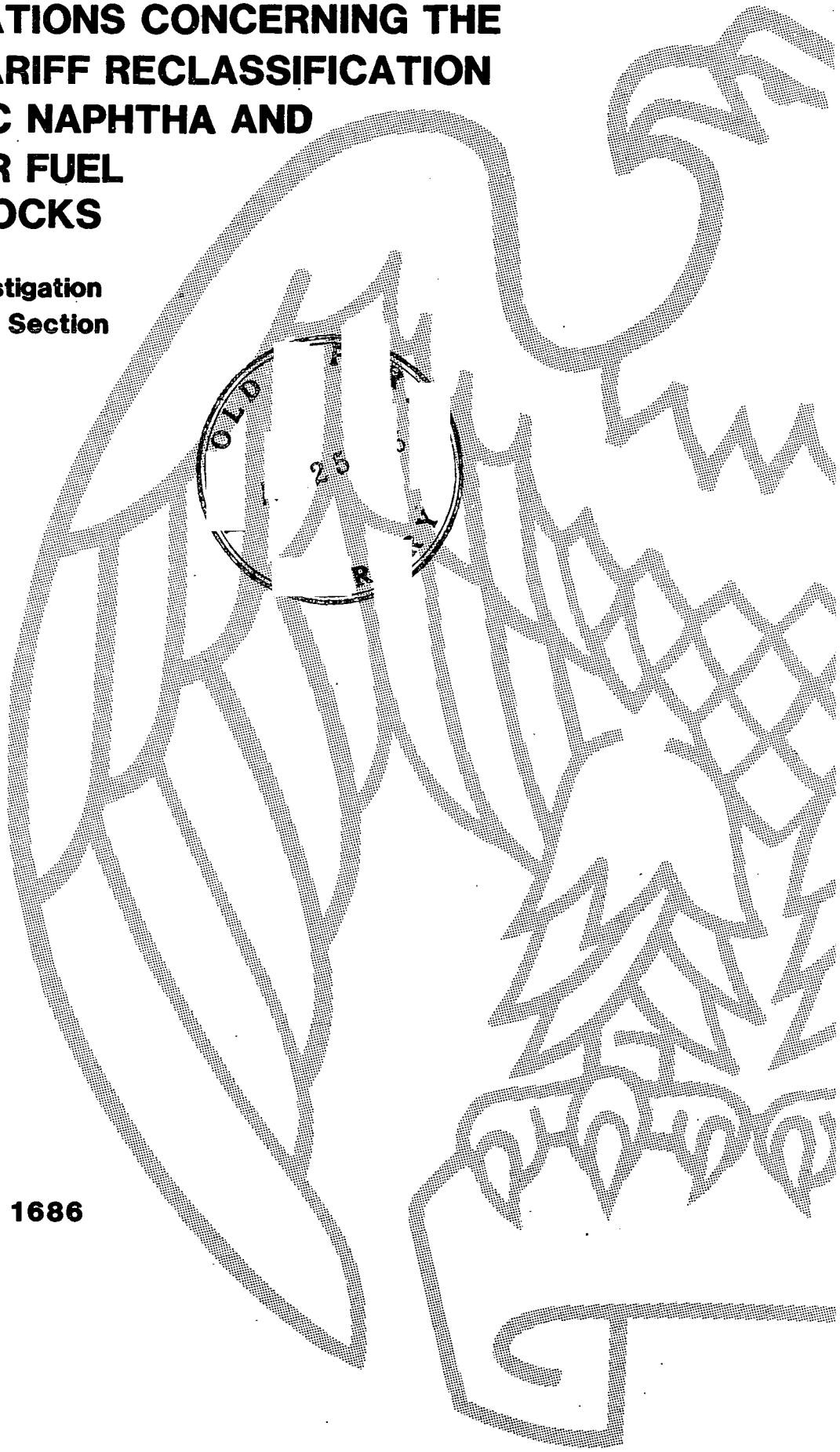
POSSIBLE EFFECTS OF AND RECOMMENDATIONS CONCERNING THE PROPOSED TARIFF RECLASSIFICATION OF CATALYTIC NAPHTHA AND OTHER MOTOR FUEL BLENDING STOCKS

Final Report on Investigation No. 332-203 Under Section 332(g) of the Tariff Act of 1930



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PREFACE

At the request of the House Committee on Ways and Means and the Senate Committee on Finance, 1/ the Commission instituted investigation No. 332-203 under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), for the purpose of gathering and presenting information on the tariff classification and treatment of those products potentially affected by a reclassification of catalytic naphtha and other motor fuel blending stocks. 2/ The Commission was also requested to hold a public hearing in connection with the investigation and to report to the Committees by April 15, 1985. 3/

The Committees specifically requested that the Commission's study address (1) the current tariff treatment of naphthas, motor fuel, and motor fuel blending stocks; (2) the desirability of modifying the current tariff classification treatment consistent with sound principles of product nomenclature; and (3) the effects that such changes would be likely to have on U.S. industries and competitive conditions between U.S. and foreign firms in the affected segments of the petrochemical and petroleum industries. A subsequent letter from the Chairman of the Senate Committee on Finance asked the Commission to provide trade data and possible improvements to the tariff nomenclature for ethyl and methyl alcohol used as motor fuel blending stocks. A public hearing in connection with the investigation was held in Washington, D.C. at 10:00 a.m. on March 7, 1985, at the U.S. International Trade Commission Building, 701 E Street, NW., Washington, DC 20436. At this hearing, the witnesses presented information to the Commission that the staff subsequently analyzed along with a number of written submissions.

1/ See app. A for copies of the requests.

2/ See app. B for a copy of the Federal Register notice of the institution of the investigation.

3/ See app. B for the list of witnesses at the Commission's hearing.

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EXECUTIVE SUMMARY

This study under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)) was requested by the House Committee on Ways and Means and the Senate Committee on Finance upon instruction of House and Senate conferees on the Trade and Tariff Act of 1984 (Pub. Law 98-573, October 30, 1984). The respective bills passed by the House and Senate and before the conferees, among others things, would have made certain changes in the tariff treatment and classification of catalytic naphtha and other motor fuel blending stocks. In view of "the unusual complexity" of the products involved, the conferees concluded that the provisions in the bills may not have accomplished the purposes intended by the respective Houses and that the Commission should study and advise on the matter before final action was taken.

The main purpose of this investigation is to study (1) the current tariff treatment of naphthas, motor fuel, and motor fuel blending stocks; (2) the desirability of modifying the current tariff classification treatment consistent with sound principles of product nomenclature; and (3) the effects that such changes may have on the U.S. industries and on the competitive conditions between U.S. and foreign firms in the affected segments of the petrochemical and petroleum industries.

In addition, the Commission was asked to seek import data on ethyl or methyl alcohol classified for tariff purposes as motor fuel blending stocks and to recommend improvements to the tariff nomenclature designed to capture ethyl and methyl alcohol for fuel use, possibly based on physical and chemical characteristics.

The following highlights are the major findings of the Commission's investigation:

1. U.S. CUSTOMS TREATMENT OF MOTOR FUEL BLENDING STOCKS AND MOTOR FUEL.

o The duty rate assessed motor fuel blending stocks can vary widely depending upon the composition of the products.

As mixtures, motor fuel blending stocks can be classified in part 1, item 407,16; part 2, item 432.10; or part 10, item 475.35 of the TSUS, depending upon the percentage of benzenoid and nonbenzenoid organic chemicals in the specified mixture. In practice, the U.S. Customs Service decides whether a mixture (e.g., naphtha) is classifiable in part 1, item 407.16 or in part 10, item 475.35 by determining the percentage weight of dutiable benzenoid chemicals present in the mixture and then applying a de minimis rule that generally allows mixtures containing up to 5 percent by combined weight of dutiable benzenoids to be classified in part 10, item 475.35 with a duty rate of 0.25 cent per gallon.

Mixtures that contain lead alkyls, ethyl alcohol, or other nonbenzenoid chemicals but not meeting the specifications for motor fuel, are classified in

part 2, item 432.10. The column 1 rate of duty is 5 percent ad valorem, but not less than the highest rate applicable to any component compound or material.

Mixtures that are chiefly used as a fuel in internal-combustion or other engines and that meet the specifications in T.D. 83-173 or, recently, T.D. 66-23(13), whether or not containing additives, are presently classified as motor fuel in item 475.25 at a duty rate of 1.25 cents per gallon. This means that a motor fuel mixture may contain different types of naphthas blended with lead alkyls, ethyl alcohol, or any other additives.

- o At present, only imports of unmixed ethyl alcohol for fuel use are subject to the temporary additional duties provided for in TSUS item 901.50.

Neat (unmixed) ethyl alcohol that is imported for fuel use is subject to a temporary additional duty of 60 cents per gallon under the provisions of TSUS item 901.50, which was established on December 5, 1980, as a protective measure to allow U.S. ethyl alcohol producers to remain competitive in the U.S. gasohol market. This provision, however, does not apply to the direct importation of gasohol (mixtures of gasoline and ethyl alcohol) which is classified under item 475.25.

2. OVERVIEW OF THE U.S. PETROLEUM PRODUCTS AND PETROCHEMICAL INDUSTRIES

- o In recent years, U.S. consumption of petroleum products has been affected by changing product prices, product availability, and domestic conservation efforts.

U.S. consumption of petroleum products (in thousand barrels per day) decreased from 18.5 million in 1979 to 15.3 million in 1982 and then increased slightly to 15.7 million in 1984 because of crude petroleum and petroleum product price changes, product availability, and conservation efforts. Approximately 42 percent of domestic consumption is used for motor gasoline. Owing to favorable economic conditions and lower petroleum prices, U.S. consumption of motor gasoline increased slightly from a low of 6.5 million barrels per day in 1982 to 6.7 million barrels per day in 1984.

- o Increased refining capacity in the OPEC nations as well as other conventional-energy-rich nations could result in increased U.S. imports of petroleum products.

In order to further economic development and diversify exports, many of the conventional-energy-rich nations are increasing their refining and petrochemical capacity. As of January 1, 1985, the OPEC nations had the

capacity to refine 4.8 million barrels per day; and OPEC has plans to increase their refining capacity to 7.7 million barrels per day by 1987. Much of this additional refining capacity is expected to be exported and could enter the U.S. market.

- o Imports of primary petrochemicals increased 31 percent (by quantity) during 1980-84.

U.S. imports of the primary petrochemicals discussed in this report increased steadily from 3.1 billion pounds, valued at $529 million in 1980 to 4.0 billion pounds, valued at $736 million in 1984. The value of primary petrochemical imports in 1984 increased 4.7 percent to $736 million compared with $703 million in 1983. In comparison, U.S. imports of Industrial Organic Chemicals (SIC 286) increased 17.3 percent from $2.62 billion in 1983 to $3.07 billion in 1984. The major source of these products was Canada and, according to industry analysts, the strong dollar was the major reason for the 25 percent increase in imports during 1983-84.

- o Brazilian imports of ethyl alcohol (unmixed) increased domestically as the United States introduced ethyl alcohol as a motor fuel.

Prior to 1980, virtually no ethyl alcohol was used as a motor fuel. By 1984, approximately 50 percent of U.S. ethyl alcohol consumption was for motor fuel blending stock. Brazil was the major U.S. source of ethyl alcohol imports during 1980-84. Ethyl alcohol imports (for nonbeverage use) from Brazil increased from 266 million pounds, valued at $50.8 million, in 1980 to 896 million pounds, valued at $116 million, in 1984. Imports from Brazil in 1984 accounted for 76 percent of total U.S. ethyl alcohol imports.

3. TECHNICAL RECOMMENDATIONS AND PROBABLE ECONOMIC EFFECTS

- o One of the most reasonable options for classifying catalytic naphtha and other motor fuel blending stock is to establish a single end-use provision instead of defining these products using physical and chemical characteristics.

As a result of this study, the Commission has determined that one of the most reasonable options for classifying these products is a single end-use provision instead of having a number of separate provisions based on physical and chemical characteristics. The difficulty in establishing for customs purposes a separate category for catalytic naphtha is in distinguishing those products that are used solely for gasoline blending from other benzenoid mixtures (i.e., catalytic naphtha) that are intended for further processing into industrial organic chemicals. The composition of the products to be classified in these categories can vary widely depending upon the type of crude petroleum and the refinery processes used. The main advantage of a

tariff item combining catalytic naphtha and other motor fuel blending stocks is that it would require only a certification by the importer of end use of the imported material; no technical definition to distinguish motor fuel blending stocks from other mixtures is necessary. Such a provision should also capture all future imports of materials to be used as blending components for motor fuel. This provision has also been inserted in the proposed HS conversion (HS2710.00.18).

This option may also be acceptable to importers of catalytic naphtha since under this "end use" option, the duty rate would be no higher than that for finished gasoline. This would be consistent with past treatment of motor fuel blending stocks, which were classifiable with motor fuel under the provisions of U.S. Customs Service Treasury Decision T.D. 66-23(13).

- o In December 1980, TSUS item 901.50 was established as a protective measure to allow U.S. ethyl alcohol producers to remain competitive in the U.S. gasohol market. It has been alleged that various legal methods are being used to import ethyl alcohol without subjecting it to the temporary additional duties provided for in TSUS item 901.50.

Various methods are allegedly being used to import ethyl alcohol without subjecting it to the additional duties in item 901.50. These methods include importation of gasohol under item 475.25 (motor fuel); direct importation from a Foreign Trade Zone or from countries designated as beneficiaries for the purposes of the Caribbean Basin Initiative; and by indirect importation through an insular possession of the United States. If, in the establishment of TSUS item 901.50, it was Congress' intent to limit the importation of ethyl alcohol, whether or not mixed with other materials, then the language of item 901.50 would have to be modified such that (1) mixtures of ethyl alcohol and gasoline are covered, and (2) the provisions of the Foreign Trade Zones Act and of the Caribbean Basin Initiative (CBI) would not prevent the application of item 901.50.

- o The Commission's technical recommendations for the tariff reclassification of catalytic naphtha and motor fuel blending stocks should have little effect on the volume of U.S. imports or the U.S. industry.

The establishment of an end-use category for motor fuel blending stocks, dutiable at the motor fuel rate of 1.25 cents per gallon, would be consistent with the past practice of Customs to classify motor fuel blending stocks as a motor fuel (T.D. 66-23(13)). Imports of leaded blending stocks, especially from China and Mexico, continue to enter the United States as motor fuels under T.D. 66-23(13), although T.D. 83-173, which increases the Research Octane Number (RON) for leaded gasoline to 87, is officially in force. Since these blending stocks were previously and are currently entering the United States under TSUS item 475.25, the staff does not feel that the technical recommendations will result in a significant rise in imports. According to submissions from representatives of PEMEX and China, two main sources of

blending stock imports, their exports to the United States will not likely increase given the tariff reclassification. Also, imports of catalytic naphtha are not expected to increase as a result of the proposed tariff reclassification. During the past two years, the volume of catalytic naphtha imports has been erratic because of the changing duty assessment. Imports of these products, have been duty free because of GSP for a short period of time and then assessed a high duty rate when the GSP limit for an individual country was exceeded. The classification of catalytic naphtha under the proposed end-use category is expected to stabilize the duty rate and the volume of imports. The U.S. refining industry therefore should not be adversely affected as a result of these technical recommendations.

- o EPA's phaseout and eventual ban of lead in gasoline is expected to result in a dramatic decline in the volume of imports of lead-containing gasoline and blending stocks and result in increased costs to domestic manufacturers and eventually the consumers of gasoline of 1 to 2 cents per gallon. 1/

In March 1985, the EPA announced plans to phase down the lead content per gallon of gasoline to 0.10 gram by 1986. EPA's rules on the phaseout and eventual ban of lead in gasoline also apply to such materials imported for domestic consumption into the United States. While any change in the tariff classification would have little, if any, effect on the volume of imports of lead-containing materials for domestic consumption, the volume of imports of these products is expected to decline dramatically when the EPA ban on leaded gasoline becomes effective.

It is estimated that unleaded gasoline could account for 52.6 percent of total gasoline demand in 1986 and 67.5 percent by 1988. The increased cost to the manufacturer, and eventually the consumer, for decreasing the lead content per gallon to 0.10 gram would be 1 to 2 cents per gallon, mainly for the increased manufacturing costs incurred in providing additional aromatic blending components. The EPA estimated that a limit of 0.10 gram of lead per gallon would cost refiners $575 million in 1986 and $503 million in 1988 with existing refinery equipment.

1/ The potential impact of the EPA's eventual ban on lead in gasoline on imports and the domestic industry was requested in the joint letter of the House Committee on Ways and Means and the Senate Committee on Finance to the Chairwoman.

INTRODUCTION

The House Committee on Ways and Means and the Senate Committee on Finance requested the Commission to conduct this study after the conference committee on the recently enacted Trade and Tariff Act of 1984 failed to reach a compromise between different proposals concerned with tariff reclassification of catalytic naphtha and motor fuel blending stocks/unfinished gasoline. From late 1983 though July 1984, a number of bills were introduced in Congress pertaining to the reclassification of these products. H.R. 4232 and S. 2479 were introduced with a duty rate of 0.25 cents per gallon for catalytic naphtha, a component used in the production of finished gasoline. While these bills were being considered by Congress, two additional bills pertaining to the reclassification of unfinished gasoline or motor fuel blending stocks, H.R. 5455 and S. 2900 were introduced to create a new tariff item for these products with a duty rate of 1.25 cents per gallon, the same rate as on finished motor fuels.

Since catalytic naphtha and motor fuel blending stocks are used in the production of gasoline, the Administration proposed a single alternative in May 1984 that was designed as a compromise to satisfy the intent of both H.R. 4232 and H.R. 5455. Due to the unusual complexity of the products involved, the conferees determined that prior to further congressional action on the issue, the Commission should be asked to examine the desirability of reclassification and the possible ramifications. In addition, the conferees requested the Commission to provide import data for ethyl and methyl alcohol and to recommend changes that would improve the tariff nomenclature for these products.

This report consists of four sections, excluding the executive summary, which present the various information and recommendations requested of the Commission by the two Congressional committees. The first section presents a detailed description of the imported products involved in this study and their uses. The second section presents a history of Customs' treatment of these products, the proposed tariff treatment of these products in the Harmonized System, and recent legislative proposals concerning these products. In the third section, background information on the U.S. petroleum, petrochemicals, and ethyl and methyl alcohol industries is presented, including information on the structure of the domestic industries, U.S. production, and international trade. The last section includes the technical recommendations of the Commission to improve the tariff classification of these products and the probable effects of such reclassification on the U.S. industries and on imports of these products. In addition, it includes the probable effects of the proposed EPA decision to ban lead from gasoline on imports and on the domestic industry.

BACKGROUND INFORMATION ON CERTAIN IMPORTED PRODUCTS

The general framework for defining the various petroleum products covered in this investigation begins with a discussion of crude petroleum. Crude petroleum is a mixture of thousands of different hydrocarbons with a discussion of a wide range of boiling points. In addition to paraffinic, naphthenic, and aromatic components, crude petroleum contains varying amounts of sulfur, nitrogen, and oxygen in the form of organic, inorganic, and organometallic compounds. The percentages of any of these components in the mixture vary from field to field and determine the suitability of the crude for certain uses.

