \times V \times 100$$

A_U = absorbance of the *Sample solution*
A_U = absorbance of the *Standard solution*
C_S = concentration of the *Standard solution* (mg/mL)
L = label claim (mg/Tablet)
V = volume of *Medium*, 900 mL

Chromatographic method
Buffer and **Mobile phase:** Prepare as directed in the *Assay*.
Standard stock solution: 0.5 mg/mL of USP Lamotrigine RS in *Medium* prepared as follows. Dissolve a suitable quantity in 15% of the flask volume of methanol, and then dilute with *Medium* to volume.
Standard solution: *L*/1000 mg/mL of USP Lamotrigine RS from the *Standard stock solution* in *Medium* where *L* is the label claim in mg/Tablet
Sample solution: Pass a portion of the solution under test through a suitable filter of 0.45-µm pore size.
Chromatographic system
(See *Chromatography* ⟨621⟩, *System Suitability*.)
Mode: LC
Column: 4.6-mm × 15-cm; 5-µm packing L1
Detector: UV 310 nm
Flow rate: 1 mL/min
Injection size: See *Table 1*.

Table 1

Label Claim (mg/Tablet)	Injection Size (µL)
25	50
100, 150, 200	10

System suitability
Sample: *Standard solution*
Suitability requirements
Tailing factor: NMT 2.0 for lamotrigine
Relative standard deviation: NMT 2.0%
Analysis
Samples: *Standard solution* and *Sample solution*
Calculate the percentage of the labeled amount of lamotrigine ($C_9H_7Cl_2N_5$) dissolved:

$$\text{Result} = (r_U/r_S) \times (C_S/L) \times V \times 100$$

r_U = peak response from the *Sample solution*
r_S = peak response from the *Standard solution*
C_S = concentration of the *Standard solution* (mg/mL)
L = label claim (mg/Tablet)
V = volume of *Medium*, 900 mL
Tolerances: NLT 80% (*Q*) of the labeled amount of lamotrigine is dissolved.

Test 2: If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 2*.
Medium, Apparatus, and **Time:** Proceed as directed for *Test 1*.
Analysis: Determine the amount of lamotrigine dissolved using either the *Spectrometric method* or *Chromatographic method* described in *Test 1*.
Tolerances: NLT 75% (*Q*) of the labeled amount of lamotrigine is dissolved.

• **Test 3:** If the product complies with this test, the labeling indicates that it meets USP *Dissolution Test 3*.
Medium: 0.1 N hydrochloric acid; 900 mL
Apparatus 2: 50 rpm
Time: 15 min
Standard solution: (*L*/900) mg/mL of USP Lamotrigine RS in *Medium*, where *L* is the tablet label claim in mg
Sample solution: Pass a portion of the solution under test through a suitable filter of 0.45-µm pore size.
Instrumental conditions
(See *Spectrophotometry and Light-Scattering* ⟨851⟩.)
Mode: UV
Analytical wavelength: 270 nm
Cell
For Tablets labeled to contain 100, 150, or 200 mg: 0.2-cm flow cell
For Tablets labeled to contain 25 mg: 1 cm
Blank: *Medium*
Analysis
Samples: *Standard solution* and *Sample solution*
Calculate the percentage of the labeled amount of lamotrigine ($C_9H_7Cl_2N_5$) dissolved:

$$\text{Result} = (A_U/A_S) \times (C_S/L) \times V \times 100$$

A_U = absorbance of the *Sample solution*
A_U = absorbance of the *Standard solution*
C_S = concentration of the *Standard solution* (mg/mL)
L = label claim (mg/Tablet)
V = volume of *Medium*, 900 mL
Tolerances: NLT 80% (*Q*) of the labeled amount of lamotrigine is dissolved. • (RB 1-May-2011)

• **UNIFORMITY OF DOSAGE UNITS ⟨905⟩:** Meet the requirements

IMPURITIES

Change to read:

• **ORGANIC IMPURITIES**
Buffer: Prepare as directed in the *Assay*.
Mobile phase: Acetonitrile, methanol, and *Buffer* (10:30:60)
Diluent: Methanol and *Buffer* (60:40)
System suitability solution: 1 µg/mL of Lamotrigine Related Compound B RS and 0.4 mg/mL of USP Lamotrigine RS in *Diluent*
Standard solution: 1.0 µg/mL of USP Lamotrigine RS in *Diluent*
Sample solution: Transfer • an amount equivalent to 100 mg of lamotrigine from a portion of crushed Tablets (NLT 20) • (RB 1-May-2011) to a suitable volumetric flask to obtain a nominal concentration of lamotrigine of about 0.4 mg/mL. Dissolve in 70% of the flask volume of *Mobile phase* by sonicating and shaking intermittently for 30 min. Dilute with *Diluent* to volume. Pass through a membrane filter of 0.45-µm pore size.
Chromatographic system
(See *Chromatography* ⟨621⟩, *System Suitability*.)
Mode: LC
Detector: UV 210 nm
Column: 4.6-mm × 25-cm; 5-µm packing L1
Flow rate: 1 mL/min
Injection size: 5 µL
System suitability
Samples: *System suitability solution* and *Standard solution*
Suitability requirements
Resolution: NLT 2.0 between lamotrigine related compound B and lamotrigine, *System suitability solution*
Tailing factor: NMT 2.0 for lamotrigine, *Standard solution*
Relative standard deviation: NMT 10.0% for lamotrigine, *Standard solution*
Analysis
Samples: *Standard solution* and *Sample solution*
Calculate the percentage of any individual 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 individual impurity from the *Sample solution*
r_S = peak response of lamotrigine from the *Standard solution*
C_S = concentration of USP Lamotrigine RS in the *Standard solution* (mg/mL)
C_U = nominal concentration of lamotrigine in the *Sample solution* (mg/mL)
F = relative response factor for the corresponding impurity (see *Table 2*)
Acceptance criteria: See *Table 2*.

Table 2

Name	Relative Retention Time	Relative Response Factor	Acceptance Criteria, NMT (%)
Lamotrigine related compound B[a]	0.67	0.75	0.2
Lamotrigine	1.0	—	—
Lamotrigine related compound C[b]	1.5	1.0	0.5
Any individual unspecified degradation impurity	—	1.0	0.2
Total impurities	—	—	0.75

[a] 2,3-Dichlorobenzoic acid.
[b] 3-Amino-6-(2,3-dichlorophenyl)-1,2,4-triazin-5(4*H*)-one.

ADDITIONAL REQUIREMENTS

- **PACKAGING AND STORAGE:** Preserve in well-closed containers, and store at controlled room temperature.
- **LABELING:** 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 Lamotrigine RS
  USP Lamotrigine Related Compound B RS
  2,3-Dichlorobenzoic acid.
  $C_7H_4Cl_2O_2$ 191.01▲*USP34*