

# Thin Layer Chromatography Identification Test for Dextromethorphan following European Pharmacopeia Monograph on Silica Gel G 254 Plates

## INTRODUCTION

**Dextromethorphan** is a drug of the morphinan class. It is a cough suppressant with sedative, dissociative, and stimulant properties (at higher doses) and it is the active ingredient in many over-the-counter cold and cough medicines.

This application note illustrates how Silica Gel G plates are suitable for the analysis of Dextromethorphan following the European pharmacopeia identification TLC test experimental conditions (version 9.0).

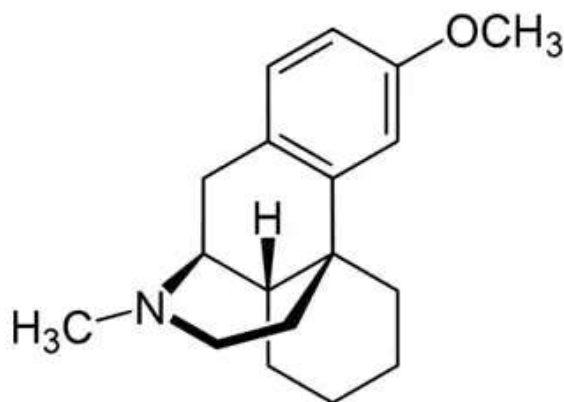


Figure 1. Dextromethorphan Hydrobromide

TLC Plate	Silica Gel 60G F <sub>254</sub> 20 x 20 cm	Injection volume	5 µL
Detection	Spray with potassium iodobismuthate solution R2 (Potassium iodobismuthate solution: Suspend 1.7 g of bismuth subnitrate R and 20 g of tartaric acid R in 40 mL of water R. To the suspension add 40 mL of a 400 g/L solution of potassium iodide R and stir for 1 h. Filter. The solution may be kept for several days in brown bottles. Mix immediately before use 5 mL of the stock solution with 15 mL of water.		
Mobile Phase	Concentrated ammonia: methanol : methylene chloride : ethyl acetate : toluene 2:13:10:20:55 (v/v/v/v/v )		
Development	Over 2/3rd of the plate		
Diluent	Methanol		
Drying	In air		
Standard	Dissolve 25 mg of standard timolol maleate in methanol and dilute to 10 ml with the same solvent		
Sample	Dissolve 25 mg substance to be examined in methanol and dilute to 10 ml with the same solvent.		