Crude petroleum, which ranges from an almost clear liquid to a pitch or tar-like material, is referred to as either sweet or sour 1/ and either light or heavy. 2/ The initial refining process separates the crude petroleum into fractions that are converted into finished products. Petroleum refinery processes (see figure 1) are generally designed to maximize the production of highly demanded products such as gasoline and diesel fuel; however, as many as 2,000 petroleum products are made, many to individual specifications. Most refinery processes 3/ can be grouped into one of the following classes:

1. Separation and distillation, which yields the desired type of product without chemically altering the materials;

2. Conversion or cracking, which reduces molecular weight and boiling point; and

3. Upgrading, which is used to bring the product up to quality specifications.

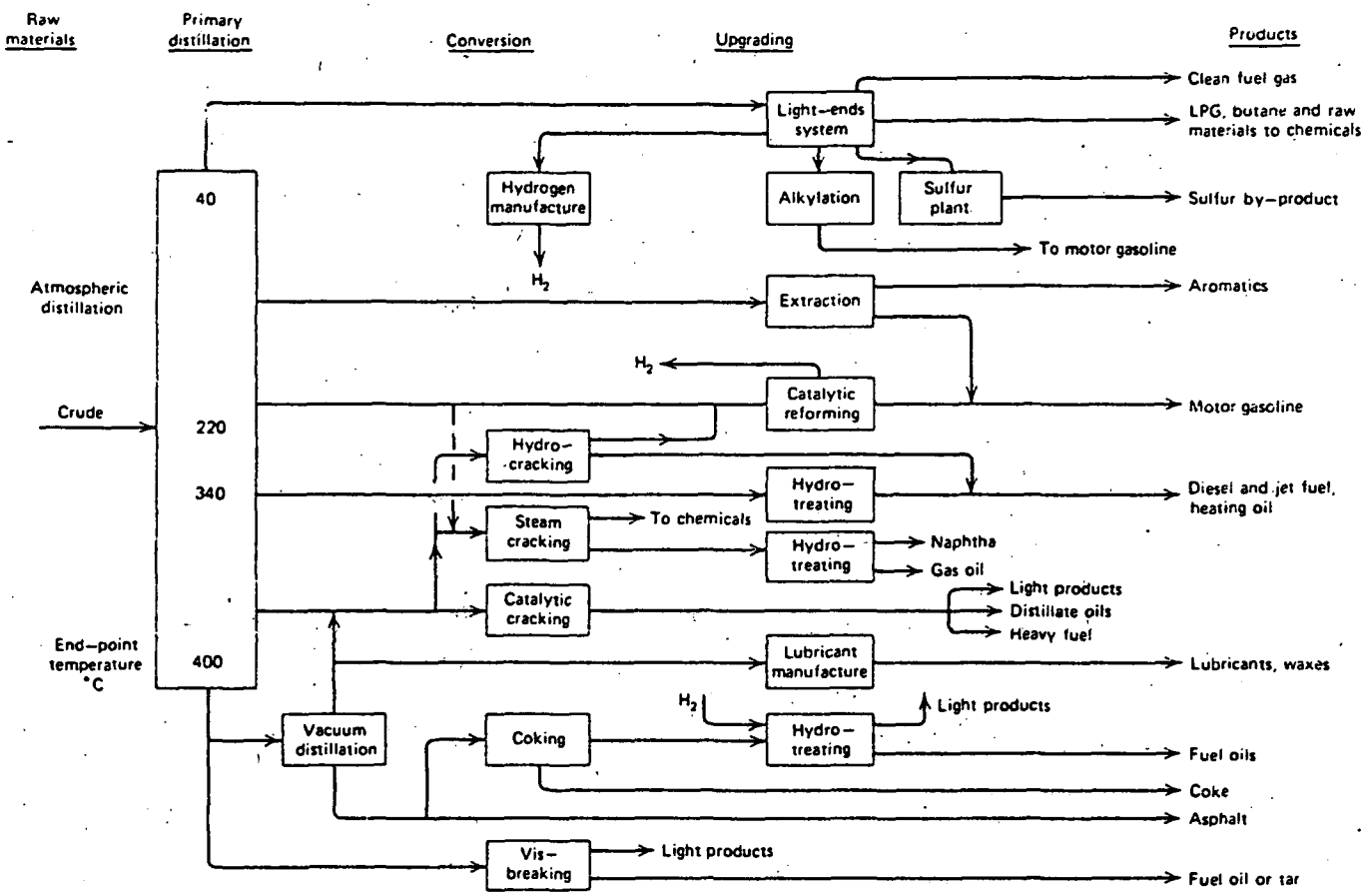
Refinery products that are separated from crude petroleum by processing are generally referred to as fractions. These refinery fractions and their mixtures are the petroleum products that account for the bulk of crude petroleum consumption, either as extracted or with special additives to improve their qualities for their intended uses. Many identical petroleum fractions are both "unfinished" and "finished" because of their being suitable for further refining or for end use as motor fuel, fuel oil, solvents, or the like, depending upon the desire of the owner or purchaser. Furthermore, the same petroleum product may have more than one use and will carry a different name depending on the use. Figure 2 shows the typical boiling ranges of petroleum products and the degree of overlap in their definitions.

1/ Sweet crude petroleum contains 0.5 weight percent or less total sulfur; sour crude petroleum contains more than 0.5 weight percent total sulfur.

2/ Light crude petroleum has an API (American Petroleum Institute) gravity greater than 25°; heavy crude petroleum has an API gravity of 25° or less.

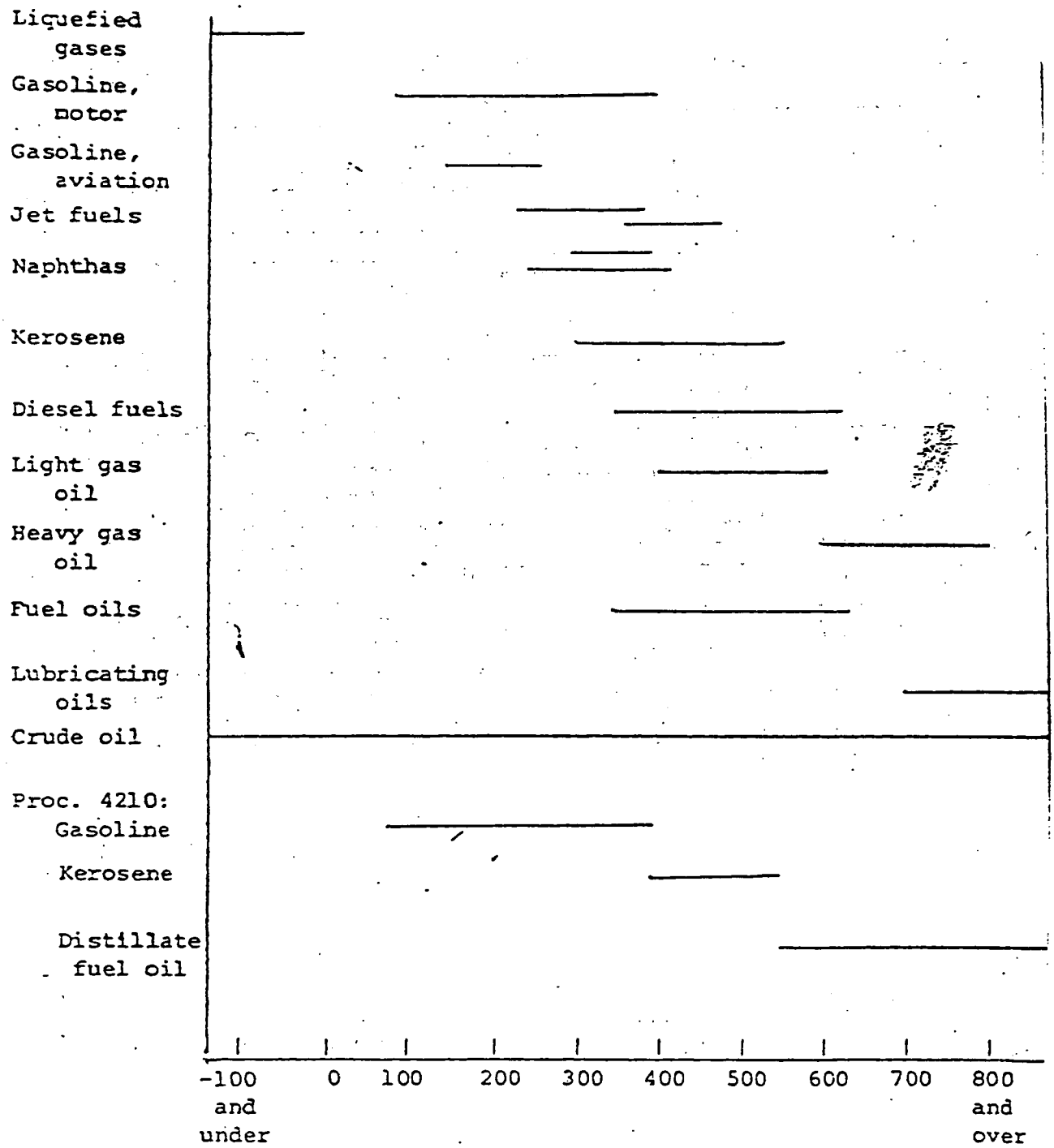
3/ Refining processes are: atmospheric distillation, vacuum distillation, alkylation, isomerization, catalytic hydrotreating, and delayed and fluid coking.

Figure 1.--Overall petroleum-refining processing



Source: Kirk-Othmer, Encyclopedia of Chemical Technology, 3rd ed., Vol. 17, p. 184.

FIGURE 2.—Typical Boiling Ranges of Petroleum Products



Source: Bureau of Mines, Petroleum Products Surveys and industry estimates.

The configuration of a refinery varies depending upon size, location, desired products, and the type of crude petroleum used; it can be small or large, simple or complex. In the United States, large, complex refineries are common and they produce a high yield of the lighter, more valuable products such as gasoline, per barrel of crude petroleum feedstock. Larger refineries are often integrated with petrochemical complexes to supply feedstocks and energy for the production of chemicals. The U.S. average annual yields of petroleum products from a barrel of crude petroleum are shown in the following tabulation: 1/

Petroleum products	Gallons	Percentage distribution of barrel
Gasoline	18.69	44.5
Liquefied gas and ethane	1.01	2.4
Naphtha jet fuel	.63	1.5
Kerosene jet fuel	2.56	6.1
Kerosene	.38	.9
Distillate fuel oil	8.61	20.5
Residual fuel oil	4.37	10.4
Petroleum feedstocks	1.89	4.5
Special naphthas	.25	.6
Lubricants	.55	1.3
Wax	.04	.1
Coke	1.30	3.1
Asphalt and road oil	1.13	2.7
Still gas 1/	1.89	4.5
Miscellaneous	.38	0.9
Yield	43.68	104.0
Processing gain 2/	-1.68	-4.0
Total	42.00	100.0

1/ Any form or mixture of gas produced in refineries by distillation, cracking, reforming and other processes, in which the principal constituents are methane, ethane, propane, propylene, butanes, butylene, and so forth.

2/ The volumetric amount by which total output is greater than input. This difference is due to the processes of crude petroleum into products which, in total, have a lower specific gravity than the crude petroleum processed. Therefore, in terms of volume (barrels), the total output of products is greater than input.

Motor gasoline

Motor gasoline is a complex mixture of relatively volatile hydrocarbons, with or without additives, blended to form a fuel suitable for use in spark-ignition engines. The hydrocarbons used to produce gasoline are the products

1/ U.S. Department of Energy, "A Barrel of Crude," Energy Fact Sheet, Mar. 17, 1983.

of a number of different refining processes and can be generally classified as paraffins, olefins, and aromatics. Gasolines produced from different refineries can vary widely in composition, even at the same octane level, since different refineries use different grades of crude petroleum.

The American Society of Testing and Materials (ASTM) specification for motor gasoline (D-439) provides general guidelines for gasoline quality. 1/ The qualities of motor fuel can be categorized as: volatility, octane, and additives.

Volatility.--Volatility is the measure of the ability of a fuel to pass from a liquid to a vapor under varying conditions of temperature and pressure. The volatility of motor gasoline affects the performance of a car as to the way it starts, the length of time it takes to warm up, the formation of ice in the carburetor, which causes stalling, and the vapor lock in the fuel system.

The volatility must be controlled within close limits over the whole boiling range. Specific limits for a country or area during a given season are established by considerations of climate, driving conditions, and the susceptibility of certain models of automobiles in the area to volatility-induced problems.

Octane.--An octane number is the performance rating used to classify motor fuels. A gasoline's octane number is an indication of the fuel's ability to prevent "knock" in an engine. Tetraethyl lead (TEL) and other materials, including organic compounds, are effective antiknock agents. The octane number displayed on gasoline pumps is a combination of the research octane numbers (RON), which provide an indication of low-speed performance at full throttle, and the motor octane numbers (MON), which relate to partial throttle. According to ASTM D439, a leaded gasoline has an octane rating in the 87 to 93 range; an unleaded gasoline has an octane rating in the 85 to 90 range.

Additives.--Substances added to gasoline to introduce new properties or improve existing ones are known as additives. For example, oxidation inhibitors are added to gasolines to allow the gasoline to be stored for long periods of time without "gum" formation. Rust inhibitors are added to reduce corrosion throughout the automobile's fuel system, and carburetor detergents are included to keep carburetors clean. In addition, gasolines are colored with oil-soluble dyes in order to distinguish among the various grades marketed.

Motor fuel blending stocks

"Motor fuel blending stock" is a term that can be used to refer to a variety of materials derived from petroleum, shale oil, or natural gas, which can be further processed into specification-grade motor fuel. It can also be used to describe materials that can be physically blended with other materials to make motor gasoline.

1/ See Appendix C for excerpts from ASTM specification D-439.

Motor fuel blending stocks could be used as a fuel in internal combustion or other engines but are outside the ASTM octane range. Generally, these products are mixed or blended with other chemicals, such as TEL, to obtain a higher octane product that meets the ASTM octane specifications for motor fuel.

Naphtha

"Naphtha" is a generic term that refers to refined, partly refined, or unrefined petroleum products and liquid products of natural gas not less than 10 percent of that distill below 347°F and not less than 95 percent of which distil below 464°F when subjected to distillation in accordance with the Standard Method of Test for Distillation of Gasoline, Naphtha, Kerosene, and Similar Petroleum Products (ASTM D86). 1/ This product is obtained from crude petroleum that is distilled into fractions of different boiling ranges. The distillate is pumped into a fractionating tower and separated into the following major fractions: 2/

Major crude-oil fractions	Approximate boiling range, °F
Light naphtha	30-200
Heavy naphtha	200-400
Kerosene	400-500
Light gas oil	400-600
Heavy gas oil	600-800
Reduced crude	800-1100+

The naphtha fractions obtained by distillation are often called "virgin naphtha" or "straightrun gasoline" because they are naturally occurring fractions of crude oil. As shown in the previous tabulation, two types or grades of naphthas, light and heavy, are determined by their approximate boiling ranges. In addition, there are other grades of naphtha established on the basis of the type of crude selected (e.g., naphthenic or paraffinic) and use of the material (e.g., for blending into gasoline, use as JP-4 military jet fuel, or conversion to primary petrochemicals). There is no clearcut distinction between the upper end of naphtha and the lower end of kerosene. Also, the amount of these naphthas obtained from petroleum refining and their hydrocarbon compositions will depend on the type of crude petroleum distilled.

The largest use of naphthas is as the major component of motor gasoline. The light naphtha fraction usually has an octane number that is sufficient to permits its use as a component of finished gasoline without further refining except for removing undesirable impurities. The heavy naphtha, however, is usually reformed catalytically to higher octane blending stock before it is

1/ Gessner G. Hawley, The Condensed Chemical Dictionary, tenth edition, Van Nostrand and Reinhold Co., New York, 1981, p. 712.

2/ Kirk-Othmer, Encyclopedia of Chemical Technology, 2nd edition, Interscience Publishers, New York, 1963, Vol. 10, p. 472.

used as a component in finished gasoline. Other minor uses of naphtha include feedstock for other chemicals, solvent applications such as paint thinners (VM&P naphtha and mineral spirits), dry cleaning (Stoddard solvent), and vapor degreasing.

Catalytic naphtha

The term "catalytic naphtha" is used to denote a mixture of aliphatic (acyclic) and aromatic compounds produced by either reforming or cracking certain petroleum distillate fractions, using a catalyst such as platinum or alumina and silica. In the catalytic reforming process, the hydrocarbon molecules of the feedstock are not cracked, but their structure is rearranged to form higher octane aromatics as they are passed through the reformer that contains a catalyst, usually platinum. The primary feedstocks used in catalytic reformers are heavy naphthas and heavy straightrun gasolines because they contain the four major hydrocarbon groups: paraffins, olefins, naphthenes, and aromatics. The paraffins and naphthenes easily undergo the two types of reactions (i.e., cyclization and isomerization) required to convert to the higher octane components because of the large number of carbon atoms in these molecules that increase the probability of either reaction occurring.

The following tabulation shows the percentages of components in the typical feedstock and reformer product. 1/

Component	Feedstock	Product
	----Percent of volume---	
Paraffins	40-55	30-50
Olefins	0-2	0
Naphthenes	30-40	5-10
Aromatics	5-10	45-60

The reformed products have a much higher octane number than the original feedstock and respond quite well to TEL antiknock fluids.

Catalytic cracking is one of the most important refinery processes used to convert heavy oil fractions into gasoline and other lower boiling point products. In this process, the hot oil feedstock is constructed with a catalyst of alumina and silica, producing the cracking reactions that form the lighter olefins and aromatics. The resulting mixture is then passed through a fractionation tower for separation into the desired fractions. Naphtha fractions produced by catalytic cracking make highly desirable blending components for high-octane gasoline. These fractions have high-octane numbers and respond well to the addition of antiknock fluids. 2/ In addition, these

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1/ J. Gary and G. Handwerk, Petroleum Refining, Technology and Economics, Marcel Dokker, Inc., New York, 1975, p. 65.

2/ Kirk-Othmer, Encyclopedia of Chemical Technology, second edition, Interscience Publishers, New York, 1963, vol. 10, p. 473.

fractions are also a source of benzene, toluene, and xylenes (BTX) mixtures, which accounts for approximately 10-12 percent of the domestic production.

Ethyl alcohol

Ethyl alcohol, also referred to as ethanol, is a clear, flammable liquid. It is classified chemically as a monohydric alcohol. Because it is hydrophilic, there is usually some water which is not distilled from the commercial product. The two commercial grades are absolute ethyl alcohol, which is 100 percent pure, and 190° 1/ ethyl alcohol, which is 95 percent ethyl alcohol and 5 percent water and other impurities.

Ethyl alcohol is produced commercially in the United States, using both synthetic and fermentation processes. Synthetic production of ethyl alcohol is accomplished by hydrating ethylene, a basic hydrocarbon, and then distilling the final product. The fermentation process generally used in the United States involves hydrolyzing corn starch and then fermenting the resulting sugars. The Bureau of Alcohol, Tobacco and Firearms (BATF) controls these processes, and compliance with BATF rules is required. Nonbeverage ethyl alcohol must be denatured by adding chemicals that make it undrinkable, otherwise, the excise tax on distilled spirits must be paid unless a special exemption has been granted by Congress.

The main uses of ethyl alcohol are as a raw material in the production of other chemicals, such as acetic acid, ethyl acetate, and actaldehyde; as a solvent; and as an additive in gasoline (e.g., gasohol).

The following tabulation shows the estimated demand for ethyl alcohol, by end use, in 1983 (in percent): 2/

End use	Demand
Fuel	50
Solvent	15
Chemical manufacture	13
Beverages	12
Vinegars	4
Miscellaneous	6
Total	100

Methyl alcohol

Methyl alcohol, also known as methanol, is a colorless, flammable, poisonous liquid used primarily as raw material in the manufacture of other chemicals, as a general solvent, and for fuel applications. Methyl alcohol was originally known as wood alcohol because it was made from the destructive

1/ The symbol "o" indicates degrees of proof.
2/ Ibid.

distillation of wood and other vegetable products. Today nearly all methyl alcohol is made synthetically from natural gas. 1/ A minor amount of methyl alcohol is regenerated in the synthesis of certain plastics used by the soft-drink industry and fibers used by the tire industry, but this methyl alcohol is not as pure as that produced from natural gas. The physical and chemical properties of bulk methyl alcohol vary little; the product normally consists of about 99.98 percent methyl alcohol with trace amounts of water and organic chemicals.

Currently, methyl alcohol is produced in the United States using, the lower pressure processes 2/ developed in the United Kingdom and West Germany. These lower pressure, methyl alcohol plants are located primarily in Texas and Louisiana.

Methyl alcohol is a basic petrochemical. Its principal uses are as a raw material for products such as formaldehyde, acetic acid, methyl halides, gasoline additives including methyl tertiary butyl ether (MTBE), methylamines, methyl methacrylate, dimethyl terephthalate, as a general solvent, and in gasoline blending. In most of its major uses there are no substitutes. The following tabulation shows the expected U.S. demand for methyl alcohol, by end uses, in 1985 (in percent): 3/

End use	Demand
Formaldehyde	30
Gasoline blending	15
Acetic acid	14
MTBE	9
Solvents	8
Methyl halides	7
Methyl methacrylate	4
Methylamines	4
Dimethyl terephthalate	4
Miscellaneous	5
Total	100

Currently, there are a number of potentially large uses for methyl alcohol being developed, especially in the fuel market. It does not appear likely that domestic use of methyl alcohol as a neat fuel or blending stock in gasoline will increase substantially in the near future because of reported car problems associated with its use (e.g., engine corrosion and moisture collection) and the declining price of crude petroleum. 4/ The major increase in domestic methyl alcohol consumption for fuel use will probably be either as

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1/ The materials in synthetic gas, the primary intermediate for methanol, may also be obtained from coke or coal, but no U.S. commercial methanol plant currently uses coal-based technology.

2/ 50 to 100 atmospheres.

3/ Ibid.

4/ "Specialties '84/Octane Enhancers," Chemical Marketing Reporter, May 7, 1984, p. 40.

a raw material for MTBE 1/ or as a cosolvent with higher alcohols (e.g., t-butyl alcohol) that are used as octane enhancers for gasoline. 2/

U.S. CUSTOMS TREATMENT

Rates of duty

Imports of the petroleum products covered by this investigation are primarily classifiable under items 407.16, 432.10, 475.25, and 475.35 of the Tariff Schedules of the United States (TSUS). Imports of nonbeverage ethyl alcohol enter under TSUS item 427.88, including imports of ethyl alcohol for fuel use, which are subject to temporary additional duties under TSUS item 901.50. Methyl alcohol for fuel use enters under TSUS item 427.96. None of these items were subject to staged duty-rate reductions resulting from the Tokyo round of the Multilateral Trade Negotiations (MTN). A short description of each of these products, along with its corresponding TSUS item and current rates of duty (effective Jan. 1, 1985), are given in Table 1. Exact tariff descriptions for these items are shown in appendix D. The rates of duty in column 1 are most-favored-nation (MFN) rates and are applicable to imported products from all countries except those Communist countries and areas enumerated in general headnote 3(f) of the TSUS, for which rates of duty in column 2 apply. 3/ However, such rates do not apply to products of developing countries that are granted preferential tariff treatment under the Generalized System of Preferences (GSP) 4/, the Caribbean Basin Initiative (CBI) 5/, or under the least-developed developing countries (LDDC) rate of duty column. 6/

1/ Approved as a fuel additive by the EPA in February 1979.

