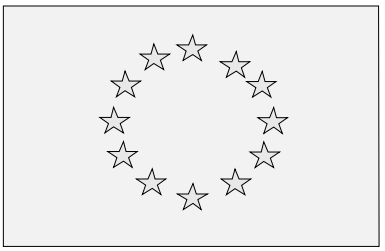
National Institute
for Public Health and
the Environment



Datasheet Tetramisole-d_5 hydrochloride

Reference number : CEC/MAT : 32

Date of preparation : 1995.06.07

date : 2001.01.03

source : CSL

"Bank of Reference Standards"

The Bank of Reference Standards was financially supported by the European Commission

Directorate General "Science, Research and Development DG XII"

Contract MAT 1 - CT92 - 0020

Contract number	:	MAT-CT92-0020[388710]			
Reference number	:	CEC/MAT 32			
Last update	:	1998.01.06	Chemical purity	:	>95 %
Quantity	:	0.111 mg	Isotopic purity	:	d_5 >98 %
					d_0 <1 %

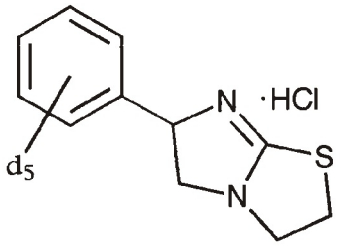


Figure 1. Molecular structure of tetramisole-d_5 hydrochloride

Name : DL-2,3,5,6-tetrahydro-6-phenyl-d_5-imidazo[2,1-b]thiazole hydrochloride
Synonym : tetramisole-d_5 hydrochloride
Molecular formula : $C_{11}H_8D_5N_2SCl$
Molecular weight : 245.782

Long term stability tested on 1997.10.22 : 98.9 ± 0.0%
(storage 4 °C, analysis HPLC-UV, 6 tests on 2 ampoules)

Methods of Characterization:

I UV spectroscopy
II IR spectroscopy
III Mass spectroscopy
IV ^{1}H-NMR spectroscopy

I UV Spectroscopy

Instrument: Hitachi U 3000
Method: Dissolved in ethanol (20mg/l)

