

U.S. GASOLINE DETERGENT ADDITIVES, 1997-2004

The U.S. market for gasoline detergent additives (GDA) has been greatly affected by Federal mandates resulting from the implementation of the Clean Air Act Amendments of 1990. Research over the last year, including numerous interviews with producers and users of GDA components and packages, indicates that consumption of GDA in 1997 was 295 million lbs, a decrease of more than 25 percent from the 1993 level. Despite the declining total volume and the exorbitant costs involved, producers continue to develop and test new additives because the potential rewards of a new technical success are great. In this highly competitive market, both additive producers and users require thorough and insightful market intelligence.

Colin A. Houston & Associates, Inc. (CAHA) has completed a comprehensive new study of this dynamic market. *U.S. Gasoline Detergent Additives, 1997-2004* assesses new detergent additive technology; reports on developments in gasoline composition; analyzes the prospects for alternative fuels; discusses and defines the gasoline detergent additive market structure; provides accurate detergent price information based on gasoline treating costs; and quantifies and forecasts demand for each type of detergent additive. An overview of the West European GDA market discusses the major issues and trends and quantifies additive consumption by type.

The following pages contain the table of contents and other details of the study.

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DESCRIPTION OF THE STUDY

U.S. Gasoline Detergent Additives, 1997-2004 examines all aspects of this complex and competitive market.

GASOLINE MARKETS

The study details the changes in gasoline composition and reports on the impact of RFG. It provides data on gasoline producers, production and market share, and quantifies and forecasts gasoline consumption by type.

AUTOMOBILE ENGINES

The study explains the elements of engine design, where deposits form and how they are controlled. It examines environmental and performance issues driving the evolution of engine design, and discusses gasoline performance requirements. It reports on the status and prospects for alternative fuel vehicles.

GASOLINE DETERGENT ADDITIVES

Both technical and commercial aspects of the GDA market are analyzed, and individual additives and companies are discussed. The GDA market's quality tiers and pricing tiers are identified, and each detergent type is ranked. Performance factors, such as the differences in combustion chamber deposit control, are discussed.

The study also provides data on gasoline treating costs, changes in treat rates, detergent pricing, and the effect of detergents on gasoline margins.

The implications of current and potential future regulations, such as the possibility that CARB will require combustion chamber deposit reduction, are discussed.

New developments in additive technology are analyzed and their impact assessed. Trends in use of the various types of GDA are discussed, and GDA consumption by type is quantified and forecast.

Problems and costs associated with bringing a new GDA to market are detailed.

CAHA published its first major multiclient study of GDA markets in 1989. A second multiclient study was issued in 1994. CAHA has also conducted proprietary studies

involving GDA, and has closely followed developments in this market over the last few years. For this new study, industry statistics and technical and market data from a variety of sources were compiled and integrated with information gathered from extensive interviews with oil companies, producers of gasoline detergent additives, additive package formulators and distributors, as well as automotive manufacturers.

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U.S. - CONSUMPTION OF GASOLINE BY TYPE, 1985-2004 (percent by volume)				
Year	Leaded	Unleaded		
		Regular	Midgrade	Premium
1985				
1986				
1987				
1988				
1989				
1990				
1991				
1992				
1993				
1995				
1997				
2002				
2004				

neg. = negligible
Source: National Petroleum News, National Energy Information Agency and CAHA estimates.

Table II-12

U.S. - MAJOR GASOLINE PRODUCER MARKET SHARES, 1993 AND 1996

Producer	1993		1996	
	Market Share (% by volume)	Gasoline Sold (billion gals)	Market Share (% by volume)	Gasoline Sold (billion gals)
Mobil				
Exxon				
Shell				
Citgo				
Texaco				
Amoco				
Chevron				
Marathon				
Phillips				
BP America				
Sun				
Arco				
Conoco				
Unocal				
Total Petroleum				
TOTAL				
Source: National Petroleum News				

Table III-1

U.S. - TOTAL PASSENGER CAR AND TRUCK SALES^a, 1977-2004

Year	Cars	Trucks	Total
1977			
1978			
1979			
1980			
1981			
1982			
1983			
1984			
1985			
1986			
1987			
1988			
1989			
1990			
1991			
1992			
1993			
1994			
1995			
1996			
1997 ^b			
2000 ^b			
2004 ^b			

^a Domestic and imported.

^b Estimated.

Source: American Automobile Manufacturers Association and CAHA estimates.