2/ Op. cit., p. 40.

3/ The only Communist countries currently eligible for MFN treatment are the People's Republic of China, Hungary, Romania, and Yugoslavia.

4/ The GSP is a program of nonreciprocal tariff preferences granted by the United States to developing countries to aid their economic development by encouraging greater diversification and expansion of their production and exports. The GSP applies to merchandise imported on or after Jan. 1, 1976, and will remain in effect until July 4, 1993, under the Trade and Tariff Act of 1984, which was signed into law by the President on Oct. 30, 1984. It provides duty-free treatment to eligible products imported directly from designated beneficiary developing countries.

5/ The CBI is a program of nonreciprocal tariff preferences granted by the United States to developing countries in the Caribbean Basin area to aid their economic development by encouraging greater diversification and expansion of their production and exports. The CBI, implemented by Presidential Proclamation No. 5133 of Nov. 30, 1983, applies to merchandise entered or withdrawn from warehouse for consumption on or after Jan. 1, 1984, and is scheduled to remain in effect until Sept. 30, 1995. It provides duty-free entry to eligible products imported directly from designated developing countries in the Caribbean Basin area.

6/ An LDDC duty rate was not established for any of the TSUS items 407.16, 432.10, 475.25, or 475.35.

Table 1.--Catalytic and other naphthas, ethyl alcohol, methyl alcohol, motor fuel blending stocks, and motor fuel: U.S. rates of duty, by TSUS items, 1985

(Percent ad valorem)

TSUS item No. 1/	Description 2/	Col. 1 rate of duty	Col. 2 rate of duty
	Mixtures of products provided for in this subpart [subpart 1-B to schedule 4]:		
407.16A*	Other [including catalytic naphtha]--	1.7¢/lb. + 13.6%, but not less than the highest rate applicable to any component material	7¢ per lb. + 43.5%, but not less than the highest rate applicable to any component material.
	Alcohols, monohydric, unsubstituted:		
427.88	Ethyl for nonbeverage use----------	3% ad val. 3/	20% ad val.
	Methyl:		
427.96	Imported only for use in producing synthetic natural gas (SNG) or for direct use as a fuel----------	Free	18¢ per gal.
	Mixtures not specially provided for:		
432.10	Mixtures derived in whole or in part from petroleum, shale oil, or natural gas [including motor fuel blending stocks other than naphthas]----------	5%, but not less than the highest rate applicable to any component material	25%, but not less than the highest rate applicable to any component material.
475.25	Motor fuel----------	1.25¢/gal.	2.5¢/gal.
475.35	Naphthas derived from petroleum, shale oil, natural gas, or combinations thereof (except motor fuel) [and except naphtha of TSUS item 407.16]----------	0.25¢/gal.	0.5¢/gal.

1/ The symbol "A*" indicates that, for TSUS item 407.16, certain designated beneficiary countries enumerated in Gen. Headnote 3(c) to the TSUS, in this case Venezuela, is currently ineligible for duty-free treatment under the GSP.

2/ The expressions in brackets were added here for explanatory purposes. Otherwise, the descriptions are shown as they appear in the TSUS.

3/ Ethyl alcohol for fuel use is also subject to an additional duty of 60¢/gal. (col. 1 and col. 2 rates) until Dec. 31, 1992, under TSUS item 901.50.

Source: Compiled by USITC staff.

Among the products covered by this report, only catalytic naphtha entering under TSUS item 407.16 is eligible for duty-free treatment under the GSP. 1/ Motor fuel (TSUS item 475.25) and naphthas of TSUS item 475.35 are specifically excluded from duty-free treatment under the CBI. 2/

Classification of motor fuel and motor fuel blending stocks

Imports of naphthas and other motor fuel blending stocks covered by this investigation are currently classifiable in part 1, part 4, or part 10 of schedule 4 of the TSUS. Depending on its characteristics, a particular blending stock may be classified--

(1) in part 1, item 407.16, as a mixture, in whole or in part of benzenoid chemicals, such mixture resulting directly from the distillation/cracking/reforming process and to which no other chemicals have been added after such process; catalytic naphthas are included in this category;

(2) in part 10, item 475.35, as a mixture, not in whole or in part of benzenoid chemicals, such mixture resulting directly from the distillation/cracking/reforming process and to which no other chemicals are added after such process; or

(3) in part 2, item 432.10, as a mixture such as (1) or (2) above, to which are subsequently added lead alkyls, ethyl alcohol or other nonbenzenoid organic chemicals, and/or inorganic components.

If any of these products meet the ASTM criteria for motor fuel, they are then classifiable in TSUS item 475.25.

Straight "naphthas" (items (1) and (2), above).--A key characteristic of these products is that each is a mixture that (a) results directly from the distillation/cracking/reforming process and (b) to which no other materials are added. They are classifiable either in part 1 or in part 10 of schedule 4 according to the provisions of headnote 1 to part 10. This headnote reads, in part, as follows:

> "Any product described in this part [part 10] and also in part 1 of this schedule [schedule 4] is classifiable in said part 1, except fuel oils, motor fuel, and lubricating oils and greases, containing by weight not over 25 percent of any product described in said part 1. . ."

In headnote 1, the expression "containing by weight not over 25 percent of any product described in said part 1" applies only to "fuel oils, motor fuel, and lubricating oils and greases," all of which are separately provided for in

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1/ Currently, Venezuela is specifically excluded from duty-free treatment for TSUS item 407.16 under the GSP.

2/ See General Headnote (3)(g)(iii)(D) to the TSUS (1985).

part 10 of schedule 4. In the case of naphthas, then, some other criterion must be used to determine whether they fall in part 1 (TSUS item 407.16) or part 10 (TSUS item 475.35). In practice, the U.S. Customs Service (Customs) bases its determination on the percentage weight of dutiable benzenoid chemicals 1/ present in the mixture. Although there are no formal written regulations which dictate a dividing line between part 1 and part 10 with respect to allowable benzenoid content, established Customs practice is to apply a de minimis rule. Under this rule, Customs generally allows imports of naphthas containing up to 5 percent by combined weight of dutiable benzenoid chemicals to be classified in part 10. The presence of any duty-free benzenoid chemicals in the mixture has no effect under the rule. The importance of the de minimis rule becomes clear when the duty rates are compared. The rate for TSUS item 407.16 is 1.7¢ per pound plus 13.6 percent ad valorem, but not less than the highest rate applicable to any component material. Often alkylbenzenes (TSUS item 402.36) make up the highest-rate component material in a naphtha, resulting in an actual tariff of 0.8¢ per pound plus 17.3 percent ad valorem. Compare these rates with that for item 475.35, which is only 0.25 cents per gallon (the 1984 ad valorem equivalent (AVE) was 0.4 percent).

Naphthas containing additives (item (3), above).--These are naphthas of TSUS item 407.16 or 475.35, to which lead alkyls (tetraethyl lead, tetramethyl lead, or both), ethyl alcohol, butane, or other chemicals have been added in order to make the product more suitable for use in blending finished gasoline; however, the mixtures themselves do not meet the criteria established by Customs for motor fuel in TSUS item 475.25. These motor fuel blending stocks are classifiable in TSUS item 432.10. The column 1 rate of duty is 5 percent ad valorem, but not less than the highest rate applicable to any component compound or material. In the case of catalytic naphthas, the actual rate is governed by the relatively high-duty-rate benzenoid compounds present in the mixture, as discussed in the preceding paragraph. Otherwise, the actual rate is either 5 percent ad valorem or the rate applicable to the additive involved, whichever is higher. For example, leaded naphthas will be assessed the duty applicable to tetraethyl lead (TSUS item 429.70), which has a column 1 rate of 9.8 percent ad valorem.

Motor fuel.--For tariff purposes, motor fuel is classifiable in TSUS item 475.25 and has a column 1 duty rate of 1.25 cents per gallon (the 1984 AVE was 1.7 percent). Motor fuel is defined by headnote 2(b) to schedule 4, part 10 of the TSUS, as follows:

> ""Motor fuel" (item 475.25) is any product derived primarily from petroleum, shale, or natural gas, whether or not containing additives, which is chiefly used as a fuel in internal-combustion or other engines."

1/ In this context, the term "benzenoid" applies to any organic chemical having, as a minimum, a benzene ring in its molecular structure. With some exceptions, benzenoid chemicals are generally classifiable in part 1, schedule 4, of the TSUS.

The expression "whether or not containing additives" means that the motor fuel mixture may contain lead alkyls, ethanol (as in "gasohol") 1/, or any other additives which bring the mixture into conformance with Customs' definition of motor fuel. However, the definition, in itself, is not specific enough for classifying motor fuels, so Customs requires that products "chiefly used as a fuel in internal combustion or other engines" meet certain standards published by the American Society of Testing and Materials (ASTM), headquartered in Philadelphia, PA. Between, January 19, 1966, and August 17, 1983, Customs officers attempting to identify imports of motor fuel were guided by Treasury Decision T.D. 66-23(13) (see appendix E), which listed various criteria for various types of motor fuel and referenced their corresponding ASTM methods. On August 17, 1983, Customs issued a new ruling, T.D. 83-173 (appendix F), which revoked T.D. 66-23(13) and established updated ASTM specifications for motor fuels: D439 for Automotive Gasoline; D1655 for Aviation Turbine fuels; or D910 for Aviation Gasolines (appendix C).

The most controversial effect of this ruling change was to increase the minimum octane ratings 2/ allowable for imported automobile gasoline. Under T.D. 66-23(13), nearly all gasolines were leaded, and the minimum combined octane rating ((RON + MON)/2) was 82; T.D. 83-173 raised that minimum to 85 for unleaded gasolines and to 87 for leaded gasolines. The result was that naphthas having a combined octane rating between 82 and 85 (unleaded) or between 82 and 87 (leaded), which had been classified with motor fuel in TSUS item 475.25, were now to be classified in TSUS item 407.16 or 432.10, with substantially higher duty rates.

Although T.D. 83-173 is "officially" in force, certain formal administrative procedures must be carried out within the Treasury Department before established Customs practice (i.e., the application of T.D. 66-23(13)) can be changed. In November 1984, Customs ruled that imports of leaded naphthas, particularly from the People's Republic of China, may continue to enter the United States as motor fuel under TSUS item 475.25 until all administrative procedures are completed. According to Customs sources, the change in practice is expected be completed in April or May 1985.

Classification of ethyl alcohol and methyl alcohol

Ethyl alcohol.--Imports of nonbeverage ethyl alcohol enter under TSUS item 427.88, with a column 1 duty rate of 3 percent ad valorem. Ethyl alcohol that is imported to be used in producing a mixture of gasoline and ethanol (e.g., gasohol) or a mixture of a special fuel and ethanol for use as fuel, or

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1/ "Gasohol" is usually a mixture of nine parts gasoline and one part ethyl alcohol; gasohol containing more than 10 percent ethyl alcohol is generally not suitable for use in American automobiles. The 10-percent mixture generally meets the ASTM criteria for motor fuel and is classifiable in TSUS item 475.25. Mixtures with higher ethyl alcohol content are classifiable in item 432.10.

2/ See previous section on Background Information for discussion of octane ratings.

to be used otherwise as a fuel, is currently subject to a temporary additional duty of 60 cents per gallon under the provisions of TSUS item 901.50. 1/

TSUS item 901.50 was established on December 5, 1980, 2/ as a protective measure to allow U.S. ethyl alcohol producers to remain competitive in the U.S. gasohol market. This legislation was further amended in 1982 and in 1984, the latter change raising it to the current rate of 60 cents per gallon. The purpose of these amendments was to limit the excise tax credit 3/ for alcohol used as a fuel to alcohol produced in the United States.

The provision has not been effective in stemming imports of fuel-use ethyl alcohol, because it can be circumvented in at least four different ways, all of them legitimate. The first way has already been mentioned: the direct importation of gasohol under TSUS item 475.25 and of other gasoline/ethyl alcohol mixtures under TSUS item 432.10. In neither of these cases does TSUS item 901.50 have any effect. The second way is through foreign-trade zones.

Foreign-trade zones (FTZ's) have been used in the United States since the passage of the Foreign-Trade Zones Act of 1934 (19 U.S.C. 81a et seq.). Under the Act, the FTZ is a secured area, legally outside the U.S. customs territory, into which foreign goods can be imported, thereby preventing it from being subject to U.S. customs procedures. Within the FTZ, such goods may, among other things, be mixed with domestic merchandise, and the resulting product entered into U.S. customs territory, dutiable in the condition as entered. 4/ Thus the effects of TSUS item 901.50 may be circumvented by importing ethyl alcohol into an FTZ, thereby preventing it from being subject to customs entry, payment of duty or tax, or bond. There it can then be mixed with foreign or domestic gasoline and subsequently entered into the U.S. customs territory as motor fuel of TSUS item 475.25 or as a motor fuel blending stock under TSUS item 432.10.

A third method of circumventing TSUS item 901.50 is by indirect importation of ethyl alcohol through an insular possession of the United States. Under the provisions of general headnote 3(a) to the TSUS, a foreign product may be imported into an insular possession (which is outside the customs territory of the United States) without U.S. customs entry. That foreign product may then enter duty free into U.S. customs territory as a product of that insular possession, if (1) it has been "substantially transformed" by upgrading or by manipulation into another product; and (2) foreign content does not account for more than 70 percent of the value of the

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1/ The text of 901.50 reads as follows: Ethyl alcohol (provided for in item 427.88, part 2D, schedule 4) when imported to be used in producing a mixture of gasoline and alcohol or a mixture of a special fuel and alcohol for use as fuel, or when imported to be used otherwise as fuel.

2/ Public Law 96-499.

3/ A federal incentive to produce alternative fuels, including ethyl alcohols as stated in Public Law 96-223.

4/ For a complete discussion of foreign-trade zones, see the Commission's report on The Implications of Foreign-Trade Zones for U.S. Industries and for Competitive Conditions Between U.S. and Foreign Firms, Investigation No. 332-165, USITC Publication 1496, February 1984.

finished product as entered into the United States. A likely scenario is as follows. Low-purity ethanol is imported from a source other than the United States into a U.S. insular possession--the Virgin Islands, for example. Upgrading the ethanol to 100-percent purity for fuel use constitutes a "substantial transformation" to a finished product of which no more than 70 percent of the value is accounted for by the original imported product. As such, it can then be entered duty free into the United States.

The fourth method of avoiding TSUS item 901.50 is by direct importation of ethyl alcohol from countries designated as beneficiaries for the purposes of the Caribbean Basin Initiative (CBI). While the number of countries that enjoy preferential duty treatment under the CBI is not extensive, the potential for imports of fuel-use ethanol from those countries is significant. As with insular possessions, crude ethyl alcohol can be imported into a CBI country, upgraded to anhydrous ethyl alcohol for fuel use, and entered duty free into U.S. customs territory. In this case, however, only 35 percent of the value of the product as entered into the United States need be accounted for by the processing that took place in the CBI beneficiary country.

Methyl alcohol.--Imports of methyl alcohol for use in producing synthetic natural gas (SNG) or for direct use as a fuel is classifiable in TSUS item 427.96. Fuel-use methyl alcohol is imported duty free.

Proposed tariff treatment in the Harmonized System

Appendix G includes copies of selected portions of the proposed conversion of the TSUS into the format of the Harmonized System (HS). The portions shown reflect all changes made to the proposed conversion as of September 1984. The provisions for nonbeverage ethyl alcohol (HS items 2207.10.60 and, if applicable, 9901.00.50) and for fuel-use methyl alcohol (HS item 2905.11.10) are identical to those in the current TSUS. All of the naphtha and naphtha-based products covered by this investigation are covered by HS subheadings 2710.00.15 (motor fuel) and 2710.00.18 (motor fuel blending stocks, including catalytic and other naphthas, with or without additives, and ethyl alcohol/gasoline mixtures). The HS provision for motor fuel does not differ from that in the current TSUS. Subheading 2710.00.18 had been inserted in the draft conversion in anticipation of the possible enactment of a separate provision similar to those proposed in legislative bills H.R. 4232 and H.R. 5455, which are discussed in the following section. Should the Congress decide to take a different approach, the draft conversion would, of course, be revised accordingly.

Recent legislative proposals

Five legislative bills proposing changes in the tariff treatment of naphthas and other motor fuel blending stocks were introduced in the Congress between mid-1983 and mid-1984. Table 2 summarizes the effects of these proposals on the products covered by this investigation. More detailed discussion of these proposals follows below.

Table 2.—Summary of recent legislative proposals concerning catalytic naphtha and motor fuel blendings stocks

Item	Bill				
	H.R. 3785	H.R. 4232	S. 2479	H.R. 5455	S. 2900
Catalytic naphtha (TSUS item 407.16)	1-year duty suspension	new separate TSUS item 407.17; col. 1 rate = 0.25¢/gal.	same as H.R. 4232 gasoline"; 1/ combine with motor fuel in TSUS item 475.25 col. 1 rate =1.25¢/gal.	include as "unfinished blending stock" in new TSUS item: 475.27; col. 1 rate = 1.25¢/gal.	include as "motor fuel
Motor fuel blending stock, except naphthas (TSUS item 432.10) 2/	(none)	(none)	(none)	combine with motor fuel in TSUS item 475.25: col. 1 rate = 1.25¢/gal.	include in new TSUS item 475.27; col. 1 rate = 1.25¢/gal.
Motor fuel (TSUS item 475.25)	(none)	(none)	(none)	expand scope to include "unfinished gasoline"	(none)
Naphtha of TSUS item 475.35	(none)	(none)	(none)	reduce scope to include only naphtha used as petrochemical feedstock; increase duty on: naphtha designa-: ted as "unfin- ished gasoline" under TSUS item 475.25	reduce scope to include only naphtha used a petrochemical feedstock; increase duty naphtha used a motor fuel blending stock under new TSUS item 475.27

1/ The terms "unfinished gasoline", "subpar gasoline", and "off-spec gasoline" are all applied to the more appropriate term "motor fuel blending stock".

2/ Including leaded naphthas and gasoline/ethyl alcohol mixtures, which do not meet ASTM criteria for motor fuel.

Source: Compiled by USITC staff.

Catalytic naphtha.--Between early August 1983 and late March 1984, three bills concerning the tariff treatment of catalytic naphtha were introduced in the Congress (see appendix H). The first, House bill H.R. 3785, introduced by Congressman Brooks on August 4, 1983, sought to suspend for one year (beginning on the date of enactment) the duty on imports of catalytic naphtha under TSUS item 407.16. During 1980-1982, the bulk of U.S. imports of catalytic naphtha had been entering the United States duty free from Venezuela, a GSP beneficiary country. However, Venezuela was removed from GSP eligibility under TSUS item 407.16, effective March 31, 1983. 1/ H.R. 3785 was, in effect, an attempt to regain, at least temporarily, duty-free treatment for catalytic naphtha otherwise than through the GSP.

A second House bill, H.R. 4232, introduced by Congressman Brooks on October 27, 1983, sought to create a new tariff item for catalytic naphtha in subpart 1-B to schedule 4 of the TSUS, to read as follows:

TSUS item	Description	Col. 1 duty	Col. 2 duty
407.17	Naphthas derived from petroleum, shale oil, natural gas, or combinations thereof (except motor fuel) which contain by weight over 5 percent of products described in this subpart.....	0.25¢/gal.	0.5¢/gal.

The purpose of the bill was to insure that catalytic naphtha (classifiable in TSUS item 407.16) would receive the same duty rates as those applicable to naphtha of TSUS item 475.35. From a Customs standpoint, this meant that the de minimis rule for benzenoid content would have to be ignored. However, it was argued that since catalytic naphtha is used exclusively for blending finished gasoline, any imports of it would not affect U.S. producers of so-called competitive industrial benzenoid chemicals of part 1 of schedule 4. According to the author of the bill, Congressman Brooks--

> "In introducing H.R. 4232, it was my purpose to facilitate the importation of a significant component which is needed to upgrade our Nation's refinery output. It was not my intent to. . .enact

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1/ Under the provisions of section 504 of the Trade Act of 1974 (Public Law 93-618), the eligibility of a designated beneficiary country could be revoked by the President, if during the preceding calendar year, that country had exported to the United States a quantity of product having an appraised value exceeding an amount that "bears the same ratio to $25,000,000 as the gross national product of the United States for the preceding year...bears to the gross national product of the United States for calendar year 1974" ($53.3 million in 1982), or which equals or exceeds 50 percent of the appraised value of the total imports reported under a single TSUS item during that calendar year.

legislation that would allow any refined products to be imported which would replace similar domestic products. On the contrary, since a significant amount of the imports of finished gasoline into this country is made possible and necessary precisely because exporting nations have difficulties in exporting blendstocks, I felt that a secondary benefit of my original bill would be to decrease the amount of finished gasoline that would be imported into the United States. With decreased imports of finished gasoline, our troubled refining industry could better maintain production and jobs at home." 1/

Senate bill, S.2479, introduced on March 27, 1984, and introduced by Senator Bentsen, was identical to H.R. 4232.