Results

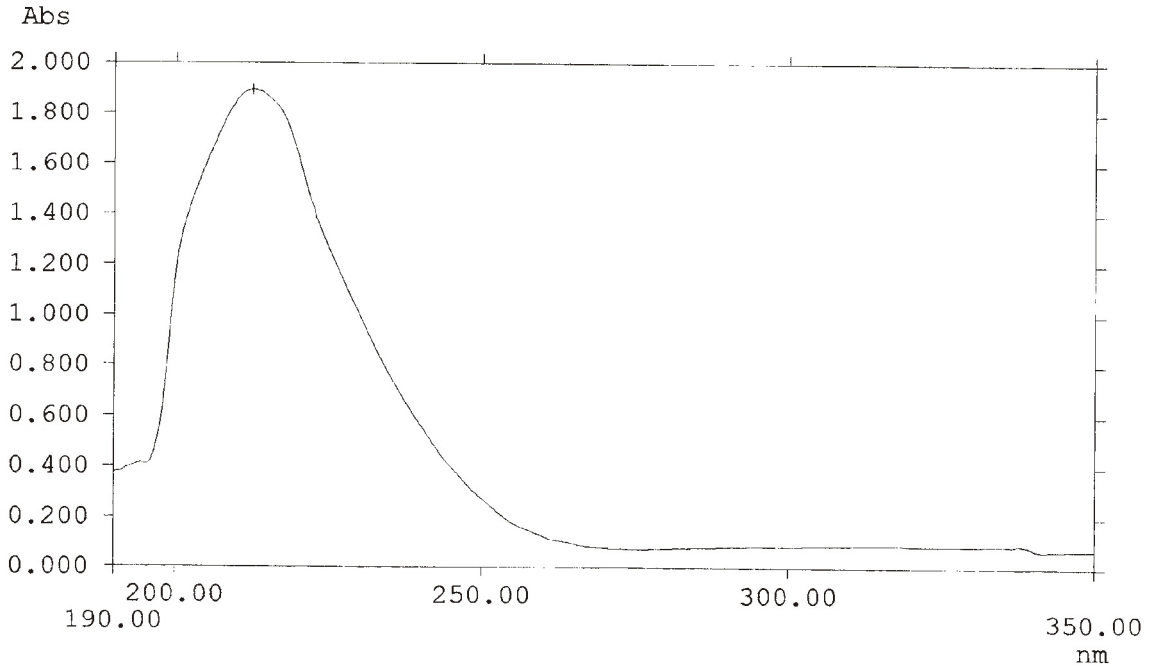


Figure 2. The UV spectrum of tetramisole-d_5 hydrochloride

Peak no.	wavelength (nm)	absorbance
1	212.50	1.8966

II IR-Spectroscopy

Instrument: Perkin Elmer STIR 1720X
Sampling technique: nujol mull

Results

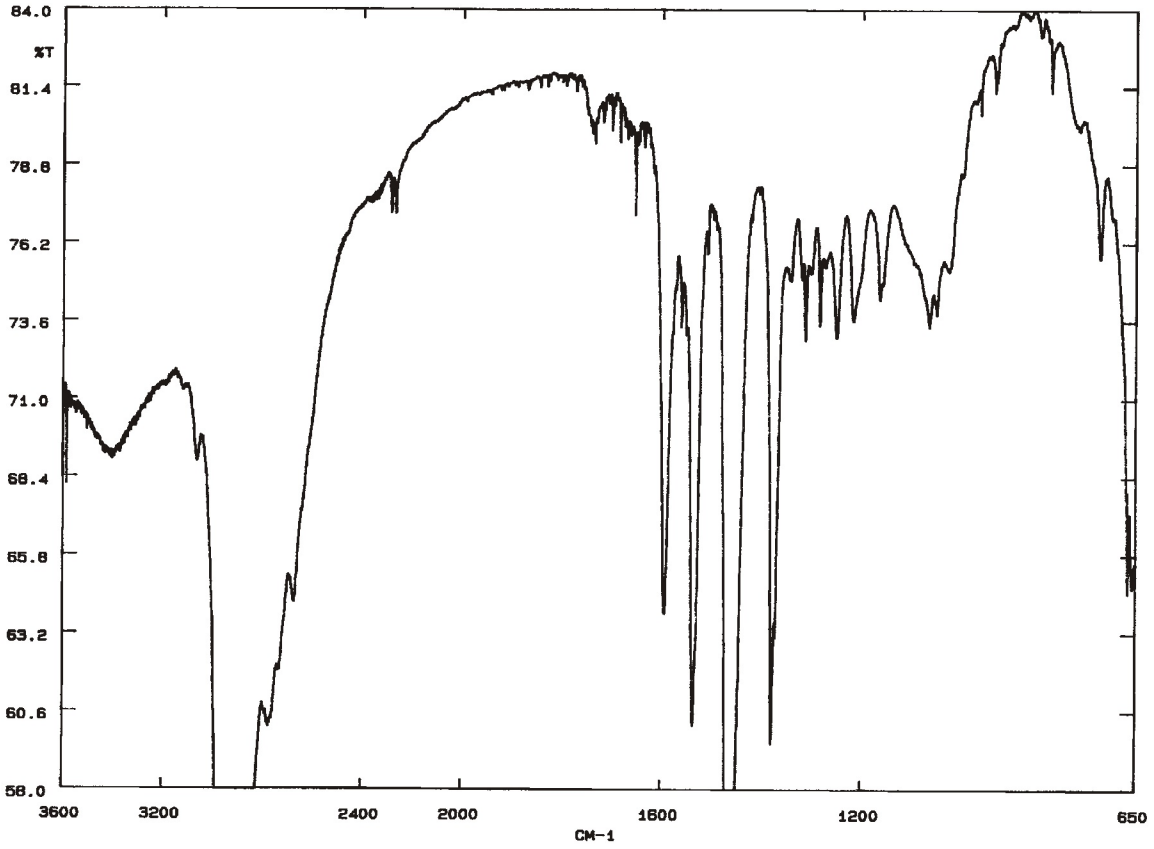


Figure 3. The IR spectrum of tetramisole-d_5 hydrochloride

Wavelength (cm-1)	designation
3402	N-H stretch ?
1592	C=C stretch in aromatic compounds
1534	C=C stretch in aromatic compounds
1312	
1283	
1249	
1215	
1163	
1064	
821	C-H out of plane deformation
722	
666	

