VA Application Note No. V - 85

Title:	Elemental sulfur in gasoline

Summary:	The concentration of elemental sulfur in gasoline is determined by polarography in acetate containing toluene/methanol electrolyte. The determination is linear up to 2 mg/L with respect to the concentration of elemental sulfur in the measuring vessel. Organic sulfur compounds are not detected with this method. The method is not suitable for diesel fuel, since diesel is not completely soluble in the used electrolyte. The gas wash bottle (6.2405.030) for inert gas supply has to be filled with supporting electrolyte.

Sample:	Gasoline
Sample preparation:	None

Analysis of sulfur

Supporting electrolyte	$c(CH_3COONH_4)$ = 0.19 mol/L $c(CH_3COOH)$ = 0.088 mol/L in toluene : methanol = 1:1	
Standard stock solution	β(sulfur) = 1 g/L dissolved in supporting electrolyte	
Measuring solution	8 mL supporting electrolyte + 4 mL gasoline	
Working electrode (WE)	**MME** (Multi Mode Electrode)	6.1246.020
Auxiliary electrode (AE)	**Pt**	6.0343.000
Auxiliary electrode (AE)	**GC** electrode holder glassy carbon rod	 6.1241.020 6.1247.000
Reference electrode (RE)	Reference system: Ag/AgCl/KCl (3 mol/L) Intermediate electrolyte: c(LiCl) = 0.1 mol/L in ethanol	6.0728.020 6.1245.010

Parameters

Working electrode	DME
Stirrer speed	2000 rpm
Mode	DP
Purge time	300 s
Addition purge time	40 s
Equilibration time	10 s

	Pulse amplitude	0.05 V
	Start potential	-0.3 V
	End potential	-0.6 V
	Voltage step	0.004 V
	Voltage step time	1 s
	Sweep rate	0.004 V/s
	Peak potential sulfur	-0.47 V

Results:	sulfur
	0.19 mg/L

Determination of sulfur