Motor fuel blending stock/unfinished gasoline.--Two bills were introduced during 1984 to provide for all motor fuel blending stocks ("unfinished or sub-par gasolines"), in part 10 of schedule 4 of the TSUS (see appendix I). Each bill was designed to remove motor fuel blending stocks from the coverage of TSUS item 432.10 by providing for them specifically in part 10. The only difference between the bills was in their approach to this end.

House bill H.R. 5455, introduced on April 12, 1984, and introduced by Congressman Glickman, proposed the amendment of the article description for existing TSUS item 475.25, from "Motor fuel" to "Motor fuel, including unfinished gasoline" (amendment underscored). The bill further provided for the addition of a new subparagraph to headnote 2 of part 10, to read as follows:

"(c) "Unfinished gasoline" (item 475.25) is any gasoline which can be used as a fuel in internal combustion or other engines, but is outside the ASTM octane range."

Senate bill S.2900, introduced by Senator Wilson on July 30, 1984, sought to establish a separate tariff item for "motor fuel blending stock" in part 10 of schedule 4, as follows:

TSUS item	Description	Col. 1 duty	Col. 2 duty
475.27	Motor fuel blending stock.....	1.25¢/gal.	2.50¢/gal.

This bill would also have added a new subparagraph to headnote 2 to part 10:

"(c) "Motor fuel blending stock" (item 475.27) is any product derived primarily from petroleum, shale oil, or natural gas, except naphthas, whether or not containing additives, which is chiefly used for direct blending in the manufacture of motor fuel."

1/ Congressional Record, Sept. 18, 1984, p. H 9655.

Finally, this bill called for the amendment of the article description of TSUS item 475.30 to read as follows (amendment underscored):

> "Kerosene derived from petroleum, shale oil, or both (except motor fuel or motor fuel blending stock)"

Administration alternative.--In May 1984, the United States Trade Representative (USTR), after consultation with other Government agencies and representatives of private industry, proposed a single alternative designed as a compromise to satisfy the intent of both H.R. 4232 and H.R. 5455 (see letter, appendix J). The Administration alternative is similar to that offered by S. 2900, except that the wording of the former's proposed new subparagraph (c) to headnote 2 of part 10, was as follows:

> "(c) "Motor fuel blending stock" (item 475.27) is any product derived primarily from petroleum, shale oil, or natural gas, whether or not containing additives, which is chiefly used for direct blending in the manufacture of motor fuel."

Congressman Brooks, who had introduced H.R. 4232, opposed the Administration alternative, insisting that catalytic naphtha should be considered separately from other motor fuel blending stocks and that it should be treated for tariff purposes in the same manner as are naphthas of TSUS item 475.35 (see letter, appendix K).

Further attempts at compromise language to be included in the omnibus tariff bill (H.R. 3398) failed. The Commission was subsequently asked to conduct this study.

OVERVIEW OF U.S. PETROLEUM PRODUCTS AND PETROCHEMICAL INDUSTRIES

Petroleum Products

Petroleum refining is the process by which crude petroleum is converted into finished products. Refinery processes are generally designed to maximize the production of those products with the greatest demand such as gasoline, which in 1982 accounted for about 44.5 percent of all of the products refined from crude petroleum, residuel fuel oil, and distillate fuel oil. 1/

U.S. industry structure

The United States relies on the major international petroleum companies and the independent domestic refiners to supply its need for crude petroleum and petroleum products. According to the 1977 Census of Manufacturers, there were 349 U.S. refineries in operation in that year; however, as of January 1, 1983, the number of operating refineries had fallen to 225, with a total

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1/ U.S. Department of Energy, "A Barrel of Crude," Energy Fact Sheet, Mar. 17, 1983.

capacity to process 16.2 million barrels of crude petroleum per day. 1/ As of January 1, 1985, there were 191 operating refineries in the United States, with a crude petroleum capacity of 15.9 million barrels per day. 2/ The decrease in the number of operating refineries since 1977 is the result of a combination of factors including decreased domestic demand for petroleum products, market shifts, increased transportation costs, consolidation of refinery operations, the end of the Federal entitlements program for small refineries, and the decontrol of crude petroleum prices in 1981. Of the 220 refiners, 131 are operated by independent refiners, which account for 30 percent of U.S. refining capacity. 3/

Employment in the petroleum refining industry decreased from 108,300 workers in 1979 to 100,600 in 1983. 4/ The number of production workers declined from 72,800 in 1979 to 64,700 in 1983. 5/

The major States producing petroleum products are Texas, California, and Louisiana. As of January 1, 1985, these States accounted for about 41 percent of the total number of U.S. refineries and 57 percent of the total refining capacity. 6/ The following tabulation shows the number of refineries and refining capacity by State as of January 1, 1985: 7/

1/ "Annual Refining Report," Oil and Gas Journal, Mar. 21, 1983, p. 130.
2/ "Annual Refining Report," Oil and Gas Journal, Mar. 18, 1985, p. 123.
3/ Submission by the Independent Refiners Coalition.
4/ U.S. Department of Commerce, Bureau of Industrial Economics, U.S. Industrial Outlook, 1984, January 1984, p. 8-5.
5/ Ibid.
6/ "Annual Refining Report," Oil and Gas Journal, Mar. 18, 1985, p. 123.
7/ Ibid.

State	Number of plants	Crude capacity
		Barrels per day
Alabama	1	80,000
Alaska	4	138,930
Arizona	1	5,000
Arkansas	4	69,170
California	30	2,265,098
Colorado	3	94,700
Delaware	1	140,000
Georgia	2	28,800
Hawaii	2	109,500
Illinois	8	946,000
Indiana	5	431,300
Kansas	7	338,000
Kentucky	2	218,900
Louisiana	16	2,188,793
Maryland	1	14,200
Michigan	4	119,400
Minnesota	2	204,143
Mississippi	5	362,400
Montana	6	147,500
Nevada	1	4,500
New Jersey	5	503,000
New Mexico	3	63,050
North Dakota	2	62,800
Ohio	5	515,700
Oklahoma	5	374,000
Oregon	1	15,000
Pennsylvania	8	658,700
Tennessee	1	57,000
Texas	33	4,145,900
Utah	6	154,950
Virginia	1	51,000
Washington	7	410,550
West Virginia	2	16,500
Wisconsin	1	39,000
Wyoming	6	162,778
Total	191	15,136,262

U.S. consumption

U.S. consumption of petroleum products has varied since 1971 as a result of crude petroleum and petroleum products price changes, product availability, and conservation efforts. In 1979, U.S. consumption of petroleum products was 18.5 million barrels per day and declined to 15.2 million barrels per day in 1983; consumption in 1984 was 15.7 million barrels per day, as shown in the following tabulation (in thousands of barrels per day), 1979-84: 1/

1/ U.S. Department of Energy, Petroleum Supply Monthly, June 1984, p. 2

Year	Consumption
1979	18,513
1980	17,056
1981	16,058
1982	15,296
1983	15,231
1984	15,745

During 1978-82, the refiner acquisition cost for domestic and imported crude petroleum rose sharply before declining slightly in 1983 and 1984 as shown in the following tabulation (in dollars per barrel), 1979-84: 1/

Year	Refiner acquisition cost of crude petroleum	
	Domestic	Imported
1978	$10.61	$14.57
1979	14.27	21.67
1980	24.23	33.89
1981	34.33	37.05
1982	31.22	33.55
1983	28.87	29.30
1984	28.63	28.96

Partially as a result of these price increases, retail prices for petroleum products increased in 1980, which led consumers to switch to alternative sources of energy and reduce consumption through conservation efforts. However, as the pace of economic activity improved in 1983, the decline in consumption of petroleum products slowed compared with previous years. In 1984, domestic consumption of petroleum products increased slightly for the first time since 1978.

Consumption of motor gasoline accounts for about 42 percent of total domestic consumption of petroleum products. Motor gasoline consumption declined after the 1973 Arab embargo and in 1979 following the Iranian Revolution when prices rose. Consumption of motor gasoline began to increase slightly in 1983 and 1984 as a result of improved economic activity and lower prices. The following tabulation shows total gasoline consumption and the percent that is unleaded: 2/

1/ U.S. Department of Energy, Monthly Energy Review, October 1984, p. 89.
2/ U.S. Department of Energy, Monthly Energy Review, October 1984, p. 45.

Year	Motor Gasoline	
	Total	Unleaded gasoline as a of total consumption
	Thousands of barrels per day	Percent
1973	6,674	1/
1974	6,537	1/
1977	7,177	27.5
1979	7,034	39.8
1980	6,579	46.6
1981	6,588	49.5
1982	6,539	52.1
1983	6,622	55.1
1984	6,715	2/ 59.0

1/ Data were not collected until 1977.
2/ Estimated.

The following tabulation shows the average price of motor gasoline (in cents per gallon, including tax), 1977-84: 1/

Year	Leaded regular	Unleaded regular	Unleaded premium	Average for all types
1977	62.2	65.6	1/	1/
1979	85.7	90.3	1/	88.2
1980	119.1	124.5	1/	122.1
1981	131.1	137.8	147.0	135.3
1982	122.2	129.6	141.5	128.1
1983	115.7	124.1	138.3	122.5
1984	2/ 113.1	2/ 121.4	2/ 136.7	2/ 119.9

1/ Not available.
2/ Estimated, based on January to November data.

U.S. production

Between 1977 1985, approximately 158 refineries shut down operations. The typical refinery that closed had a capacity of less than 50,000 barrels per day, with no cracking or other major crude petroleum upgrading facilities. Many of these refineries were built under the Government program

1/ Ibid., p. 92.

of support for small refiners in the 1970's. 1/ During the period 1981-83, the refineries remaining open were primarily sophisticated units that operated at about 68-70 percent of capacity compared with an average of 85 percent in 1979. 2/ During the first half of 1984, the refinery capacity utilization rate averaged about 76 percent as a result of higher gross inputs of crude petroleum to refineries and lower total refining capacity. 3/ Another factor contributing to the decrease in U.S. production of refined products and the subsequent decline in capacity utilization is an increase in offshore refinery operations. Currently, the world crude petroleum market is witnessing a situation of oversupply as well as excess refinery capacity. Some of the excess production made in these offshore refinery facilities enter the U.S. market, which is already faced with decreased demand for these refined products.

The following tabulation shows U.S. production of selected petroleum products (in thousands of barrels per day), 1973-84: 4/

Year	Motor gasoline	Distillate fuel oil	Residual fuel oil	Liquefied petroleum gases 1/	Other 2/
1973	6,535	2,822	971	1,600	3,693
1977	7,033	3,278	1,754	1,566	3,912
1979	6,852	3,153	1,687	1,556	4,153
1980	6,506	2,662	1,580	1,535	3,956
1981	6,405	2,613	1,321	1,571	3,739
1982	6,338	2,606	1,070	1,528	3,453
1983	6,340	2,456	852	1,642	3,460
1984	6,468	2,688	891	1,702	3,656

1/ Includes ethane, propane, normal butane, and isobutane.
2/ Includes pentanes, other hydrocarbons, alcohols, unfinished oils, gasoline blending components, and all finished petroleum products, except finished motor gasoline, distillate fuel oil, residual fuel oil, and liquefied petroleum gases.

U.S. trade

Imports.--The United States became a net importer of crude petroleum following World War II. As the volume of total U.S. imports of crude

1/ Resource Systems Institute, OPEC Downstream Project, "The Changing Structure of World Refining Industry: Implications for U.S. Energy Security," presented to the U.S. Department of Energy, Jan. 23, 1985, p. 23.
2/U.S. Department of Energy, Petroleum Supply Monthly, March 1982, p. 6 and January 1983, p. 6.
3/ U.S. Department of Energy, Petroleum Supply Monthly, June 1984, p. xiii.
4/ U.S. Department of Energy, Monthly Energy Review, October 1984, pp. 45, 47, 49, 51, and 52.

petroleum increased, the share of total imports accounted for by the OPEC nations also increased, thus spurring concern over U.S. dependence on foreign petroleum. Because of concern for national security, the United States has employed various methods to control imports of crude petroleum and petroleum products and thus reduce dependence on foreign supplies.

During 1955-59, control programs were essentially voluntary with few mechanisms to police compliance; however, during 1959-73, imports of both crude petroleum and petroleum products were regulated by a mandatory program based on officially fixed quotas. The Mandatory Oil Import Program (MOIP) was established by Presidential Proclamation No. 3279 on March 19, 1959, and provided quotas for virtually all U.S. imports of crude petroleum and petroleum products. The action was taken under the national security provisions of the Trade Agreements Extension Act of 1958. 1/ The program was originally designed to limit imports and thus insulate the price of U.S.-produced crude petroleum from the much lower world prices. 2/ It also established a fixed ceiling on imports so that domestic production was needed to supply domestic demand.

Although numerous modifications were made to the original restrictions of Proclamation No. 3279 between 1959 and 1977, one proclamation in particular issued during this period may have had an important bearing on the level of trade of crude petroleum and petroleum products during 1978-82. That was proclamation No. 4210, which was issued and became effective April 18, 1973. This proclamation suspended tariffs on imports of crude petroleum and petroleum products. It also provided for a transition period during which the then existing MOIP quota method was shifted to a license fee system. Under the fee system, it was believed that adjustments to the fees from time to time could fine tune better than a quota the importation of crude petroleum and petroleum products into the United States. These fees could be raised when the quantity of imports increased to such a level as, for example, to threaten to impair the national security. These fees could also be reduced if U.S. shortages of crude petroleum and petroleum products occurred.

Because of the continued shortages in international petroleum and the resultant escalating world prices as well as the need for the United States to continue to import, Proclamation No. 4655, issued April 6, 1979, and effective April 7, 1979, suspended the import fees; however, licenses were still required.

The United States is a net importer of petroleum products, primarily from Venezuela and refineries in the Caribbean nations. As a result of increased prices, the value of imports of all petroleum products increased from $11.4 billion in 1980 to $18.6 billion in 1984 (table 3). U.S. imports of petroleum products could increase further as additional refinery capacity comes onstream in the OPEC nations as well as other conventional-energy-rich nations. As of

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1/ Authority for such action was later provided for under sec. 232 of the Trade Expansion Act of 1962.

2/ U.S. Tariff Commission, World Oil Developments and U.S. Oil Import Policies, October 1973, p. 42.

Table 3.--Petroleum products: U.S. imports for consumption, by principal sources, 1980-84

(In thousands of dollars)

Source	1980	1981	1982	1983	1984
Venez	3,202,196	3,078,736	2,995,228	2,890,272	3,482,349
Algeria	633,030	1,059,741	1,351,209	1,655,822	2,535,309
N Antil	2,428,061	2,503,093	2,051,526	2,180,452	1,960,574
Canada	588,264	966,541	799,031	1,187,966	1,339,722
Nethlds	71,519	507,191	544,600	774,398	1,068,668
Bahamas	1,262,283	1,146,145	941,492	1,547,388	1,007,010
Mexico	85,705	292,863	235,754	475,919	791,227
Brazil	29,036	123,771	377,158	531,820	716,035
All other	3,055,417	3,512,049	3,767,409	3,739,945	5,734,477
Total	11,355,510	13,190,129	13,063,408	14,983,983	18,635,372

Source: Compiled from official statistics of the U.S. Department of Commerce.

January 1, 1985, the OPEC nations had the capacity to refine 4.8 million barrels per day of crude petroleum and are expected to have a refining capacity of 7.7 million barrels per day by 1987. 1/ These nations, with abundant supplies of crude petroleum and natural gas have a competitive advantage in the production of energy-intensive products, such as petroleum products and petrochemicals, because of relatively assured low-cost supplies of raw materials. At a time when exports of crude petroleum have peaked, these nations have developed or are developing downstream industries to utilize natural resource advantages and to diversify their exports as a means to further their economic development.

Residual fuel oils accounted for about 38 percent of the total value of U.S. imports of petroleum products in 1984. U.S. residual fuel oil imports decreased in quantity from 282 million barrels in 1980 to 254 million barrels in 1984; the value decreased only slightly from $7.2 billion in 1980 to $7.1 billion in 1984, primarily because of rising prices. The major sources of U.S. imports of residual fuel oils in 1984 were the North Antilles (except the Bahamas) and Venezuela, together accounting for 41 percent (table 4).

U.S. imports of distillate fuel oils increased irregularly from 15 million barrels, valued at $552 million in 1980 to 61 million barrels, valued at $2.0 billion, in 1983 and 103 million barrels, valued at $3.3 billion, in 1984 (table 5). Venezuela, Mexico, and Canada supplied about 54 percent of the total 1984 U.S. imports of distillate fuel oils.

U.S. imports of motor fuel increased irregularly from 19 million barrels in 1980 to 102 million barrels in 1984; however, during the same period the value of these imports increased from $716 million to $3.2 billion (table 6). In 1983, the major sources for U.S. imports of motor fuel were the Netherlands, accounting for 20 percent, and Venezuela, accounting for 16 percent; in 1984, this situation was reversed and the Netherlands accounted for 14 percent and Venezuela, 22 percent.

Exports.--The exportation of petroleum products was, until 1982, restricted and may, at any time, be restricted by the President under section 103 of the "Energy Policy and Conservation Act," Public Law 94-163, December 22, 1975. The President acts through the Secretary of Commerce, who imposes such restrictions as are necessary to be consistent with the national interest. The Secretary enforces this provision of the act through the requirement of validated export licenses. 2/

Exports of petroleum products during 1980-84 are shown in table 7. The value of U.S. exports increased by 265 percent during 1980-82. The reasons for this apparent dramatic increase include an increase in the unit value of petroleum product exports and the 1982 relaxation of export restrictions. However, U.S. exports in 1984 declined by 25 percent to a value of $3.6

1/ "Worldwide Report," Oil and Gas Journal, Dec. 31, 1984, p. 74-75; and Resource Systems Institute, OPEC Downstream Report, op. cit., p. 38.

2/ The rules governing these exports are set forth in section 377.6, "Petroleum and Petroleum Products," of the Export Administration Regulations of the U.S. Department of Commerce (15 C.F.R. §377.6).