III Mass Spectroscopy

Instrument: Kratos MS 25
Sampling technique: Direct probe, 70 ev electron impact

Results

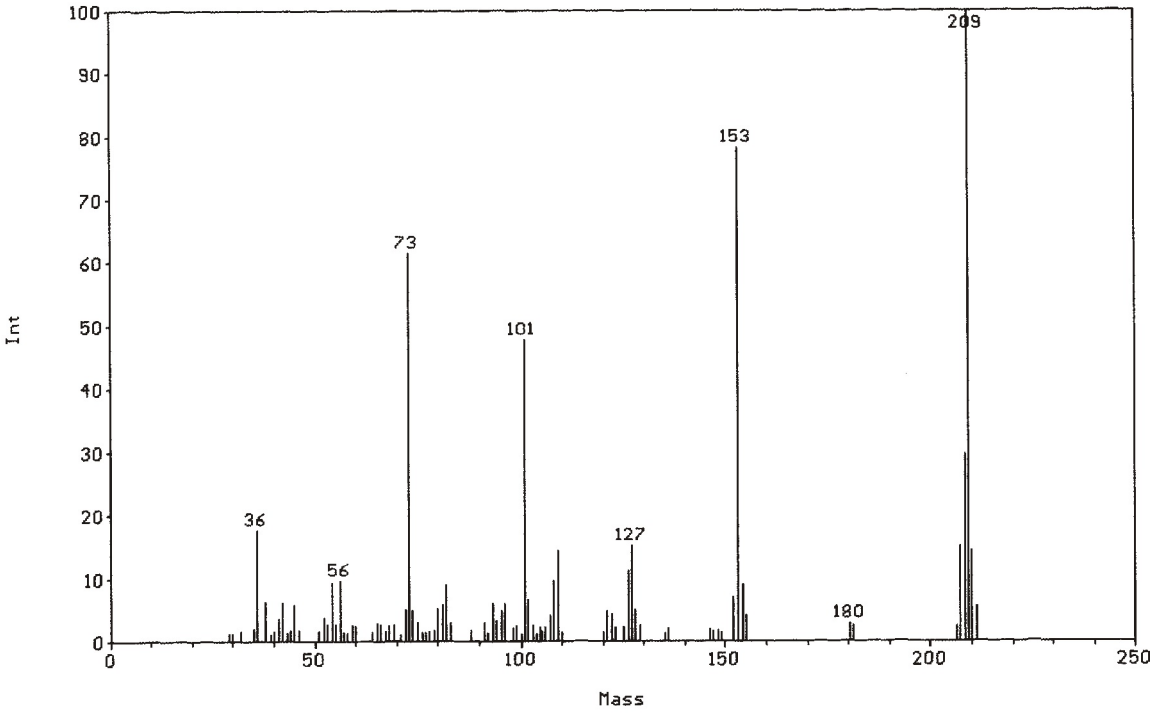


Figure 4. The mass spectrum of tetramisole-d_5 hydrochloride

m/u	percentage	designation
210	14	M - Cl
209	100	M - HCl
208	30	M - (HCl + H)
207	15	M - (HCl + H_2)
153	78	$Ph(d_5)C(S)N^+CH$
127	15	$Ph(d_5)C(S)N^+CH$ - (N + C)
109	14	
101	48	
73	61	Probably not DMF or at least not much (MS for compound before ampouling showed this peak at 58 %)
36	18	

III ^{1}H-NMR Spectroscopy

Instrument: Bruker AC250
Solvent: CD_3OD with TMS (δ = 0.0) as internal standard.