**Table 1.** Experimental Conditions

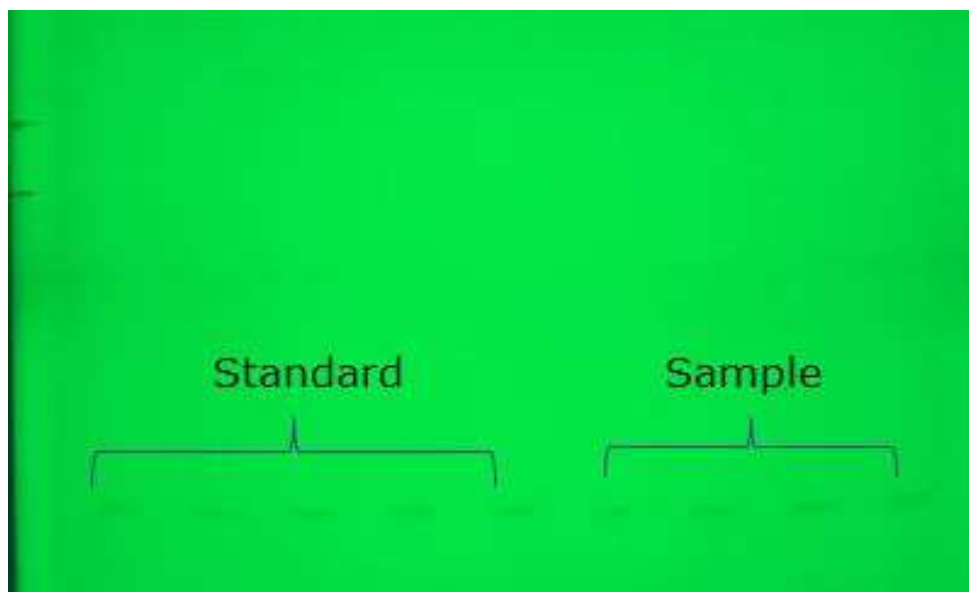


Figure 2. TLC plate development

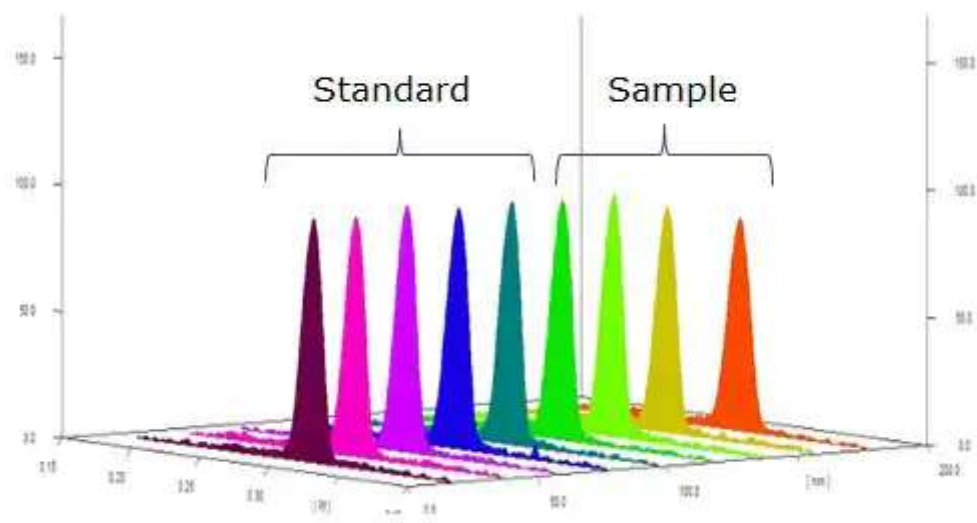


Figure 3. Chromatograms

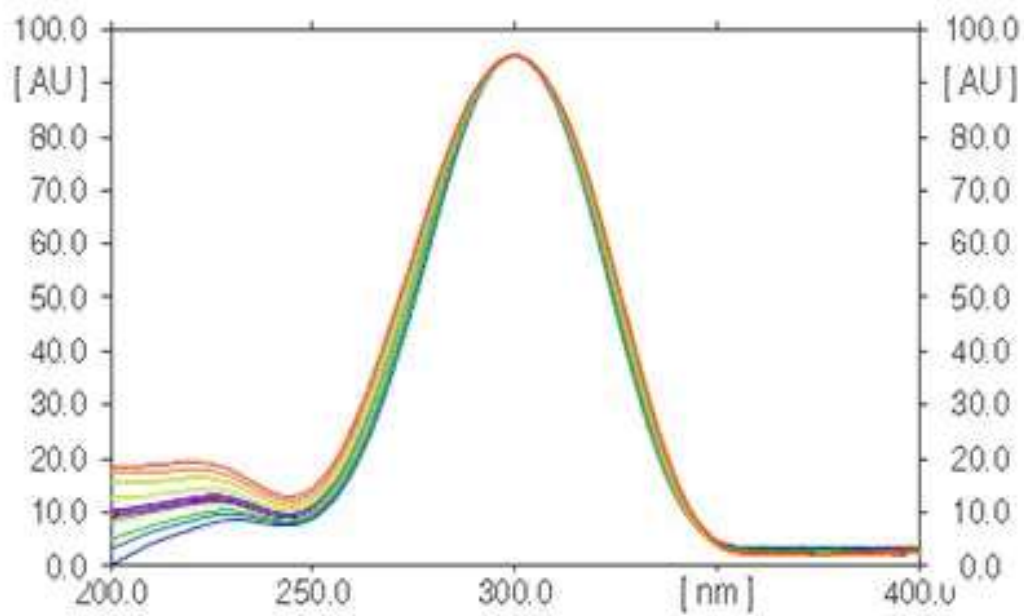


Figure 4. Spectrum

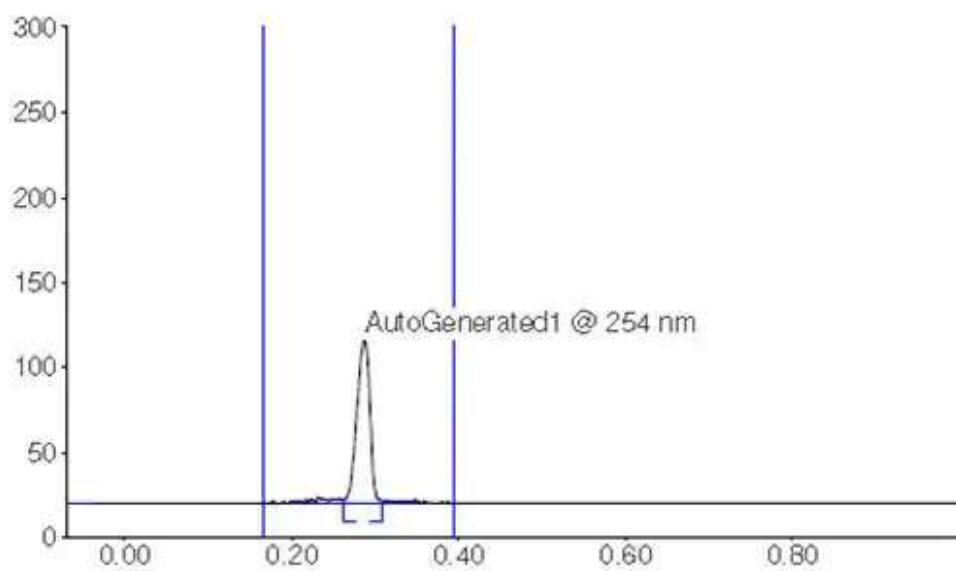
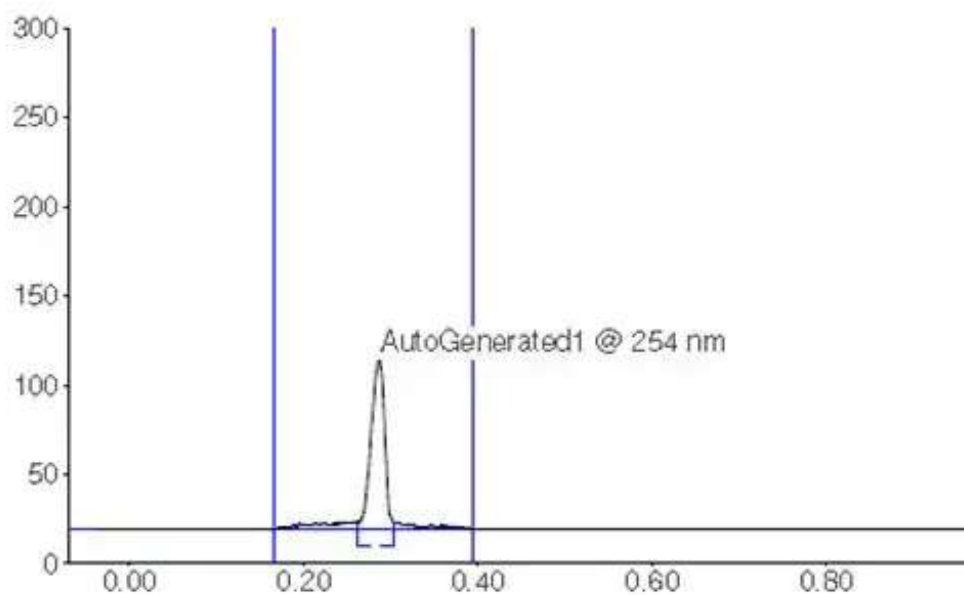


Figure 5. Chromatographic Data (Standard Solution)



**Figure 6.** Chromatographic Data (Sample Solution)

	Compound	Rf
1	Dextromethorphan	0.29

	Compound	Rf
1	Dextromethorphan	0.29









STD 1	2363
STD 2	2347
STD 3	2494
STD 4	2453
STD 5	2461

Mean	2423.6
Standard Deviation	64.7
RSD (%)	2.7

**Table 2.** Standard Repeatability

1. The principal spot in the chromatogram obtained with the test solution is similar in position, colour and size to the principal spot in the chromatogram obtained with reference solution.
2. All the spots for the reference solution have a repeatability better than 3% RSD.
3. Merck silica gel G plates provides repeatable and reproducible results for Dextromethorphan identification test and comply to all requirements as per European Pharmacopoeia.

## Materials

Product No.	Description	SDS	Pricing