Table 4.--Residual fuel: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 barrels)				
N Antil	63,794	62,409	57,588	62,974	54,110
Venez	106,485	85,570	78,859	57,310	48,780
Algeria	11,536	16,849	28,857	21,827	24,003
Bahamas	29,788	17,252	15,681	25,903	16,749
Peru	385	1,505	4,270	9,525	12,035
Brazil	1,019	3,884	7,408	9,456	10,902
Canada	12,680	13,045	9,797	11,136	10,391
Indnsia	7,755	11,483	3,966	5,496	7,300
All other	48,567	45,727	59,314	59,943	70,162
Total	282,010	257,724	265,739	263,568	254,431
	Value (1,000 dollars)				
N Antil	1,455,971	1,820,185	1,482,590	1,628,008	1,495,709
Venez	2,708,417	2,561,622	2,135,988	1,465,819	1,355,761
Algeria	356,080	563,715	919,461	639,192	721,727
Bahamas	874,713	596,294	443,193	764,164	491,457
Peru	9,959	44,015	118,873	248,227	323,130
Brazil	29,031	117,862	218,747	255,708	312,150
Canada	275,148	361,061	265,308	303,483	294,680
Indnsia	228,076	363,382	123,816	152,820	205,598
All other	1,289,379	1,305,666	1,587,099	1,603,870	1,923,903
Total	7,226,774	7,733,802	7,295,075	7,061,292	7,124,116
	Unit value (per barrel)				
N Antil	$22.82	$29.17	$25.74	$25.85	$27.64
Venez	25.43	29.94	27.09	25.58	27.79
Algeria	30.87	33.46	31.86	29.28	30.07
Bahamas	29.36	34.56	28.26	29.50	29.34
Peru	25.89	29.25	27.84	26.06	26.85
Brazil	28.48	30.34	29.53	27.04	28.63
Canada	21.70	27.68	27.08	27.25	28.36
Indnsia	29.41	31.65	31.22	27.81	28.16
All other	26.55	28.55	26.76	26.76	27.42
Average	25.63	30.01	27.45	26.79	28.00

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 5.--Distillate fuel: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 barrels)				
Venez	326	6,013	6,809	13,246	24,953
Mexico	201	1,281	600	4,349	16,800
Canada	512	5,490	4,140	12,776	13,851
Nethlds	192	4,005	823	4,404	10,839
Bahamas	1,167	7,081	8,579	12,572	8,425
Algeria	253	2,164	454	2,769	7,062
USSR	0	2,062	0	1,729	5,292
N Antil	7,234	3,142	3,572	2,659	3,299
All other	5,437	7,125	5,712	6,737	12,945
Total	15,322	38,363	30,689	61,240	103,466
	Value (1,000 dollars)				
Venez	10,041	230,403	240,524	426,918	808,595
Mexico	5,634	39,383	14,936	138,277	481,069
Canada	10,976	214,258	157,025	420,225	461,203
Nethlds	8,437	152,700	32,340	146,207	364,106
Bahamas	40,528	272,993	303,559	401,011	270,643
Algeria	8,783	80,678	17,843	85,587	229,677
USSR	-	80,706	-	55,968	168,040
N Antil	257,206	114,209	116,071	85,919	103,746
All other	180,387	269,920	197,530	204,581	400,685
Total	521,992	1,455,250	1,079,829	1,964,692	3,287,763
	Unit value (per barrel)				
Venez	$30.77	$38.32	$35.32	$32.23	$32.40
Mexico	28.01	30.76	24.90	31.80	28.64
Canada	21.44	39.03	37.93	32.89	33.30
Nethlds	43.94	38.13	39.28	33.20	33.59
Bahamas	34.73	38.55	35.38	31.90	32.12
Algeria	34.71	37.28	39.34	30.91	32.52
USSR	-	39.14	-	32.38	31.75
N Antil	35.56	36.35	32.50	32.32	31.45
All other	33.18	37.88	34.58	30.37	30.95
Average	34.07	37.93	35.19	32.08	31.78

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 6.--Motor fuels: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 barrels)				
Venez	4	0	1,584	12,201	22,497
Nethlds	591	6,092	11,375	15,381	14,700
Brazil	0	0	3,868	7,590	12,554
Canada	3,439	3,780	3,833	7,904	9,744
China M	2,559	6,767	9,559	10,371	10,687
Italy	1,153	3,113	1,643	3,071	6,556
U King	1/	26	476	2,223	4,517
Romania	0	2,312	1,958	6,385	4,533
All other	11,208	10,786	13,324	13,592	16,012
Total	18,953	32,876	47,620	78,719	101,799
	Value (1,000 dollars)				
Venez	100	-	61,198	427,551	720,866
Nethlds	24,575	242,094	411,547	511,119	466,398
Brazil	-	-	142,745	253,202	377,448
Canada	129,582	153,485	153,673	277,089	321,953
China M	81,809	258,744	336,884	308,895	309,909
Italy	53,075	121,305	59,402	101,245	197,574
U King	1/	1,052	17,172	76,182	141,374
Romania	-	90,241	69,846	207,709	136,346
All other	426,713	430,554	496,978	466,367	505,581
Total	715,855	1,297,476	1,749,445	2,629,359	3,177,451
	Unit value (per barrel)				
Venez	$25.02	-	$38.62	$35.04	$32.04
Nethlds	41.60	39.74	36.18	33.23	31.73
Brazil	-	-	36.90	33.36	30.07
Canada	37.68	40.60	40.09	35.06	33.04
China M	31.97	38.24	35.24	29.78	29.00
Italy	46.04	38.97	36.15	32.97	30.13
U King	113.00	40.37	36.10	34.27	31.30
Romania	-	39.02	35.68	32.53	30.08
All other	38.07	39.92	37.30	34.31	31.58
Average	37.77	39.47	36.74	33.40	31.21

1/ Less than 500.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 7.--Petroleum products: U.S. exports of domestic merchandise, by principal markets, 1980-84

(In thousands of dollars)

Market	1980	1981	1982	1983	1984
Japan	75,770	151,692	483,606	489,930	539,412
Canada	107,431	215,384	317,299	428,585	512,421
Mexico	218,609	210,206	962,901	196,868	270,028
N Antil	4,940	16,876	75,657	147,947	258,656
U King	50,084	36,732	126,652	85,555	218,200
China t	39,194	85,244	44,676	113,314	157,229
SPAIN	-	-	-	-	148,312
Kor Rep	17,328	87,875	277,132	132,516	147,816
All other	799,477	1,426,571	2,503,971	2,173,975	1,325,122
Total	1,312,833	2,230,580	4,791,893	3,768,688	3,577,194

Source: Compiled from official statistics of the U.S. Department of Commerce.

billion because of the strength of the U.S. dollar vis-a-vis other currencies and an oversupply of products on the world market.

Tables 8-10 show the increase in volume of exports through 1982 of three major petroleum products, distillate fuel oil, motor fuels, and residual fuel oil, which together accounted for nearly 78 percent of petroleum product exports in 1982. U.S. exports of residual fuels increased from 6 million barrels, valued at $163 million in 1980 to 67 million barrels, valued at $1.8 billion in 1984 (table 8.)

Exports of distillate fuel oils increased from 387,000 barrels in 1980 to 1.2 million barrels in 1981; between 1981 and 1982, distillate fuel oil exports increased to more than 28.2 million barrels. In 1984, exports declined to 19.3 million barrels (table 9).

Exports of motor fuels, however, decreased in volume from 1.3 million barrels in 1980 to 1.0 million barrels in 1981. After export restrictions were relaxed, export volume climbed to over 13.9 million barrels in 1982, but then declined to 3.1 million barrels in 1984 because of the increased value of the U.S. dollar and declining demand (table 10).

The major markets for petroleum products have been other developed nations without significant reserves of crude petroleum for use as a raw material base, especially Japan, Canada, the Netherlands, and Singapore. These four nations together accounted for nearly 50 percent of U.S. exports of petroleum products. A notable exception to this rule is Mexico.

Petrochemicals

The term petrochemicals refers mainly to chemicals that, at least in part, are derived directly from hydrocarbons occurring naturally in crude petroleum and natural gas. The diversity of petrochemicals has led to the use of three general categories: primary petrochemicals, intermediate petrochemicals, and petrochemical products. Primary petrochemicals are derived directly from a feedstock either by refining, cracking or chemically converting the feedstock. Intermediate petrochemicals are usually made from primary petrochemicals, although some are manufactured directly from the feedstock. Petrochemical products are typically made from intermediate petrochemicals and often can be used without further chemical conversion (see the following tabulation): 1/

1/ U.S. Department of Commerce, Bureau of Industrial Economics, U.S. Industrial Outlook, 1984, January 1984, p. 9-4.

Table 8.--Residual fuel: U.S. exports of domestic merchandise, by principal markets, 1980-84

Market	1980	1981	1982	1983	1984
	Quantity (1,000 barrels)				
Japan	10	1,887	5,645	10,694	13,580
U King	0	247	3,346	1,645	7,725
N Antil	100	0	2,812	4,056	7,210
China t	551	2,220	958	3,640	4,140
Kor Rep	0	2,433	8,298	3,524	3,922
Italy	0	2,733	3,276	2,581	3,610
SPAIN	0	0	0	0	3,366
Singapr	1,940	4,699	6,181	13,740	3,140
All other	3,475	18,607	44,002	22,335	20,276
Total	6,076	32,826	74,518	62,216	66,969
	Value (1,000 dollars)				
Japan	376	54,364	162,029	276,692	369,215
U King	-	5,568	81,724	42,312	206,219
N Antil	1,732	-	69,436	96,113	193,576
China t	14,760	66,325	26,254	97,370	112,367
Kor Rep	-	65,444	214,714	93,456	104,129
Italy	-	90,567	83,182	63,773	92,590
SPAIN	-	-	-	-	89,295
Singapr	58,390	137,286	167,024	344,549	83,215
All other	88,368	488,504	1,112,088	578,040	551,943
Total	163,627	908,059	1,916,451	1,592,305	1,802,551
	Unit value (per barrel)				
Japan	$37.47	$28.81	$28.71	$25.87	$27.19
U King	-	22.50	24.43	25.72	26.70
N Antil	17.25	-	24.69	23.69	26.85
China t	26.80	29.88	27.41	26.75	27.14
Kor Rep	-	26.90	25.87	26.52	26.55
Italy	-	33.14	25.39	24.71	25.65
SPAIN	-	-	-	-	26.53
Singapr	30.09	29.22	27.02	25.08	26.50
All other	25.43	26.25	25.27	25.88	27.22
Average	26.93	27.66	25.72	25.59	26.92

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 9.--Distillate fuel: U.S. exports of domestic merchandise, by principal markets, 1980-84

Market	1980	1981	1982	1983	1984
	Quantity (1,000 barrels)				
Canada	2	5	4	1,389	5,417
Japan	20	403	5,458	4,955	3,321
N Antil	0	0	119	1,265	1,492
Panama	262	134	739	883	1,424
SPAIN	0	0	0	0	1,233
China t	0	1	0	0	920
Bahamas	1/	1/	51	528	917
Ecuador	0	1/	617	1,254	804
All other	102	672	21,258	16,144	3,799
Total	387	1,216	28,245	26,418	19,328
	Value (1,000 dollars)				
Canada	74	181	141	46,822	169,965
Japan	820	16,412	205,079	159,314	106,343
N Antil	-	-	3,398	38,519	46,401
Panama	5,692	5,406	27,287	28,189	46,079
SPAIN	-	-	-	-	37,906
China t	-	29	-	-	28,747
Bahamas	8	14	1,937	16,063	28,217
Ecuador	-	2	25,002	41,984	26,329
All other	3,179	28,341	819,557	550,439	121,759
Total	9,773	50,384	1,082,400	881,330	611,746
	Unit value (per barrel)				
Canada	$30.05	$36.71	$34.77	$33.71	$31.38
Japan	40.88	40.68	37.57	32.15	32.02
N Antil	-	-	28.67	30.46	31.10
Panama	21.70	40.37	36.91	31.93	32.35
SPAIN	-	-	-	-	30.74
China t	-	25.99	-	-	31.25
Bahamas	24.76	36.68	38.34	30.45	30.77
Ecuador	-	35.00	40.55	33.48	32.73
All other	31.22	42.15	38.55	34.10	32.05
Average	25.25	41.43	38.32	33.36	31.65

1/ Less than 500.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 10.--Motor fuels: U.S. exports of domestic merchandise, by principal markets, 1980-84

Market	1980	1981	1982	1983	1984
	Quantity (1,000 barrels)				
Canada	13	190	128	1,846	885
N Zeal	69	0	1/	0	443
Ecuador	0	0	173	1,098	462
N Antil	0	0	1/	275	291
Chile	0	1/	1/	1/	262
Panama	0	1/	30	71	237
Austral	78	0	1/	438	269
Fr P IS	116	84	111	0	114
All other	1,049	752	13,494	708	141
Total	1,324	1,026	13,938	4,436	3,104
	Value (1,000 dollars)				
Canada	341	7,766	5,138	64,857	27,549
N Zeal	3,362	-	9	-	14,224
Ecuador	-	-	7,225	37,748	13,062
N Antil	-	-	1	11,607	10,173
Chile	-	1	9	1	8,799
Panama	-	1	1,098	2,444	8,375
Austral	3,754	-	2	13,990	8,121
Fr P IS	5,070	4,292	5,670	-	3,704
All other	13,043	29,824	522,899	26,724	5,976
Total	25,569	41,883	542,052	157,370	99,983
	Unit value (per barrel)				
Canada	$26.62	$40.84	$40.06	$35.13	$31.14
N Zeal	48.72	-	44.36	-	32.10
Ecuador	-	-	41.71	34.39	28.26
N Antil	-	-	28.39	42.15	35.00
Chile	-	28.30	28.02	27.98	33.52
Panama	-	29.52	36.36	34.55	35.39
Austral	48.29	-	29.81	31.91	30.19
Fr P IS	43.71	51.15	51.09	-	32.56
All other	12.43	39.64	38.75	37.76	42.24
Average	19.30	40.80	38.89	35.48	32.21

1/ Less than 500.

Source: Compiled from official statistics of the U.S. Department of Commerce.

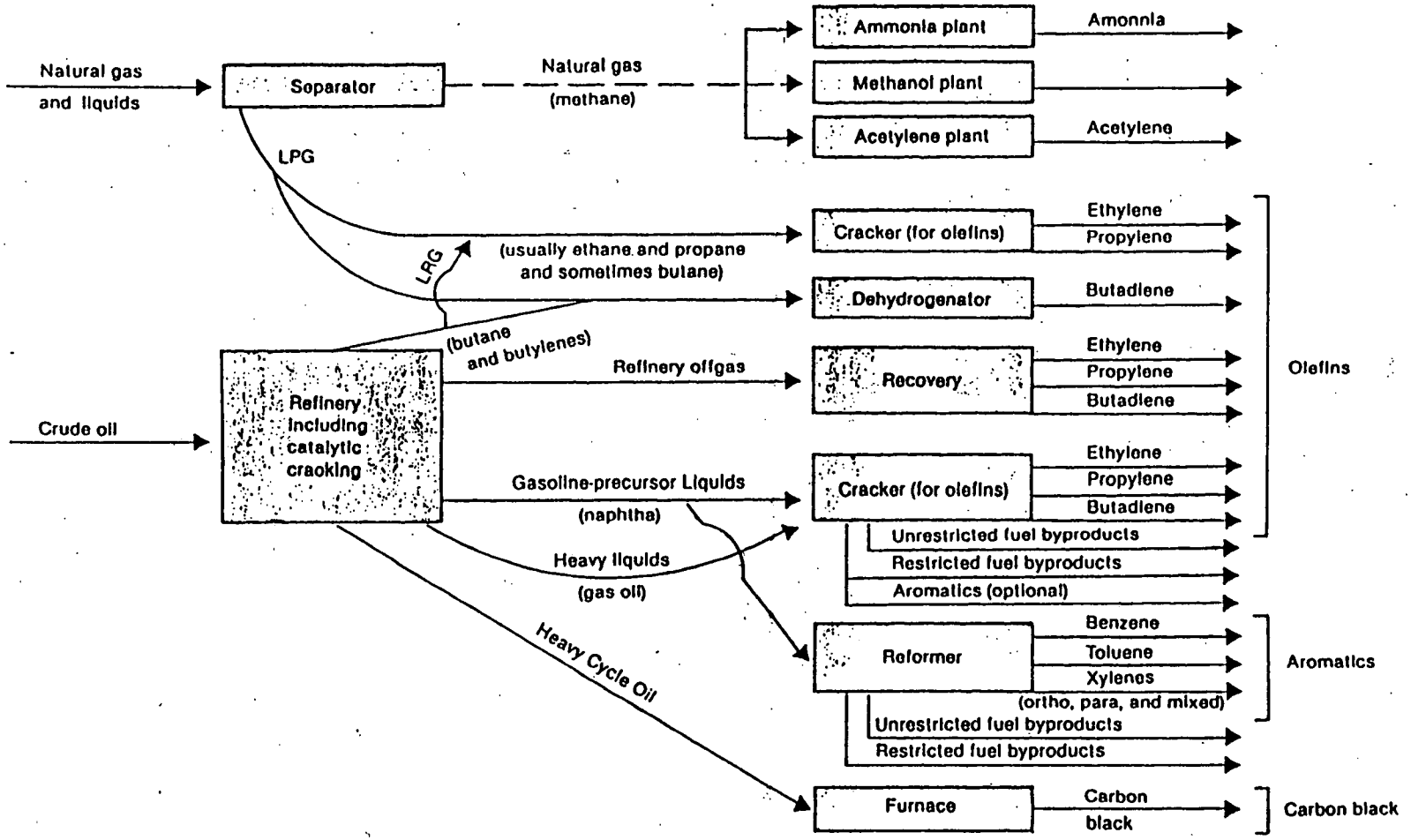
Primary petrochemicals	Intermediate petrochemicals	Petrochemical products
Aromatics:	Aromatic/cyclic	
Benzene	Ethylbenzene	Plastic materials
Toluene	Styrene	e.g.--polystyrene
Xylenes (mixed)	Phenol	
o-xylene	Phthalic anhydride	Synthetic rubber
m-xylene	Terephthalic acid	e.g.--polybutadiene
p-xylene	Aniline	
Naphthalene		Synthetic fibers
		e.g.--nylon
Olefins:	Aliphatic/acyclic:	Surfactants
Ethylene	Acetic acid	e.g.--arylsulfonates
Propylene	Ethylene oxide	
Butylene	Ethylene glycol	
Butadiene	Ethylene dichloride	Nitrogenous fertilizer
Acetylene	Vinyl chloride	e.g.--ammonium nitrate
	Formaldehyde	Phosphatic fertilizer
	Butanol	e.g.--ammonium phosphate
Ammonia		
Carbon black		

For the purpose of this study, emphasis will be given to primary petrochemicals such as aromatics (benzene, toluene, and mixed xylenes) and olefins. The chemicals are included in this study because they are not only used as components in finished gasoline but also as major feedstocks for the petrochemical industry. The flow chart in figure 3 shows the relation between these products and petroleum refining.

U.S. industry structure

The domestic petrochemicals industry is extremely heterogeneous. There are producers whose operations are located entirely within the continental United States, while others have operations and facilities located throughout the world. There are a few producers who, by choice, have limited their lines of production and have not integrated forward into the production of higher value-added products; many more are integrated both horizontally and vertically. Those firms that exemplify a "typical" vertically integrated petrochemical producer may be refiners which use their hydrocarbon feedstocks to produce primary commodity petrochemicals, which in turn may be used to produce down-line, value-added petrochemical products, such as plastics or fibers. A number of U.S. firms are subsidiaries of foreign multinational companies.

Figure 3.—Simplified Flow Diagram of Primary Petrochemical Production



Source: Office of Technology Assesment, Technology Transfer to the Middle East, 1984, Appendix 5A, p. 169.

The value of all petrochemical shipments (in current dollars) decreased from $82.2 billion in 1981 to $76.5 billion in 1983. 1/ Employment in the petrochemical industry decreased from 311,100 workers in 1979 to 266,700 in 1983. 2/ The number of production workers declined from 204,600 in 1979 to 170,200 in 1983. 3/

Primary petrochemicals are produced by about 35 companies located mainly in Texas and Louisiana. The five largest petrochemical companies account for 45-50 percent of total production.

U.S. consumption

Because primary petrochemicals eventually become final products that are consumed by industries, producing such cyclical products as housing and automobiles, consumption of these products is also cyclical. Domestic consumption of these products declined from 74.9 billion pounds, valued at $12.5 billion, in 1980 to 60.3 billion pounds, valued at $12.1 billion in 1982 (table 11). As the U.S. economy recovered during 1983-84, domestic consumption increased to 74.1 billion pounds, valued at $13.6 billion dollars in 1984.

U.S. production

U.S. production of primary petrochemicals decreased from 72.8 billion pounds, valued at $12.1 billion, in 1980, to 57.5 billion pounds, valued at $11.6 billion, in 1982. Following the U.S. economic recovery during 1983-84, domestic production increased to 71.4 billion pounds, valued at $13.1 billion, in 1984 (table 11).

U.S. trade

Imports.--U.S. imports of primary petrochemicals discussed in this report increased steadily from 3.1 billion pounds, valued at $529 million, in 1980 to 4.0 billion pounds, valued at $736 million, in 1984 (table 11). The value of primary petrochemical imports in 1984 increased 4.7 percent to $736 million compared with $703 million in 1983. In comparison, U.S. imports of Industrial Organic Chemicals (SIC 286) increased 17.3 percent from $2.62 billion in 1983 to $3.07 billion in 1984. 4/ Canada was the major source of imports for both aromatics and olefins. Other suppliers included the Netherlands, Italy, and the United Kingdom for the olefins; and Brazil, the Netherlands, and Japan for the aromatics. Industry sources cite the strong dollar as the main reason for increased imports.

Exports.--U.S. exports of these products decreased steadily from 1.5 billion pounds, valued at $242 million, in 1981 to 1.3 billion pounds, valued

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1/ U.S. Department of Commerce, Bureau of Industrial Economics, U.S. Industrial Outlook, 1984, January 1984, p. 9-4.
2/ Ibid.
3/ Ibid.
4/ U.S. Department of Commerce, Bureau of Industrial Economics, U.S. Industrial Outlook, 1985, January 1985, p. 12-7.

at $233 million, in 1984 (table 11) because of the increased value of the U.S. dollar and excess world capacity. The largest markets for U.S. exports of olefins during 1980-84 were Canada and Mexico. The largest markets for U.S. exports of aromatics during this same period were Canada, the Netherlands, the Republic of Korea, and Belgium.

Ethyl and Methyl Alcohol

Ethyl and methyl alcohol have been included in the current investigation because of the recent increase in the use of these products as a motor fuel blending stock and the expected future increased use. U.S. consumption of ethyl alcohol for motor fuel blending purposes increased from virtually nothing in 1980 to more than 260 million gallons in 1983. Use of methyl alcohol as a motor fuel component has also recently increased.

Particular interest in these products was elaborated in a letter from Senator Robert Dole to Chairwoman Paula Stern (see Appendix A).

U.S. industry structure

Ethyl alcohol.--Ethyl alcohol can be produced either synthetically or by fermentation. In 1983, the domestic capacity of ethyl alcohol was estimated at 670 million gallons per year, with approximately 30 percent utilizing the synthetic process, and the remaining 70 percent using the fermentation process. 1/ At present, the United States is the largest producer of synthetic ethyl alcohol in the noncommunist world. 2/ In 1983, seven companies produced synthetic ethyl alcohol in plants located in Texas, Pennsylvania, and Illinois. The producers of synthetic ethyl alcohol are large chemical firms that produce a variety of products including other alcohols. In a number of instances, these producers use all or part of their ethyl alcohol to manufacture other chemicals. There are nine major producers of fermentation ethyl alcohol with plants located in Illinois, Wisconsin, Iowa, Kentucky, and Pennsylvania. The companies involved are in either the agriculture business or the distilled spirits industry. Of the 16 major U.S. producers of ethyl alcohol (either synthetic or fermentation), the 7 largest firms account for approximately 80 percent of domestic capacity.