Table IV-11		
TYPICAL GASOLINE DETERGENT USE RATES ^a		
Use	Treat Rate ^b	
	ptb	ppm
Carburetor		
Fuel Injectors		
Intake Valves		
^a Package as sold commercially. ^b Treating rates include solvent.		

Table IV-16		
GASOLINE TREATING COSTS ^a , THREE TIER MARKET		
Tier 1	Performance:	
	Cost:	
	Share of Market:	
Tier 2	Performance:	
	Cost:	
	Share of Market:	
Tier 3	Performance:	
	Cost:	
	Share of Market:	
^a All costs here are reported as available from the supplier and they do not include freight and other add-ons.		

Table IV-29	
PACKAGE TREAT RATE	
Detergent Types	Treating Range (ptb)
Polyether amine	
Polybutene amine	
Mannich	
Succinimide	

Table IV-30			
U.S. - GASOLINE DETERGENT ADDITIVE CONSUMPTION BY SURFACTANT TYPE - SCENARIO ONE (millions lbs)			
Type	1997	1999	2004
Polyether amines			
Polybutene amines			
Mannichs			
Alkenyl succinimides			
TOTAL			

Table IV-22		
EUROPEAN COMMISSION GASOLINE FUEL SPECIFICATIONS (maximum)		
Aromatics Controlled	Current	Future
Benzene (volume %)		
Sulfur (wt. %)		
Lead (gallon/liter)		
Vapor Pressure (kPa)		

Table IV-23	
EUROPE - DETERGENT ACTIVE PRODUCERS AND ESTIMATED MARKET SHARES, 1996	
Company	Percent
BASF	
Shell	
Chevron (Oronite)	
Lubrizol	
Adibis	
Octel	
Others (including Elf/Agip/Ethyl etc.)	

Table IV-34	
WEST EUROPE - GASOLINE DETERGENT ADDITIVE CONSUMPTION BY SURFACTANT TYPE, 1997 (million lbs)	
Detergent Type	Detergent
Polyisobutene Amines	
Succinimides	
Polyether amines	
TOTAL	

QUALIFICATIONS AND PERSONNEL

Colin A. Houston & Associates Inc. (CAHA) was founded in 1971 to provide consulting services to the chemical industry worldwide. The primary area of expertise was and continues to be surfactants: raw materials, intermediates, commodity and specialty surfactants, and the surfactant-consuming industries. CAHA has enlarged its field of activity to include other materials used in these industries, such as detergent builders, bleaching agents, ingredients for personal care products, and oilfield chemicals.

The reputation thus earned by CAHA for comprehensive, high quality techno-economic and market analyses has led to a variety of engineering, marketing and strategic planning studies for individual clients in North America, Western Europe, and Asia.

The project team approach utilized by CAHA includes a core of senior and technical professionals augmented by expert consultant associates. CAHA conducted its first investigation of the U.S. and West Europe gasoline detergent additives market in a multiclient study published in January 1989. A second comprehensive study, *Gasoline Detergent Additives - United States and West Europe II, 1992-2002*, was published in 1994. CAHA has also covered this subject in numerous other multiclient studies conducted over the past two decades.

U.S. Gasoline Detergent Additives, 1997-2004, was carried out by CAHA's senior consultant for fuels and lubricants research, Mack W. Hunt, with the support of CAHA staff members. Mr. Hunts's curriculum vitae is presented on the following page.

MACK W. HUNT
Senior Consultant

Mr. Hunt has over 35 years of experience in the creation, synthesis, development, manufacture and management of fuel and lubricating oil additives. He is an internationally known expert in motor oil detergents and has authored or co-authored 53 U.S. patents and many foreign patents.

Professional Experience

Colin A. Houston & Associates, Inc.

- Authored U.S. portion of *Gasoline Detergent Additives - United States and West Europe II, 1992-2002*
- Proprietary studies of market prospects for gasoline detergent additives
- Authored the Petroleum Additives section - *Alpha-Olefins - World Markets, 1990-2002*

Lerco Associates, Ltd. - Senior Associate

- Consultant to major oil and chemical companies and additive manufacturers

Amoco Oil Company - Research Associate and Director of Research

Calumet Petrochemical - Vice President of Manufacturing

Bray Oil Company - Assistant to the President

Witco Chemical Company - Director of Sulfonate Research

Continental Oil Company - Research Chemist and Research

- Supervisor

Education

A.B. Chemistry, Math and Biology, Nebraska Wesleyan University

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