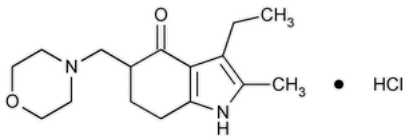
Status: Currently Official on 15-Feb-2025
Official Date: Official as of 01-Dec-2022
Document Type: USP Monographs
DocId: GUID-6E0291D2-7C8C-4D2E-B4F8-6FBCB94F7F04_5_en-US
DOI: https://doi.org/10.31003/USPNF_M54530_05_01
DOI Ref: z89dd



# Molindone Hydrochloride



$C_{16}H_{24}N_2O_2 \cdot HCl$ 312.84

4*H*-Indol-4-one, 3-ethyl-1,5,6,7-tetrahydro-2-methyl-5-(4-morpholinylmethyl)-, monohydrochloride;

3-Ethyl-6,7-dihydro-2-methyl-5-(morpholinomethyl)indol-4(5*H*)-one monohydrochloride CAS RN®: 15622-65-8; UNII: 1DWS68PNE6.

**DEFINITION**

Molindone Hydrochloride contains NLT 98.0% and NMT 101.5% of molindone hydrochloride ($C_{16}H_{24}N_2O_2 \cdot HCl$), calculated on the anhydrous basis.

**IDENTIFICATION**

• **A. Spectroscopic Identification Tests ⟨197⟩, *Infrared Spectroscopy*:** 197K. Do not dry the Standard or Sample.

***Change to read:***

• **B.** ▲The retention time of the major peak of the *Sample solution* corresponds to that of the *Standard solution*, as obtained in the *Assay*.▲ (USP 1-Dec-2022)

• **C. Identification Tests—General ⟨191⟩, *Chemical Identification Tests, Chloride*:** Meets the requirements

**ASSAY**

***Change to read:***

• **Procedure**

▲**Mobile phase:** Dissolve 1.1 g of octanesulfonic acid sodium salt in 600 mL of water. Add 400 mL of methanol, 1 mL of glacial acetic acid, and 0.5 mL of triethylamine.

**Diluent:** Methanol and 0.01 N hydrochloric acid TS (40:60)

**Standard solution:** 0.5 mg/mL of USP Molindone Hydrochloride RS in *Diluent*

**Sample solution:** 0.5 mg/mL of Molindone Hydrochloride in *Diluent*

**Chromatographic system**

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

**Mode:** LC

**Detector:** UV 254 nm

**Column:** 4.6-mm × 25-cm; 5-µm packing L11

**Temperatures**

**Autosampler:** 4°

**Column:** 35°

**Flow rate:** 1.5 mL/min

**Injection volume:** 5 µL

**Run time:** NLT 1.7 times the retention time of molindone

**System suitability**

**Sample:** *Standard solution*

**Suitability requirements**

**Tailing factor:** NMT 2.0

**Relative standard deviation:** NMT 0.73%

**Analysis**

**Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of molindone hydrochloride ($C_{16}H_{24}N_2O_2 \cdot HCl$) in the portion of Molindone Hydrochloride taken:

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

$r_U$ = peak response of molindone from the *Sample solution*

$r_S$ = peak response of molindone from the *Standard solution*

$C_S$ = concentration of USP Molindone Hydrochloride RS in the *Standard solution* (mg/mL)

$C_U$ = concentration of Molindone Hydrochloride in the *Sample solution* (mg/mL)▲ (USP 1-Dec-2022)

**Acceptance criteria:** 98.0%–101.5% on the anhydrous basis

**IMPURITIES**

• **Residue on Ignition ⟨281⟩:** NMT 0.25%

***Change to read:***

• **Organic Impurities**

▲**Mobile phase** and **Diluent:** Prepare as directed in the *Assay*.

**System suitability solution:** 2 mg/mL of USP Molindone Hydrochloride RS and 0.01 mg/mL of USP Molindone Related Compound A RS in *Diluent*

**Sensitivity solution:** 0.001 mg/mL of USP Molindone Hydrochloride RS in *Diluent*

**Standard solution:** 0.002 mg/mL each of USP Molindone Hydrochloride RS and USP Molindone Related Compound A RS in *Diluent*

**Sample solution:** 2 mg/mL of Molindone Hydrochloride in *Diluent*

**Chromatographic system:** Proceed as directed in the *Assay*, except for the *Injection volume*.

**Injection volume:** 20 µL

**System suitability**

**Samples:** *System suitability solution*, *Standard solution*, and *Sensitivity solution*

**Suitability requirements**

**Resolution:** NLT 5 between molindone and molindone related compound A, *System suitability solution*

**Relative standard deviation:** NMT 5.0% each of molindone and molindone related compound A, *Standard solution*

**Signal-to-noise ratio:** NLT 10 of molindone, *Sensitivity solution*

**Analysis**

**Samples:** *Standard solution* and *Sample solution*

Calculate the percentage of molindone related compound A in the portion of Molindone Hydrochloride taken:

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

$r_U$ = peak response of molindone related compound A from the *Sample solution*

$r_S$ = peak response of molindone related compound A from the *Standard solution*

$C_S$ = concentration of USP Molindone Related Compound A RS in the *Standard solution* (mg/mL)

$C_U$ = concentration of Molindone Hydrochloride in the *Sample solution* (mg/mL)

Calculate the percentage of any unspecified impurity in the portion of Molindone Hydrochloride taken:

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

$r_U$ = peak response of any unspecified impurity from the *Sample solution*

$r_S$ = peak response of molindone from the *Standard solution*

$C_S$ = concentration of USP Molindone Hydrochloride RS in the *Standard solution* (mg/mL)

$C_U$ = concentration of Molindone Hydrochloride in the *Sample solution* (mg/mL)

**Acceptance criteria:** See *Table 1*. The reporting threshold is 0.05%.

**Table 1**

| Name | Relative Retention Time | Acceptance Criteria, NMT (%) |
|---|---|---|
| Molindone related compound A | 0.55 | 0.10 |
| Molindone | 1.0 | — |

| Name | Relative Retention Time | Acceptance Criteria, NMT (%) |
|---|---|---|
| Any unspecified impurity | — | 0.10 |
| Total impurities | — | 0.50▲ (USP 1-Dec-2022) |

**SPECIFIC TESTS**

***Change to read:***

• **pH** ⟨791⟩

**Sample solution:** 10 mg/mL ▲in water▲ (USP 1-Dec-2022)

**Acceptance criteria:** 4.0–5.0

• **Water Determination** ⟨921⟩, *Method I*: NMT 0.5%

**ADDITIONAL REQUIREMENTS**

• **Packaging and Storage:** Preserve in tight, light-resistant containers.

***Change to read:***

• **USP Reference Standards** ⟨11⟩

USP Molindone Hydrochloride RS

▲ USP Molindone Related Compound A RS

3-Ethyl-2-methyl-1,5,6,7-tetrahydro-4*H*-indol-4-one.

$C_{11}H_{15}NO$ 177.25▲ (USP 1-Dec-2022)

**Auxiliary Information** - Please check for your question in the FAQs before contacting USP.

| Topic/Question | Contact | Expert Committee |
|---|---|---|
| MOLINDONE HYDROCHLORIDE | Documentary Standards Support | SM42020 Small Molecules 4 |

**Chromatographic Database Information:** Chromatographic Database

**Most Recently Appeared In:**
Pharmacopeial Forum: Volume No. 47(4)

**Current DocID: GUID-6E0291D2-7C8C-4D2E-B4F8-6FBCB94F7F04_5_en-US**

**DOI: https://doi.org/10.31003/USPNF_M54530_05_01**

**DOI ref: z89dd**