Methyl alcohol.--In terms of volume, methyl alcohol (methanol) is one of the top 10 organic chemical commodities in the United States. It is produced by 11 major chemical companies, with most production facilities located in the Gulf States of Texas, Louisiana, and Florida. These traditional domestic producers are large integrated chemical companies that consume their methyl alcohol in the production of downstream products. In 1984, domestic capacity was approximately 11.3 billion pounds per year.

Currently, worldwide capacity to produce methyl alcohol exceeds demand. As a result of weak prices due to this overcapacity, two major domestic

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1/ CPI Purchasing, December 1983, p. 21.
2/ Chemical Marketing Reporter, May 2, 1983, p. 7.

Table. 11--Primary petrochemicals: 1/ U.S. production, exports, imports, and apparent consumption, 1980-84

(Quantity in thousands of pounds, value in thousands of dollars)

Year	Production	Exports	Imports	Apparent consumption
	Quantity			
1980	72,764,036	946,848	3,061,819	74,879,007
1981	70,034,130	1,465,414	3,430,393	71,999,109
1982	57,487,897	1,036,489	3,845,659	60,294,067
1983	68,686,846	1,188,481	3,697,579	71,195,944
1984	71,359,578	1,279,648	4,003,348	74,083,278
	Value			
1980	12,145,459	197,533	529,134	12,477,060
1981	15,969,546	241,787	688,745	16,416,504
1982	11,611,224	210,086	738,927	12,140,065
1983	12,902,659	235,068	702,569	13,370,160
1984	13,119,054	233,029	736,158	13,622,183

1/ Includes olefins and aromatics.

Source: Official statistics of the U.S. International Trade Commission and the U.S. Department of Commerce.

suppliers each closed one plant (at least temporarily) and one supplier stopped selling on the merchant market. 1/ The domestic industry is currently operating at approximately 65 percent capacity.

U.S. consumption

Ethyl alcohol.--The major domestic use for ethyl alcohol in 1983 was as a motor fuel blending component in gasohol (approximately 50 percent). 2/ The Crude Oil Windfall Profits Tax of 1980 (Public Law 96-223) 3/ provided for federal incentives to produce alternative fuels, including gasohol. Many States have implemented similar programs. The following tabulation shows U.S. consumption of ethyl alcohol, 1979-84: 4/

	U.S. consumption	
Year	Quantity (million pounds)	Value (1,000 dollars)
1979	1,835	$340,586
1980	2,303	593,286
1981	1,632	444,594
1982	2,145	614,374
1983	2,955	787,260
1984 1/	3,474	861,739

1/ Estimated.

Methyl alcohol.--U.S. consumption of methyl alcohol declined from 7.9 billion pounds, valued at $716 million, in 1981 to 6.8 billion pounds, valued at $538 million, in 1982 before increasing to 9.2 billion pounds, valued at $645 million in 1984. Industry analysts estimate that in 1984 approximately 210 million gallons of methyl alcohol were used as either a motor fuel component or in the production of MTBE. This volume represent approximately 15 percent of total U.S. methyl alcohol consumption in 1984. They also project that in 1985 this number will increase to 260 million gallons. 5/ The ratio of imports to consumption increased from 2 percent in 1981 to approximately 14 percent in 1984. The following tabulation shows U.S. consumption of methyl alcohol (in millions of pounds and thousands of dollars): 6/

1/ Chemical & Engineering News, Sept. 10, 1984, p. 7.
2/ CPI Purchasing, December 1983, p. 21.
3/ 26. U.S.C. 4081.
4/ U.S. International Trade Commission, Summary of Trade and Tariff Information, Monohydric Alcohols, USITC publication No. 841, December 1983.
5/ Alcohol Outlook, February 1985 Information Resources Inc., Washington D.C., p. 2-4.
6/ Ibid.

U.S. consumption

Year	Quantity (million pounds)	Value (1,000 dollars)
1979	7,384	$520,874
1980	7,064	631,278
1981	7,920	716,401
1982	6,798	538,460
1983	8,016	561,120
1984 1/	9,212	644,840

1/ Estimated.

Mainly because of the growing use in these areas, domestic demand for methyl alcohol is expected to increase by 17 percent in 1985. 1/ MTBE and methyl alcohol for fuel use will account for approximately 15 percent of consumption in 1985. 2/

U.S. production

Ethyl alcohol.--Total U.S. production of ethyl alcohol for nonbeverage use decreased from 1.97 billion pounds, valued at $531 million, in 1980 to 1.51 billion pounds, valued at $423 million, in 1981. After 1981, production increased steadily to an estimated 2.38 billion pounds, valued at $714 million, in 1984. A major source of this increased production was fermentation; production by this method increased from 940 million pounds in 1982 to 1.27 billion pounds in 1984. The major reason for this increased production was due to use as a motor fuel blending stock. The following tabulation shows U.S. production of ethanol by process, 1979-84: 3/

1/ CPI Purchasing, October 1984, p. 49.
2/ Chemical and Engineering News, Feb. 4, 1985, p. 13.
3/ U.S. International Trade Commission, International Developments in Biotechnology and Their Possible Impact on Certain Sectors of the U.S. Chemical Industry, October 1984, p. 46.

Year	Synthetic	Fermentation	Total	
			Quantity	Value
	Million pounds		Million pounds	1,000 dollars
1979	1,408	301	1,710	324,870
1980	1,451	519	1,970	531,806
1981	1,317	194	1,511	423,007
1982	1,023	940	1,963	588,847
1983	1,104	1,195	2,299	689,584
1984 1/	1,107	1,274	2,381	714,300

1/ Estimated.

According to industry analysts, domestic ethyl alcohol production for fuel use has grown from 10 million gallons in 1978 to 375 million gallons in 1983 and is expected to grow at an annual rate of 15 percent over the next 10 years. 1/ This growth rate, however, is dependent upon continued Federal and State subsidies and the price of crude petroleum. Many analysts believe the recent decline in the price of crude petroleum has made gasohol less competitive. In addition, increased competition from imports may force some domestic producers to reconsider their positions in this market, which could result in a smaller growth rate than originally predicted.

Methyl alcohol.--U.S. production of methyl alcohol decreased from 8.6 billion pounds, valued at $771 million, in 1981 to 7.6 billion pounds, valued at $604 million, in 1982. The economic downturn during 1982-83 and the increase in imports during the same period contributed to the decline in production. As the U.S. economy recovered during 1983-84, production increased to 7.98 billion pounds in 1983 and then to 8.36 billion pounds in 1984. Production, however, has yet to reach the 1981 level, and because of lower prices, sales revenues are substantially reduced. The following tabulation shows U.S. production of methyl alcohol, 1979-84: 2/

Year	Quantity (million pounds)	Value (1,000 dollars)
1979	7,367	$515,718
1980	7,153	643,768
1981	8,577	771,894
1982	7,555	604,367
1983	7,982	558,740
1984 1/	8,365	585,550

1/ Estimated.

1/ U.S. International Trade Commission, Summary of Trade and Tariff Information, Monohydric Alcohols; Ibid.

2/ "Specialties '84/Octane Enhancers," Chemical Marketing Reporter, May 7, 1984. p. 40.

U.S. imports

Ethyl alcohol.--Total U.S. imports of ethyl alcohol declined from 397 million pounds, valued at $74.6 million, in 1980 to 188 million pounds, valued at $36.5 million in 1981 (table 12). U.S. imports of ethyl alcohol increased steadily to 1.1 billion pounds, valued at $153 million, in 1984. The major source of supply was Brazil which, in January-November 1984, accounted for approximately 71 percent of imports. Imports of ethyl alcohol for motor fuel use increased from virtually nothing in 1980 to 541 million pounds, valued at $65 million in 1984 (table 13). Brazil was the major supplier in 1984, accounting for over 95 percent of imports. It has also been alleged that ethyl alcohol mixed with gasoline (gasohol) has been imported under item 475.25, motor fuels; however, the staff was not able to verify these allegations.

Methyl alcohol.--U.S. imports of methyl alcohol for fuel use increased from 3.6 million pounds, valued at $352,000, in 1981 to 148 million pounds, valued at $7 million in 1984. The major sources of these imports were Canada and Mexico (table 14).

U.S. exports

Ethyl alcohol.--U.S. exports of ethyl alcohol fluctuated during 1980-84, reaching a high of 67.7 million pounds, valued at $14.9 million, in 1981 and a low of 16 million pounds, valued at $3.8 million in 1983. U.S. exports increased in 1984 to 23 million pounds, valued at $5.3 million (table 15), or approximately one percent of domestic production. The major markets for U.S. exports of ethyl alcohol in 1983 were Belgium, the Republic of Korea, and Canada.

Methyl alcohol.--U.S. exports of methyl alcohol increased from 323 million pounds, valued at $29 million, in 1980 to 1.1 billion pounds, valued at $89.3 million, in 1982. U.S. exports then decreased to 283 million pounds, valued at $26.7 million, in 1984 because of rising worldwide overcapacity to produce methyl alcohol, resulting from the opening of new Saudi facilities during 1983-84, 1/ and the strong U.S. dollar which made U.S. exports of this product less competitive in foreign markets (table 16).

TECHNICAL RECOMMENDATIONS AND PROBABLE ECONOMIC EFFECTS

Technical Recommendations

For the purposes of this report, three main tariff classification issues are addressed: (1) the tariff treatment of naphthas and other motor fuel blending stocks; (2) the tariff treatment of fuel-use ethyl alcohol, gasohol and other gasoline/ethyl alcohol mixtures as it relates to the possible

1/ Chemical Marketing Reporter, July 9, 1984, p. 1.

Table 12.--Ethyl alcohol for fuel and commercial use: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
Brazil	267,544	84,756	116,457	478,663	895,933
U King	1/	2	45,570	33,820	69,877
Canada	56,212	56,794	34,183	92,814	48,005
Argent	73,111	47,215	30,056	36,210	42,346
Spain	0	0	0	6,058	25,377
France	22	1/	0	10,575	15,648
Rep Saf	0	0	0	9,390	10,603
Nethlds	0	1	3,245	0	5,880
All other	10	21	3,426	4,796	1,829
Total	396,900	188,789	232,936	672,326	1,115,498
	Value (1,000 dollars)				
Brazil	50,829	17,013	18,717	71,240	115,723
U King	2	10	8,568	5,921	13,253
Canada	12,300	12,033	5,018	12,984	8,746
Argent	11,468	7,302	5,790	6,336	6,310
Spain	-	-	-	596	3,197
France	2	1	-	1,870	2,658
Rep Saf	-	-	-	1,744	1,368
Nethlds	-	2	556	-	1,100
All other	21	109	376	894	353
Total	74,623	36,469	39,025	101,584	152,708
	Unit value (per pound)				
Brazil	$0.19	$0.20	$0.16	$0.15	$0.13
U King	74.64	4.46	0.19	0.18	0.19
Canada	0.22	0.21	0.15	0.14	0.18
Argent	0.16	0.15	0.19	0.17	0.15
Spain	-	-	-	0.10	0.13
France	0.09	7.95	-	0.18	0.17
Rep Saf	-	-	-	0.19	0.13
Nethlds	-	1.79	0.17	-	0.19
All other	2.02	5.32	0.11	0.19	0.19
Average	0.19	0.19	0.17	0.15	0.14

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 13.--Ethyl alcohol for fuel use: U.S. imports for consumption, by principal sources, 1980-84

Source	1980	1981	1982	1983	1984 1/
	Quantity (1,000 pounds)				
Brazil	0	29,128	88,432	357,414	539,628
Spain	0	0	0	5,136	1,771
Canada	0	0	296	0	0
Total	0	29,128	88,728	362,551	541,399
	Value (1,000 dollars)				
Brazil	-	5,834	14,122	52,654	64,758
Spain	-	-	-	505	174
Canada	-	-	65	-	-
Total	-	5,834	14,188	53,159	64,968
	Unit value (per pound)				
Brazil	-	$0.20	$0.16	$0.15	$0.12
Spain	-	-	-	0.10	0.10
Canada	-	-	0.22	-	-
Average	-	0.20	0.16	0.15	0.12

1/ Estimated from data collected by the Bureau of Alcohol, Tobacco, and Fire Arms.

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 14.--Methyl alcohol for fuel use: U.S. imports for consumption by principal sources, 1980-84

Source	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
Trinid	0	0	0	0	75,269
Canada	189	3,552	55,116	70,742	68,189
Mexico	0	0	0	507	3,554
N Zeal	0	0	0	0	1,155
Fr Germ	0	0	0	1	31
Libya	0	0	1,974	0	0
Romania	0	0	0	0	0
Nethlds	0	0	0	0	0
Total	189	3,552	57,090	71,250	148,198
	Value (1,000 dollars)				
Trinid	-	-	-	-	3,875
Canada	13	352	4,434	4,295	3,238
Mexico	-	-	-	26	175
N Zeal	-	-	-	-	47
Fr Germ	-	-	-	3	7
Libya	-	-	140	-	-
Romania	-	-	-	-	-
Nethlds	-	-	-	-	-
Total	13	352	4,574	4,323	7,341
	Unit value (per pound)				
Trinid	-	-	-	-	$0.05
Canada	0.07	0.10	0.08	0.06	0.05
Mexico	-	-	-	0.05	0.05
N Zeal	-	-	-	-	0.04
Fr Germ	-	-	-	2.00	0.22
Libya	-	-	0.07	-	-
Romania	-	-	-	-	-
Nethlds	-	-	-	-	-
Average	0.07	0.10	0.08	0.06	0.05

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 15.--Ethyl alcohol for commercial use: U.S. exports of domestic merchandise, by principal markets, 1980-84

Market	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
Belgium	30,840	23,712	13,282	4,244	7,171
Japan	7,665	9,578	12,485	4	3,076
Canada	5,781	7,125	4,368	6,224	5,540
Kor Rep	684	330	600	2,577	825
Mexico	864	803	529	499	4,061
N Antil	796	1,065	718	481	452
Trinid	293	231	393	290	211
Haiti	58	52	51	44	201
All other	16,706	24,802	18,344	1,646	1,413
Total	63,688	67,698	50,771	16,009	22,949
	Value (1,000 dollars)				
Belgium	4,699	4,475	3,480	1,112	2,346
Japan	2,007	2,472	2,949	3	839
Canada	482	666	447	674	713
Kor Rep	287	169	221	822	301
Mexico	78	101	72	86	242
N Antil	293	329	242	183	173
Trinid	116	95	173	135	108
Haiti	22	23	20	18	75
All other	5,159	6,552	5,894	776	471
Total	13,143	14,882	13,498	3,808	5,269
	Unit value (per pound)				
Belgium	$0.15	$0.19	$0.26	$0.26	$0.33
Japan	0.26	0.26	0.24	0.74	0.27
Canada	0.08	0.09	0.10	0.11	0.13
Kor Rep	0.42	0.51	0.37	0.32	0.37
Mexico	0.09	0.13	0.14	0.17	0.06
N Antil	0.37	0.31	0.34	0.38	0.38
Trinid	0.40	0.41	0.44	0.46	0.51
Haiti	0.37	0.44	0.39	0.41	0.37
All other	0.31	0.26	0.32	0.47	0.33
Average	0.21	0.22	0.27	0.24	0.23

Source: Compiled from official statistics of the U.S. Department of Commerce.

Table 16.--Methyl alcohol: U.S. exports of domestic merchandise, by principal markets, 1980-84

Market	1980	1981	1982	1983	1984
	Quantity (1,000 pounds)				
U King	17	32	13	26,331	45,008
Nethlds	48,542	212,872	295,937	290,392	94,089
Japan	56,033	194,221	346,881	52,480	11,718
Rep Saf	13,136	25,267	62,715	26,087	41,179
Venez	17,583	8,604	21,952	15,474	15,332
Brazil	15,834	6,581	8,748	2,192	15,523
Colomb	6,212	4,218	5,631	5,898	14,151
Canada	517	401	475	3,363	11,004
All other	165,430	378,859	367,849	231,274	34,791
Total	323,304	831,055	1,110,199	653,490	282,794
	Value (1,000 dollars)				
U King	3	11	2	1,670	8,159
Nethlds	2,567	14,377	27,243	18,479	5,623
Japan	5,746	14,948	24,073	3,270	3,551
Rep Saf	1,266	2,090	8,566	1,795	2,486
Venez	1,650	666	1,477	1,234	943
Brazil	1,783	564	855	146	921
Colomb	550	355	448	393	889
Canada	74	39	33	214	869
All other	15,305	36,065	26,574	17,974	3,279
Total	28,944	69,115	89,272	45,176	26,720
	Unit value (per pound)				
U King	$0.19	$0.33	$0.13	$0.06	$0.18
Nethlds	0.05	0.07	0.09	0.06	0.06
Japan	0.10	0.08	0.07	0.06	0.30
Rep Saf	0.10	0.08	0.14	0.07	0.06
Venez	0.09	0.08	0.07	0.08	0.06
Brazil	0.11	0.09	0.10	0.07	0.06
Colomb	0.09	0.08	0.08	0.07	0.06
Canada	0.14	0.10	0.07	0.06	0.08
All other	0.09	0.10	0.07	0.08	0.09
Average	0.09	0.08	0.08	0.07	0.09

Source: Compiled from official statistics of the U.S. Department of Commerce.

circumvention of the provisions of TSUS item 901.50; and (3) the tariff treatment of fuel-use methyl alcohol. In addition, the Commission can offer constructive recommendations to clarify the language and coverage of certain other areas of the TSUS.

Tariff treatment of catalytic naphtha and other motor fuel blending stocks

The discussion of the tariff treatment of these products in general must begin with an examination of the treatment of catalytic naphtha in particular. The main question is whether catalytic naphtha should be treated as (1) a benzenoid mixture in TSUS item 407.16, with an ad valorem equivalent duty rate approaching 21 percent; (2) naphtha classifiable in TSUS item 475.35, with an ad valorem equivalent rate of 0.4 percent; or (3) a motor fuel blending stock, with an ad valorem equivalent rate of 1.7 percent.

Catalytic naphtha is just one variety of naphthas produced in the refining of crude petroleum. Different types of naphtha result from variations in the methods of processing the petroleum, but each type is generally produced by the same producers and on the same basic equipment. The important difference from a Customs standpoint is that catalytic naphtha, by virtue of the processing involved, contains a higher percentage of dutiable benzenoid chemical compounds than is allowed by the de minimis rule used by Customs for determining whether the imported product is classifiable in part 1 or part 10 of schedule 4 of the TSUS.

Classification of catalytic naphtha in TSUS item 407.16.--Three legislative bills, 1/ introduced to the Congress in rapid succession between August 1983 and March 1984, proposed that catalytic naphtha continue to be classified in part 1 of the TSUS, but that it be given the same tariff treatment as those naphthas provided for in part 10. Arguments were presented by Congressman Brooks that catalytic naphtha, though "benzenoid" by Customs definition, is neither intended nor economically suitable for use as a feedstock for the high-duty benzenoid chemicals found in part 1 of schedule 4. As such, the argument continues, imports of catalytic naphtha would not pose a threat to U.S. producers of benzenoid chemicals. Two respondents in this investigation support this argument, but opine that the proper classification of catalytic naphtha should be in part 10.

One difficulty lies in distinguishing, for practical customs purposes, between catalytic naphtha, which is used almost solely for blending into finished gasoline, and other benzenoid mixtures that are intended for further processing into benzenoid chemicals. At this point, neither private industry nor Government agencies have been able to formulate a practical, workable definition of catalytic naphtha for facilitating identification by Customs.

Opposition to the treatment of catalytic naphtha in the same manner as naphtha in part 10 comes from domestic independent refiners, who claim that

1/ These and the other legislative proposals mentioned in this section are discussed in more detail in the U.S. CUSTOMS TREATMENT section of this report.

competitive imports of catalytic naphtha (and other petroleum derivatives) are a major cause of their current economic doldrums. This claim was disputed by several importers, blenders, and industry observers, both in the Commission's hearing and in post-hearing statements submitted to the Commission.

Classification of catalytic naphtha as motor fuel blending stock.--Two legislative bills were introduced in Congress in 1984, proposing that motor fuel blending stocks (under the sobriquet of "unfinished gasoline", "sub-par gasoline", or "off-spec gasoline") be provided for in part 10 of schedule 4 and given the same tariff treatment as finished gasoline (motor fuel) of TSUS item 475.25. Catalytic naphtha would be included in this new provision, if it is established. These proposals were in response to the issuance by the Customs Service of T.D. 83-173, which had suddenly changed the Customs definition of "motor fuel." Before this change, most of these products had been classified by Customs under the motor fuel provision. The change resulted in the scattering of the so-called blending stocks to other parts of the TSUS, in all cases at significantly higher duty rates. Several options have been proposed by the industry to restore the previous tariff treatment of these products.