Results

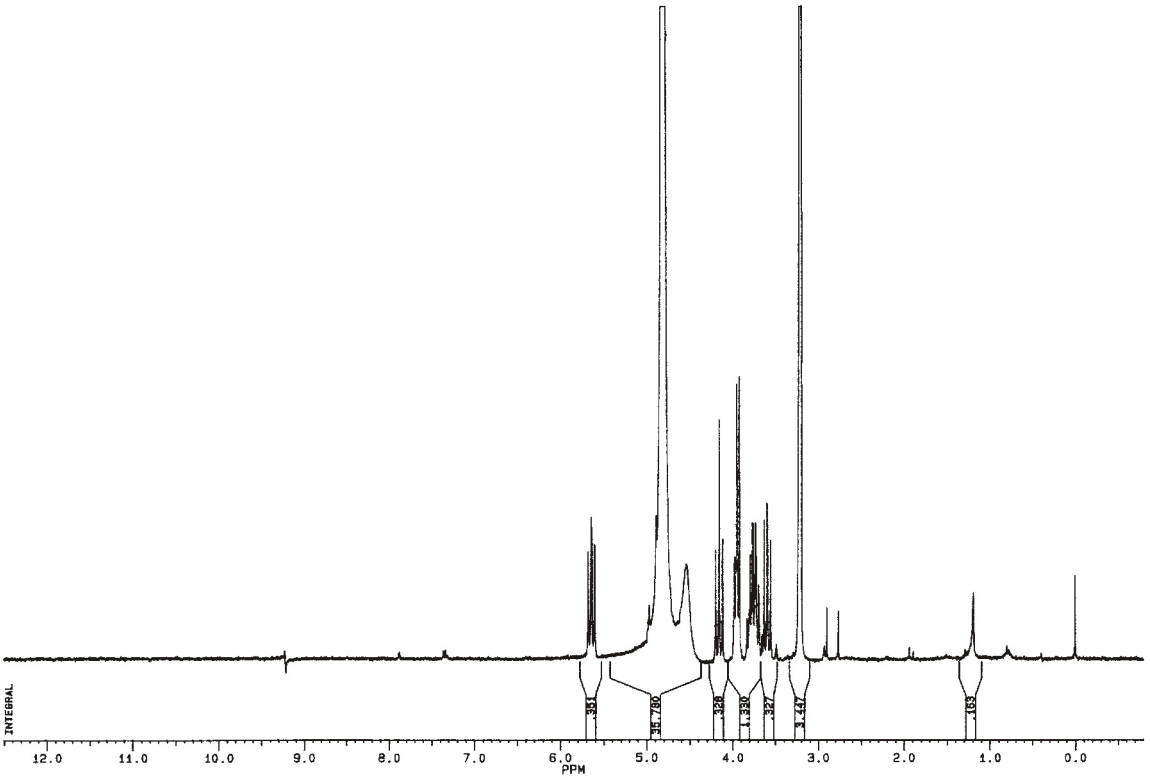


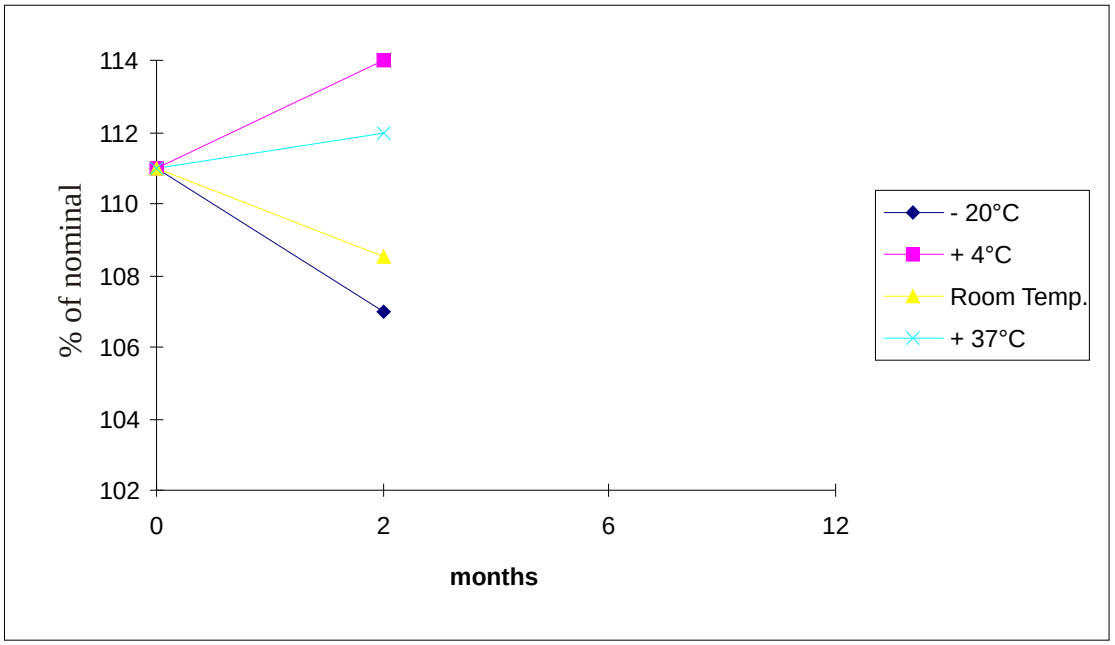
Figure 5. The NMR spectrum of tetramisole-d_5 hydrochloride

Chemical Shift (δ)	number of protons	designation
3.6	1	H5[a]
3.75}	4	(H2 and H3) x 2H
3.85}		
4.15	1	H5[b]
5.65	1	H6

Preparation and validation of reference standards

The production of ampoules containing the reference material was described in the final report produced September 1995.
The thermal stability of the compound was under investigation and the results over a period of two months are expressed in the table and chart below.

Tetramisole-d_5 hydrochloride Stability Trials



Results of tetramisole-d_5 hydrochloride stability trials

The results below are the % recovery (with cv) of tetramisole-d_5 hydrochloride at 4 different storage temperatures over a period of 2 months compared with a standard equivalent to 0.1 mg.

	temp. (°C)	t = 0 months (% recovery)	t = 2 months (% recovery)	t = 6 months (% recovery)	t = 12 months (% recovery)
TS-d_5	- 20°C	111.0 +/- 1.5	107.0 +/- 1.5	-	-
	4°C	-	114.0 +/- 1.0	-	-
	Room Temp.	-	108.5 +/- 2.0	-	-
	37°C	-	112.0 +/- 2.0	-	-

Conclusion

The spectroscopic data is consistant with the proposed structure for all the methods of determination although a little DMF (which was used as solvent during ampouling) was detected by NMR at approximately 2.8 and 2.9 d.
No significant impurities were detected by any of the methods of characterization employed.

The results from the stability trials indicate that tetramisole-d_5 hydrochloride is acceptably stable over a period of two months at temperatures up to 37 °C.