<b>D0740000</b>	<b>Dextromethorphan hydrobromide</b> European Pharmacopoeia (EP) Reference Standard	<a href="#">↓</a>	<a href="#">Expand</a> 
<b>PHR1018</b>	<b>Dextromethorphan HBr</b> certified reference material, pharmaceutical secondary standard	<a href="#">↓</a>	<a href="#">Expand</a> 
<b>1.06044</b>	<b>Dichloromethane</b> for liquid chromatography LiChrosolv®	<a href="#">↓</a>	<a href="#">Expand</a> 
<b>1.00868</b>	<b>Ethyl acetate</b> for liquid chromatography LiChrosolv®	<a href="#">↓</a>	<a href="#">Expand</a> 
<b>1.05043</b>	<b>Potassium iodide</b> for analysis EMSURE® ISO, Reag. Ph Eur	<a href="#">↓</a>	<a href="#">Expand</a> 
<b>33801</b>	<b>L-(+)-Tartaric acid</b> puriss. p.a., reag. ISO, 99.5-101.0% (calc. to the dried substance)	<a href="#">↓</a>	<a href="#">Expand</a> 
<b>1.00390</b>	<b>TLC Silica gel 60G F<sub>254</sub> 25 Glass plates 20 x 20 cm</b> glass support (silica gel coated), plate L × W 20 cm × 20 cm, suitable for thin layer chromatography (TLC), pkg of 25 plates, fluorometric		<a href="#">Expand</a> 
<b>1.08327</b>	<b>Toluene</b> for liquid chromatography LiChrosolv®	<a href="#">↓</a>	<a href="#">Expand</a> 
<b>1.15333</b>	<b>Water</b> for chromatography (LC-MS Grade) LiChrosolv®	<a href="#">↓</a>	<a href="#">Expand</a> 