The most touted option is that of combining catalytic naphtha with all other motor fuel blending stocks and establishing a separate end-use category for them. House bill H.R. 5455, Senate bill S.2900, and the proposed Administration alternative (all discussed in the section on U.S. CUSTOMS TREATMENT) all take this approach, though the details of each are different. More than half of the respondents in this investigation support this approach, at least in principle. This option has the advantage of solving two problems at once--it restores the historical tariff treatment of motor fuel blending stocks, and it offers what appears to be a satisfactory solution to the problem of how to treat catalytic naphtha. Classification would be by use, rather than by chemical composition; no technical definition to distinguish motor fuel blending stocks from other mixtures would be necessary. This provision is already in the proposed HS conversion.

Classification of catalytic naphtha in TSUS item 475.35.--As mentioned earlier in this section, certain respondents argue that catalytic naphtha should be classified with other naphtha in part 10 of schedule 4, with a duty rate of 0.25 cent per gallon, rather than with other motor fuel blending stocks under a new provision carrying the motor fuel tariff of 1.25 cents per gallon. This would mean a significant (at least, in the petroleum industry) duty savings of 1 cent per gallon of imported product. However, there is no historical precedent for this proposal.

When catalytic naphtha was first imported into the United States in 1980, it was in response to an accelerating shift in consumer demand from leaded gasoline to unleaded gasoline. Under existing Customs practices, catalytic naphtha was properly classified as a benzenoid mixture in part 1 of schedule 4. There was no dispute with that classification at the time. That such imports entered duty free was attributable to the GSP eligibility of the source country, Venezuela. The fact that Venezuela subsequently lost its GSP eligibility with respect to TSUS item 407.16 did not affect the classification of catalytic naphtha under that provision. When legislation was introduced, first to gain a temporary duty suspension, then to get a permanent reduction

in the rate applicable to catalytic naphtha, the proposals were always couched in terms of part 1 of schedule 4.

Consequently, any proposal to reclassify catalytic naphtha in part 10 of schedule 4, whether as naphtha or as motor fuel blending stock, would represent a duty reduction even though some imports were duty free under GSP for a short period. In this respect, the proposal to create a single-use provision for motor fuel blending stock would be beneficial, and presumably acceptable, to importers of catalytic naphtha.

There is some disagreement among proponents for a separate-use provision for motor fuel blending stock as to whether classification should be by "chief use" or by "actual use". Chief use is defined in the TSUS 1/ as the use that exceeds all other uses (if any) combined. The chief use of an article in the United States would have to be determined at, or immediately prior to, the date of importation. Adoption of a chief-use provision for motor fuel blending stock would supersede with the existing provision for naphthas of TSUS item 475.35, because the bulk of naphthas, including nonbenzenoid naphthas covered by this item, are used in motor fuel blending. As a result, nonbenzenoid naphthas would then be classifiable in the use provision with a 4-fold increase in the duty rate applicable to those naphthas imported for use as petrochemical feedstock. None of the respondents in this investigation have advocated such an increase, and many have indicated that it would be undesirable. In addition, a chief-use provision would result in the classification of benzenoid naphthas not intended for motor fuel blending (now subject to high duty rates in part 1 of schedule 4), to be included as motor fuel blending stock at a much lower duty rate. The only alternative that would avoid both these problems is an actual-use provision.

A tariff provision controlled by actual use is satisfied only if (1) such use is intended at the time of importation; (2) the imported product is so used; and (3) proof of such actual use is furnished within 3 years after the date the product is entered. Under an actual-use provision, only benzenoid naphthas intended for actual use in motor fuel blending would be included. Those benzenoid naphthas not used for motor fuel blending would remain classifiable as benzenoid mixtures in part 1. Since TSUS item 475.35 is eo nomine (listed by that name), it would prevail over the use provision, thereby maintaining historical tariff treatment of nonbenzenoid naphthas.

A secondary question concerns the administrability of an actual-use provision for motor fuel blending stocks, which the Commission ordinarily discourages. Such provisions have been enacted by the Congress in the past, and Customs has been able to apply them effectively through established operating and enforcement procedures.

Tariff treatment of fuel-use ethyl alcohol, gasohol, and other gasoline/ethyl alcohol mixtures; possible circumvention of TSUS item 901.50

In the enactment of TSUS item 901.50, Congress attempted to discourage the importation of ethyl alcohol for fuel use. Specifically, the provision

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1/ Chief use and actual use are both defined in the general interpretative rules, general headnote 10(e)(i) and (ii), of the TSUS.

applies to ethyl alcohol that is imported "to be used in producing a mixture of gasoline and alcohol or a mixture of a special fuel and alcohol for use as a fuel, or when imported to be used otherwise as fuel." Customs has interpreted the provision to cover imports of neat (i.e., unmixed) ethyl alcohol, but not ethyl alcohol mixed with gasoline before importation into the United States. As discussed in the U.S. CUSTOMS TREATMENT section of this report, various methods can be used to circumvent legitimately the provisions of TSUS item 901.50. If such circumvention is contrary to the Congress' intent in enacting TSUS item 901.50, the Congress may wish to modify the language of the item to include gasoline/ethyl alcohol mixtures and to amend the provisions governing imports from foreign-trade zones, insular possessions, and CBI beneficiary countries so that they do not preclude the application of TSUS item 901.50. 1/

Tariff treatment of fuel-use methyl alcohol

The Commission does not recommend any change to TSUS item 427.96, a duty-free provision that covers methyl alcohol imported for direct use as a fuel. There would be no overlap between this provision and any proposed provision for motor fuel blending stocks, for two reasons. First, TSUS item 427.96 covers only neat (i.e., unmixed) methyl alcohol. Second, though it is an end-use provision, it is more specific than, and therefore would take precedence over, an end-use provision for motor fuel blending stocks.

Other technical recommendations

In the course of this investigation, it was found that certain areas of the TSUS must be read in the light of the interpretation of the U.S. Customs Service before they can be entirely understood. Two such areas are in part 2 and in part 10 of schedule 4 to the TSUS. Notwithstanding proposed changes to the TSUS with respect to naphthas and other motor fuel blending stocks, ethyl alcohol, or methyl alcohol, the following changes are recommended.

Part 2.--At the end of subpart 2-D, there are two mixtures provisions (items 430.10 and 430.20), preceded by a superior heading that reads as follows:

"Mixtures of two or more organic compounds . . ."

Customs practice has been to interpret this language to include mixtures of two or more of the chemicals provided for in subpart 2-D only. Therefore, the

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1/ Senator Dole has recently introduced two bills concerning this issue: S. 575, a bill to ensure payment of the additional duty imposed on ethyl alcohol used as a fuel or in making gasohol; and S. 576, a bill to exclude from the Caribbean Basin Economic Recovery Act ethyl alcohol used for fuel which is merely distilled or denatured in a beneficiary country.

Commission staff would recommend that this interpretation be codified by a simple revision, as follows (amendment underscored):

"Mixtures of two or more organic compounds of this subpart:"

Part 10.--Headnote 1 to part 10 of schedule 4 reads as follows:

"1. Any product described in this part and also in part 1 of this schedule is classifiable in said part 1, except fuel oils, motor fuel, and lubricating oils and greases, containing by weight not over 25 percent of any product described in said part 1. . ."

According to established Customs practice, the 25-percent limitation applies only to "fuel oils, motor fuel, and lubricating oils and greases." Though that is relatively clear, the meaning of "not over 25 percent of any product described in said part 1" is not. Again, one must look to Customs practice for the answer, which, in this case, is actually two answers. First, Customs applies the 25-percent limitation to any one product of part 1. Second, the 25-percent limit applies only to those chemicals in part 1 that are dutiable. Thus the combined weight of benzenoid chemicals from part 1 may exceed 25 percent of the product falling in part 10, as long as any single dutiable product accounts for no more than 25 percent of the total weight of the imported product. The Commission staff would, therefore, recommend that headnote 1 to part 10 be amended as follows to reflect this practice (amendment underscored):

"1. Any product described in this part and also in part 1 of this schedule is classifiable in said part 1, except fuel oils, motor fuel, and lubricating oils and greases, containing by weight not over 25 percent of any one dutiable product described in said part 1. . ."

Probable Economic Effects

Effects of the Commission's technical recommendations

Effects on U.S. imports.--The technical recommendations concerning the combining of catalytic naphtha and other motor fuel blending stocks and establishing an end-use category for them, dutiable at the motor fuel rate of 1.25 cents per gallon, would have little effect on the volume of imports of these materials. Such a provision would be consistent with the past practice of Customs of classifing motor fuel blending stocks as motor fuel. 1/ In addition, this action is also expected to stabilize the duty rate for catalytic naphtha and the volume of imports that have been erratic during the past two years. Because imports of catalytic naphtha are eligible for GSP under item 407. 16, the duty assessment on these imports has varied from duty free to a high duty rate because the GSP limit on imports for an individual country was exceeded.

1/ Treasury Decision TD. 66-23(13).

If the tariff classification for ethanol under item 901.50 is modified to include gasoline containing ethyl alcohol (gasohol), imports of this product would likely decrease since they would be dutiable at a higher duty rate than under TSUS item 475.25.

Effects on the U.S. industry.--Beginning in late 1974, domestic refiners participated in an oil entitlements program that provided the small refiner with various benefits, including an exemption from the lead phase-down program. In January 1981, the price of crude petroleum was decontrolled, and many of these small refineries began to shut down operations. 1/ At the same time, U.S. demand for petroleum products, such as gasoline, declined primarily as a result of high prices and conservation efforts.

As stated previously, motor fuel blending stocks were classified by Customs in TSUS item No. 475.25, dutiable at the motor fuel rate of 1.25 cents per gallon, under T.D. 66-23(13) from January 19, 1966 to August 17, 1983. On August 17, 1983, Customs issued a new ruling, T.D. 83-173 and revoked T.D. 66-23(13), under the T.D. 83-173, the minimum octane ratings allowable for the imported products to be classified as motor fuel were increased to a minimum of 85 RON for unleaded gasolines and to 87 RON for leaded gasoline.

Although T.D. 83-173 is officially in force, imports of leaded blending stocks, especially from China, continue to enter the United States as motor fuels. These blending stocks previously were and are currently entering the United States under TSUS item No. 475.25, and, according to testimony from PEMEX 2/ and China, 3/ that their exports to the United States will not likely increase given the tariff reclassification.

EPA ban on lead in gasoline

The use of lead in gasoline, which has been recognized as a hazardous material, has been regulated since 1973 by the Environmental Protection Agency (EPA) under the authority of the Clean Air Act (42 U.S.C. §7545(c)) to reduce the adverse health effects associated with exposure to lead. 4/ They also acted to assure the availability of unleaded gasoline for automobiles with pollution-control devices. EPA's original regulations limited the lead content per gallon, averaged over all gasolines (both leaded and unleaded). 5/ Also, small refiners were given separate, less stringent interim limits. In 1982, EPA established new rules that--

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1/ For detailed information, see the overview of the Petroleum Products Industry section of this report.

2/ Testimony and post-hearing briefs filed by PEMEX.

3/ Staff meeting with representatives of the China National Chemicals Import and Export Corporation.

4/ U.S. Environmental Protection Agency, Draft Regulatory Impact Analysis of Proposed Rules Limiting the Lead Content of Gasoline, July 23, 1984, p. I.2-I.3.

5/ 38 F.R. 33741, Dec. 6, 1973.

1) changed the basis of the standard from all gasolines to leaded only;

2) set a limit of 1.10 grams of lead per gallon of leaded gasoline;

3) phased in uniform treatment for all refiners, and

4) allowed refiners to average lead use (for example, a refiner could produce a gallon with 1.20 grams of lead if it was traded for a gallon with 1.00 gram of lead produced by another refiner. 1/

The change in the basis for the standard from the average of leaded and unleaded combined to leaded only was intended to reduce the overall lead usage because sales of leaded gasoline would decline as older automobiles designed to use leaded gasoline disappeared. Although leaded gasoline sales have declined, they have not reached the declines projected by the EPA in 1982, because of misfueling. Misfueling is the use of leaded gasoline in autombiles designed for unleaded gasoline. According to EPA, 13.5 percent of the automobiles designed for unleaded gasoline are misfueled. 2/ This estimate may be low since, although Federal Law prohibits gasoline dispensing outlets from putting leaded gasoline in vehicles designed for unleaded, owners are not required to have their automobiles tested for misfueling.

On March 4, 1985, the EPA ordered the removal of more than 90 percent of the lead from leaded gasoline by the end of the year. Under the new regulations, refiners must reduce the amount of lead from 1.10 grams per gallon of leaded gasoline to 0.5 gram of lead per gallon by July 1, 1985 and to 0.1 gram of lead per gallon by January 1, 1986. 3/ However, in a realistic effort to allow refiners to achieve the standards, EPA proposed a modification to the rules for the reduction of lead that would allow refiners to make gasoline with less lead than the current limits allow and "bank" the difference, using the credits earned in 1986 and 1987 when lead standards become more stringent. These credits could also be transferred between refiners. 4/

Effects on U.S. imports.--EPA's rules on the phase out and eventual ban of lead in gasoline also apply to imports that are sold in the United States. 5/ Transshipments are not subject to these rules. Official U.S. Bureau of Census data on imports of leaded gasoline are not available because the tariff provisions for motor fuels did not distinguish between leaded and unleaded until January 1, 1985; however, the U.S. Department of Energy does collect data on U.S. imports of unleaded and leaded gasolines and blending

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1/ 47 F.R. 49331, Oct. 29, 1982.
2/ EPA, op. cit., p. I.4.
3/ "Reaction to Lead Edict Mixed," The Washington Post, Mar. 6, 1985, p. D1.
4/ "Change Sought in Gasoline Lead Rules," Washington Post, Jan. 1, 1985, p. E-1.
2/ 40 CFR sec 80.20

components, as shown in the following tabulation, 1981-Jan.-Jun. 1984 (in thousands of barrels): 1/

Year	U.S. imports		
	Unleaded gasolines	Leaded gasolines	Blending components
1981	24,820	32,485	8,760
1982	25,185	46,720	15,330
1983	43,773	47,128	12,688
Jan. June 1984	27,455	26,722	13,127

Imports of the materials used as motor fuel blending stocks containing lead require additional amounts of lead to reach the latest specification octane levels for motor gasolines. The volume of imports of motor fuel blending stocks is expected to decline dramatically when the EPA ban on leaded gasoline becomes effective.

In 1984, China accounted for 10 percent of total U.S. imports of motor fuels. Most Chinese refineries can produce both leaded and unleaded gasoline for export. 1/ Since the second half of 1984, the Chinese gasoline exported to the United States has had a RON of 87 and a MON of 82. The lead content has been reduced either to 0.21 gram of lead or 0.8 gram of lead per gallon depending on the refining process used and the type of crude petroleum. 2/ Exports of gasoline from China are expected to meet the EPA's new standards of 0.5 gram of lead per gallon, effective July 1, 1985, and 0.1 gram of lead per gallon, effective January 1, 1986. 3/ When lead is banned from use, the Chinese should be able to export an unleaded gasoline to the United States; however, the RON of the unleaded gasoline currently does not meet specifications and therefore would be classified as a blending stock if such a provision is established.

Mexico also has the capacity to produce an unleaded gasoline, however, it is currently produced only for domestic consumption. 4/ Unleaded gasoline accounts for less than 5 percent of domestic Mexican sales of gasoline. 5/ Whether Mexico plans to upgrade its refineries to produce a leaded gasoline

1/ U.S. Department of Energy, Petroleum Supply Monthly, various issues, p. 38,

2/ Submission of the China National Chemicals Import and Export Corporation, before the U.S. International Trade Commission for inv. No. 332-203, Mar. 7, 1985.

3/ Ibid.

4/ Ibid.

5/ Statement of Mr. Alfredo Gutierrez Kirchner during questioning at the hearing on inv. No. 332-203 (p. 143 of the transcripts).

6/ Ibid.

that will met EPA's standards or produce an unleaded gasoline for export is still unknown.

Effects on U.S. production.--U.S. production of unleaded gasoline, as a percent of total gasoline production, increased from 27.5 percent in 1977 to 59.5 percent in 1984. 1/ The following tabulation shows U.S. production of unleaded gasoline, 1977-84: 2/

Year	Production		Unleaded gasoline as a percent of total gasoline production
	Total gasoline	Unleaded gasoline	
	1,000 barrels per day		Percent
1977	7,177	1,976	27.5
1978	7,412	2,521	34.0
1979	7,034	2,798	39.8
1980	6,579	3,067	46.6
1981	6,588	3,264	49.5
1982	6,539	3,409	52.1
1983	6,622	3,647	55.1
1984	6,715	3,987	59.5

The EPA has estimated gasoline demand and the leaded/unleaded split under existing policies and misfueling rates and under the proposed interim rule. Demand for gasoline in 1983 was approximately 6.6 million barrels per day. EPA assumed that demand would fall to 6.5 million barrels per day in 1988, and rise slightly by 1992, because of a balancing of fuel efficiency effects with the growing number of vehicles. The EPA estimated that unleaded gasoline would account for 62.6 percent of total gasoline demand in 1986 and 67.5 percent in 1988. 3/ The following tabulation shows EPA's projected gasoline demand (in millions of barrels per day), 1982-92: 4/

1/ U.S. Department of Energy, Petroleum Supply Monthly, November 1984, p. 45.
2/ Ibid.
3/ EPA, op. cit., p. III. 2.
4/ Ibid., p. III. 4.

Year	Demand with misfueling		Demand without misfueling	
	Leaded	Unleaded	Leaded	Unleaded
1982 1/	3.13	3.41	2/	2/
1984	2.80	3.78	2.32	4.26
1986	2.45	4.09	1.88	4.66
1988	2.11	4.39	1.48	5.04
1990	1.80	4.66	1.07	5.39
1992	1.59	4.87	0.85	5.61

1/ Actual data.
2/ Not available.

Effects on refining costs.--According to the EPA, since lead is a low-cost octane booster, reducing the amount allowed in a gallon of gasoline could raise refiners' manufacturing costs but should not increase real costs for the distribution and marketing of gasoline. 1/ Methods to raise octane include additional isomerization, increased severity and throughput of reformers, and the use of other additives. 2/ The EPA estimated that a limit of 0.10 gram of lead per gallon would cost refiners $575 million in 1986 and $503 million in 1988 with existing refinery equipment if misfueling is eliminated. 3/

Effects on retail price of gasoline.--The following tabulation shows average retail prices for gasoline (in cents per gallon, including tax, 1977-84: 4/

Year	Leaded regular	Unleaded regular	Unleaded premium
1977	62.2	65.6	1/
1978	62.6	67.0	1/
1979	85.7	90.3	1/
1980	119.1	124.5	1/
1981	131.1	137.8	147.0
1982	122.2	129.6	141.5
1983	115.7	124.1	138.3
1984	112.9	121.2	136.6

1/ Not available.

1/ EPA, op. cit., p. I. 9.
2/ Ibid.
3/ Estimates are in 1983 dollars.
4/ U.S. Department of Energy, Monthly Energy Review, June 1984, p. 92.

The EPA estimates that unleaded gasoline costs about 2 cents per gallon more to manufacture than leaded gasoline at 1.10 grams of lead per gallon. 1/ Also, the differential between the spot prices of leaded and unleaded regular gasoline in large quantities has been between 1 and 4 cents per gallon over the last several years. At the end of 1983, wholesale price differentials in the Gulf of Mexico were about 3 cents per gallon. 2/

The additional price gap between leaded and unleaded gasoline at the retail level does not appear to reflect incremental distribution costs since both types of gasoline are distributed through the same network of pipelines, terminals, barges, and tank trucks. 3/ Since the distribution costs of low lead gasoline are the same as for higher lead gasoline, the only increase in cost to the consumer for decreasing the lead content per gallon to 0.10 gram is the increased manufacturing cost incurred mainly in providing additional aromatic blending components. 4/

With respect to the distribution of those costs, if the increased cost of retail gasoline tracks the manufacturing cost increase, then leaded gasoline prices would rise by 1 to 2 cents per gallon, or about $5 - $10 annually per car. 5/ This is claimed to be less than the maintenance benefits those same cars obtain from using unleaded gasoline.65/

1/ EPA, op. cit., p. III. 7.
2/ Ibid., and Platt's Oilgram News.
3/ EPA, op. cit., p. III. 7.
4/ Ibid., p. III. 9.
5/ Ibid.
6/ Ibid.

APPENDIX A

LETTER TO THE CHAIRWOMAN OF THE U.S. INTERNATIONAL TRADE COMMISSION FROM THE CHAIRMAN OF HOUSE COMMITTEE ON WAYS AND MEANS AND THE CHAIRMAN OF THE SENATE COMMITTEE ON FINANCE AND THE FOLLOW-UP LETTER FROM THE CHAIRMAN OF THE SENATE COMMITTEE ON FINANCE

OFFICE OF THE CHAIRWOMAN

COMMITTEE ON WAYS AND MEANS

U.S. HOUSE OF REPRESENTATIVES
WASHINGTON, D.C. 20515

84 NOV 28 A 8:49

November 26, 1984

The Honorable Paula Stern
Chairwoman
U.S. International Trade Commission
701 E Street, N.W.
Washington, D.C. 20436

Dear Madam Chairwoman:

During our conference on the recently enacted Trade and Tariff Act of 1984, the conferees agreed to delete House and Senate provisions relating to the tariff classification and treatment of naphtha products and a House provision creating a new tariff item for "motor fuel blending stock." Due to the unusual complexity of the products involved, the conferees determined that such provisions may not have accomplished the purposes intended by the respective Houses. The conferees therefore concluded that the Committee on Finance and the Committee on Ways and Means would request the International Trade Commission to conduct a study of the tariff classification and treatment of those products potentially affected by a reclassification of catalytic naphtha and other motor fuel blending stocks. The purpose of this letter is to request the Commission to undertake such a study under section 332 of the Tariff Act of 1930.

It would be particularly helpful if this study would address (1) the current tariff treatment of naphthas, motor fuel and motor fuel blending stocks; (2) the desirability of modifying the current tariff classification treatment consistent with sound principles of product nomenclature; and (3) the effects that such changes would be likely to have on U.S. industries and competitive conditions between U.S. and foreign firms in the affected segments of the petroleum industry. In addressing this subject, it is requested that the final report include the following:

(1) A description of the current tariff treatment of motor fuel, naphthas and motor fuel blending stocks, including--

(a) Customs historical administration of the provisions and the basis for differentiating between the products for classification purposes, with attention also given to Treasury Decision 83-173 and the effect of that decision on the importation of motor fuel blending stocks;

(b) an assessment of whether the tariff nomenclature for these products reflects realistic and meaningful distinctions which conform to industry terminology; and

(c) a comparison of U.S. tariff nomenclature with that included in the proposed Harmonized System.

(2) Analysis of the effects of the reclassification proposals for motor fuel blending stocks on the tariff classification of ethyl or methyl alcohol used in motor fuels.

(3) Background information on the segments of U.S. petroleum and petrochemical industries affected by imports of such petroleum products, including--

(a) the structure of the domestic industry;

(b) import, export, and domestic production data for the relevant petrochemicals and petroleum products; and

(c) a discussion of current trade patterns and factors affecting such patterns.

(4) A detailed description of the imported products and the domestic uses of such products.

(5) The potential impact on imports and domestic industry of the proposed EPA decision to ban lead from gasoline.

(6) Technical recommendations to improve the tariff nomenclature for these products.

Because of the great interest that was shown in this issue, it is recommended that public hearings be held to provide interested parties the opportunity to comment. We have asked the U.S. Customs Service and the Environmental Protection Agency to cooperate in the conduct of this study. We would appreciate receiving your report by April 15, 1985.

Sincerely yours,

Robert Dole
Chairman
Committee on Finance

Dan Rostenkowski
Chairman
Committee on Ways and Means

OFFICE OF THE CHAIRWOMAN

United States Senate

COMMITTEE ON FINANCE
WASHINGTON, D.C. 20510

351

84 DEC 6 P1:34

December 4, 1984

The Honorable Paula Stern
Chairwoman
U. S. International Trade Commission
701 K Street, N.W.
Washington, D.C. 20436

Dear Madam Chairman:

The Committees on Finance and Ways and Means recently requested that the Commission undertake, pursuant to its authority under section 332 of the 1930 Tariff Act, a study of the tariff classification of and trade in catalytic naphtha and other motor fuel blending stocks. By letter of November 26, 1984, to you (copy enclosed), Chairman Rostenkowski and I described in some detail the information needed by our committees to evaluate possible legislation on this subject in the new Congress.

I wish to elaborate on our earlier letter with regard to two matters of particular interest to this Committee. First, in conducti its investigations, the Commission should seek data on imports of ethyl or methyl alcohol classified for tariff purposes as motor fuels or motor fuel blending stocks. Second, in its recommendations to improve the tariff nomenclature for these products, the Commission should evaluate and report on methods of distinguishing among these products based on their distillation and other chemical characteristi such as boiling points and octane specifications.

Thank you for ensuring that the Commission's work encompasses these matters.

Sincerely,

BOB DOLE
Chairman

BD:tkk
Enclosure

APPENDIX B

FEDERAL ITC'S REGISTER NOTICE OF THE INSTITUTION OF INVESTIGATION NO. 332-203 AND LIST OF WITNESSES APPEARING AT THE HEARING

(B) Analyze the effects of such pricing policies on certain industries or groups of industries.

(C) Estimate the foreign production cost savings conferred by such pricing policies

(D) Analyze the competitive advantage of such production cost savings vis-a-vis United States producers.

(E) Analyze the effect of such foreign resource pricing policies on the resource allocation within the foreign country.

Natural resources to be included in the study are petroleum, natural gas, and metal ores.

Authority: This investigation is being instituted under authority of section 32(b) of the Tariff Act of 1930 (19 U.S.C. 1332(b)).

Written Submissions: In lieu of a public hearing, interested parties are invited to submit written statements concerning the investigation. Commercial or financial information which a submitter desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of section 201.6 of the Commission's *Rules of Practice and Procedure* (19 CFR 201.6 as amended by 49 FR 32571 of August 15, 1984). All written submissions, except for confidential business information, will be made available for inspection by interested persons. To be assured of consideration by the Commission, written statement should be received by the Commission at the earliest practical date, but not later than February 19, 1985. All submissions should be addressed to the Secretary at the Commission's Office in Washington, DC.

By Order of the Commission

Kenneth R. Mason,

Secretary

Issued December 19, 1984.

[FR Doc. 84-33657 Filed 12-26-84; 8:45 am]

BILLING CODE 7020-02-M

[332-203]

Investigation and Hearing; Possible Effects of and Recommendations Concerning the Proposed Tariff Reclassification of Catalytic Naphtha and Other Motor Fuel Blending Stocks

AGENCY: International Trade Commission.

ACTION: Institution of an investigation under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)) and scheduling of a public hearing.

SUMMARY: At the request of the House Committee on Ways and Means and the Senate Committee on Finance, the Commission has instituted investigation No. 332-203 under 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), for the purpose of gathering and presenting information on the tariff classification and treatment of those products potentially affected by a reclassification of catalytic naphtha and other motor fuel blending stocks. The Commission was also requested to hold a public hearing in connection with the investigation and to report to the Committees by April 15, 1985.

EFFECTIVE DATE: December 18, 1984.

FOR FURTHER INFORMATION CONTACT: Mr. Edmund Cappuccilli or Ms. Cynthia B. Foreso, Energy and Chemicals Division, U.S. International Trade Commission, Washington, DC 20436, telephone 202-523-0490/202-523-1230.

SUPPLEMENTARY INFORMATION: The Committees specifically requested that the Commission study address (1) the current tariff treatment of naphthas, motor fuel, and motor fuel blending stocks; (2) the desirability of modifying the current tariff classification treatment consistent with sound principles of product nomenclature; and (3) the effects that such changes would be likely to have on U.S. industries and competitive conditions between U.S. and foreign firms in the affected segments of the petrochemical and petroleum industries.

Public Hearing: A public hearing in connection with the investigation will be held in Washington, DC at 10:00 a.m. on March 7, 1985, at the U.S. International Trade Commission Building, 701 E Street, NW., Washington, DC 20436. All persons shall have the right to appear by counsel or in person, to present information, and to be heard. Requests to appear at the public hearing should be filed with the Secretary, United States International Trade Commission, 701 E Street, NW., Washington, DC 20436, not later than February 21, 1985.

Written Submission: In lieu of or in addition to appearance at the public hearing, interested persons are invited to submit written statements concerning the investigation. Commercial or financial information which a party desires the Commission to treat as confidential must be submitted on separate sheets of paper, each clearly marked "Confidential Business Information" at the top. All submissions requesting confidential treatment must conform with the requirements of section 201.6 of the Commission's *Rules of Practice and Procedure* (19 CFR 201.6 as amended in 49 F.R. 32571 of August 15, 1984.). All written submissions, except for confidential business information, will be made available for inspection by interested parties. To be ensured of consideration by the Commission, written statements should be received by the close of business on March 11, 1985. All submissions should be addressed to the Secretary at the Commission's office in Washington, DC.

By order of the Commission.

Issued by: December 21, 1984.

Kenneth R. Mason,

Secretary.

[FR Doc. 84-33648 Filed 12-26-84; 8:45 am]

BILLING CODE 7020-02-M

INTERSTATE COMMERCE COMMISSION

[Finance Docket No. 30575]

Rail Carriers; Willamette Valley Railroad Co. and Willamina & Grand Ronde Railroad Co.; Acquisition and Operation Exemption

AGENCY: Interstate Commerce Commission.

ACTION: Notice of exemption.

SUMMARY: The Interstate Commerce Commission exempts from the requirements of (a) 49 U.S.C. 10901 the acquisition and operation by Willamette Valley Railroad Company of a 1.8-mile line of railroad extending from milepost 0.0 at or near Independence, to milepost 1.8, in Polk County, OR, owned by the Valley & Siletz Railroad Company; (b) 49 U.S.C. 11301 the issuance by Willamette Valley Railroad Company of 500 shares of $40 par value common stock to Willamina & Grand Ronde Railroad Company and (c) 49 U.S.C. 11343 control of Willamette Valley Railroad Company by the Willamina & Grand Ronde Railroad Company, subject to standard employee protective conditions.

DATES: This exemption will be effective on December 27, 1984. Petitions to reopen must be filed by January 18, 1985.

ADDRESSES: Send pleadings referring to Finance Docket No. 30575 to:

(1) Office of the Secretary, Case Control Branch, Interstate Commerce Commission, Washington, DC. 20423

(2) Petitioners' representative: Fritz R. Kahn, Suite 1000, 1660 L Street, NW., Washington, DC 20036

FOR FURTHER INFORMATION CONTACT: Louis E. Gitomer (202) 275-7245.

SUPPLEMENTARY INFORMATION: Additional information is contained in

TENTATIVE CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

Subject : Possible Effects of and Recommendations Concerning the Proposed Tariff Reclassification of Catalytic Naphtha and Other Motor Fuel Blending Stocks

Inv. No. : 332-203

Date and time : March 7, 1985 - 10:00 a.m.

Sessions were held in the Hearing Room of the United States International Trade Commission, 701 E Street, N.W., in Washington.

Domestic:

Crown Central Petroleum Corporation, Baltimore, Maryland

Edwin P. Mampe, Jr., Director, Government Affairs

The Independent Refiners Coalition

Saber Energy, Inc., Houston, Texas

M. P. Zanotti, President

American Independent Refiners Association, Washington, D.C.
and
Tosco Corporation, Santa Monica, California

Charles P. Eddy, Director of Government Relations

Ashland Petroleum Company, Washington, D.C.

Lloyd E. Busch, Vice President

Importers:

The Petrochemical Energy Group

Richard Birdwell, General Manager, Louisiana Division,
Dow Chemical USA

Independent Gasoline Marketers Council, Washington, D.C.

Jack A. Blum, General Counsel

Wickland Oil Company, Sacramento, California

Roy Wickland, President

Milgrim, Thomajan, Jacobs & Lee--Counsel
Washington, D.C.
on behalf of

Oxbow Resources, Houston, Texas

R. Michael Johnson

Peter H. Rodgers--OF COUNSEL

Milgrim, Thomajan, Jacobs & Lee--Counsel
Washington, D.C.
on behalf of

Professor Edward W. Erickson, North Carolina State University,
Department of Economics and Business

Lynn Bonde--OF COUNSEL

Collier, Shannon, Rill & Scott--Counsel
Washington, D.C.
on behalf of

The Society of Independent Gasoline Marketers of Ameria

Robert L. Meuser--OF COUNSEL

Arent, Fox, Kintner, Plotkin & Kahn--Counsel
Washington, D.C.
on behalf of

Petroleos Mexicano ("Pemex")

Alfredo Gutierrez Kirchner, General Representatve

Arnold H. Weiss)
Joseph E. Sandler)--OF COUNSEL

Rogers & Wells--Counsel
Washington, D.C.
on behalf of

Interbras, Rio de Janeiro, RJ-Brazil

Anthony F. Essaye--OF COUNSEL

APPENDIX C

ASTM D-439, SPECIFICATION FOR MOTOR GASOLINES

AMERICAN NATIONAL STANDARD ANSI/ASTM D 439 - 79'

Standard Specifications for AUTOMOTIVE GASOLINE[1]

This standard is issued under the fixed designation D 439; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

NOTE—Editorial changes were made in Table 3 and Annex A1.5.3 in July 1980.

1. Scope

1.1 These specifications are for guidance in establishing the required properties of automotive gasolines for ground vehicles.

1.2 These specifications are not a complete definition of gasoline. They describe various characteristics of gasolines used in a wide range of operating conditions. They do not necessarily include all types of gasolines satisfactory for automotive vehicles, nor necessarily exclude gasolines that may give unsatisfactory performance in certain equipment or under certain operating conditions.

NOTE 1—The values stated in lb. in. units shall be regarded as the standard.

2. General

2.1 These specifications provide for an automatic variation by the seller to meet the requirements of seasonal changes in temperature, depending upon the season and the locality in which the product is to be used. This is done by providing five volatility classes and differentiating the use of these classes according to the months of the year and the geographical location in the United States. The specifications further categorize gasoline into six levels, three antiknock index levels each for leaded and unleaded gasolines.

2.2 These specifications represent a description of gasolines as of the date of publication. They are under continuous review, which may result in revisions based on changes in gasoline or automotive requirements, or both. All users of this standard, therefore, should refer to the latest edition.

NOTE 2—If there is any doubt as to the latest edition of Specifications D 439, the user should contact ASTM Headquarters.

3. Detailed Requirements

3.1 The five volatility classes of gasoline shall conform to the requirements prescribed in Table 1.

3.2 The seasonal and geographical distribution of the five classes shall conform to the schedule in Table 2.

3.3 Antiknock index levels, defined as the average of the Research octane number (RON) and Motor octane number (MON), and their application are set forth in Table 3.

4. Workmanship

4.1 The finished gasoline shall be visually free of undissolved water, sediment, and suspended matter and shall be clear and bright at the ambient temperature or 70°F (21°C), whichever is higher.

5. Basis for Purchase

5.1 The purchasing agency shall:

5.1.1 State the antiknock index as agreed upon with the seller (Table 3),

5.1.2 Indicate the season and locality in which the fuel is to be used, and,

5.1.3 Indicate the lead level required (Table 1).

6. Test Methods

6.1 The requirements enumerated in these specifications shall be determined in accordance with the following ASTM methods:

6.1.1 *Distillation*—Method D 86, Distillation

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[1] These specifications are under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants.

Current edition approved Aug. 31, 1979. Published October 1979. Originally published as D 439 - 37 T. Last previous edition D 439 - 78.

of Petroleum Products.[2]

6.1.2 *Vapor-Liquid Ratio*—Method D 2533, Test for Vapor-Liquid Ratio of Gasoline.[3]

6.1.3 *Vapor Pressure*—Method D 323, Test for Vapor Pressure of Petroleum Products (Reid Method),[2] or Method D 2551, Test for Vapor Pressure of Petroleum Products (Micromethod).[3]

6.1.4 *Research Method Octane Number*—Method D 2699, Test for Knock Characteristics of Motor Fuels by the Research Method[4], or Method D 2885, Research and Motor Method Octane Ratings Using On-Line Analyzers.[4]

6.1.5 *Motor Method Octane Number*—Method D 2700, Test for Knock Characteristics of Motor and Aviation Type Fuels by the Motor Method[4], or Method D 2885, Research and Motor Method Octane Ratings Using On-Line Analyzers.[4]

6.1.6 *Corrosion*—Method D 130, Test for Detection of Copper Corrosion from Petroleum Products by the Copper Strip Tarnish Test,[2] 3 h at 122°F (50°C).

6.1.7 *Existent Gum*—Method D 381, Test for Existent Gum in Fuels by Jet Evaporation.[2]

6.1.8 *Sulfur*—Method D 1266, Test for Sulfur in Petroleum Products (Lamp Method),[2] or Method D 2622, Test for Sulfur in Petroleum Products (X-Ray Spectrographic Method).[3]

6.1.9 *Lead*—Method D 2547, Test for Lead in Gasoline, Volumetric Chromate Method[3] or Method D 2599, Test for Lead in Gasoline by X-ray Spectrometry.[3] For lead levels below 0.1 g/gal (0.03 g/litre) use Method D 3116, Test for Trace Amounts of Lead in Gasoline,[5] D 3229, Test for Low Levels of Lead in Gasoline by X-ray Spectrometry,[5] or Method D 3237, Test for Lead in Gasoline by Atomic Absorption Spectrometry.[5]

6.1.10 *Oxidation Stability*—Method D 525, Test for Oxidation Stability of Gasoline Induction Period Method.

7. Precision

7.1 The following criteria should be used to judge the acceptability of results (95 % confidence):

7.1.1 *Repeatability*—Data to determine acceptable limits for duplicate results obtained by the same operator have not been developed.

7.1.2 *Reproducibility*—The results submitted by each of two laboratories should not be considered suspect unless their difference is greater than the limits shown in the following table:

Average (R+M)/2 Octane Number	Limit Octane Number
85	0.7
87	0.7
89	0.6
91	0.6
93	0.6
95	0.6
97	0.7

7.2 The reproducibility limits in 7.1.2 were calculated from research and motor octane number results obtained by 15 to 25 member laboratories of the National Exchange Group (NEG) of Research and Development Division I, ASTM Committee D-2, participating in cooperative testing programs during the period 1966 through 1976.

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[2] *Annual Book of ASTM Standards*, Part 23.
[3] *Annual Book of ASTM Standards*, Part 24.
[4] *Annual Book of ASTM Standards*, Part 47.
[5] *Annual Book of ASTM Standards*, Part 25.

TABLE 1 Detailed Requirements for Gasoline

Gasoline Volatility, Class	Distillation Temperatures, °F (°C), at Percent Evaporated[A]					Dist. Residue, % max	Vapor/Liquid Ratio[A]	
	10 max	50		90 max	End Point, max		Test Temperature, °F (°C)	V/L, max
		min	max					
A	158(70)	170(77)	250(121)	374(190)	437(225)	2	140(60)	20
B	149(65)	170(77)	245(118)	374(190)	437(225)	2	133(56)	20
C	140(60)	170(77)	240(116)	365(185)	437(225)	2	124(51)	20
D	131(55)	170(77)	235(113)	365(185)	437(225)	2	116(47)	20
E	122(50)	170(77)	230(110)	365(185)	437(225)	2	105(41)	20

Gasoline Volatility, Class	Reid Vapor Pressure, psi(kPa), max	Lead Content, g/gal (g/L), max		Copper Strip Corrosion, max	Existent Gum, mg/100 mL, max	Sulfur, wt %, max		Oxidation Stability, min	Antiknock Index
		Lead Level				Leaded	Unleaded		
		Unleaded[B]	Conventional						
A	9.0(62)	0.05(0.013)	4.2(1.1)	No. 1	5	0.15	0.10	240	[C]
B	10.0(69)	0.05(0.013)	4.2(1.1)	No. 1	5	0.15	0.10	240	[C]
C	11.5(79)	0.05(0.013)	4.2(1.1)	No. 1	5	0.15	0.10	240	[C]
D	13.5(93)	0.05(0.013)	4.2(1.1)	No. 1	5	0.15	0.10	240	[C]
E	15.0(103)	0.05(0.013)	4.2(1.1)	No. 1	5	0.15	0.10	240	[C]

[A] At 760 mm Hg pressure (101.3 kPa).

[B] The intentional addition of lead compounds is not permitted. Current EPA promulgations call for 0.05 g of lead per gallon (0.013 g/L) maximum and 0.005 g of phosphorus per gallon (0.0013 g/L) maximum, effective July 1, 1974.

[C] See Table 3.

TABLE 2 Schedule of Seasonal and Geographical Volatility Classes

This schedule, subject to agreement between purchaser and seller, represents the time and place of use of the gasoline. Shipments intended for future use may anticipate this schedule.
Where alternative classes are permitted, the option shall be exercised by the seller.

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Alabama	D	D	D/C	C	C/B	B	B	B	B/C	C	C/D	D
Alaska	E	E	E	E/D	D	D	D	D	D/E	E	E	E
Arizona	D C	C	C/B	B	B/A	A	A	A	A	A/B	B/C	C/D
Arkansas	D	D	D/C	C	C/B	B	B	B	B/C	C	C/D	D
[A] California:												
North Coast	D	D	D	D/C	C	C	C	C	C	C	C/D	D
South Coast	D	D	D/C	C	C	C/B	B	B	B	B/C	C	C/D
Southeast	D/C	C	C/B	B	B/A	A	A	A	A	A/B	B/C	C/D
Interior	D	D	D/C	C	C/B	B	B	B	B	B/C	C/D	D
Colorado	D	D	D/C	C/B	B	B/A	A	A	A/B	B/C	C/D	D
Connecticut	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
Delaware	E	E/D	D	D/C	C	C	C	C	C	C/D	D	D/E
District of Columbia	E	E/D	D	D/C	C	C	B/C	B/C	C	C/D	D	D/E
Florida	D/C	C	C	C	C	C	C	C	C	C	C	C/D
Georgia	D	D	D/C	C	C/B	B	B	B	B/C	C	C/D	D
Hawaii	C	C	C	C	C	C	C	C	C	C	C	C
Idaho	E	E/D	D	D/C	C/B	B	B	B	B	B/C	C/D	D/E
Illinois:												
N 40° Latitude	E	E	E/D	D/C	C	C	C	C	C	C/D	D	D/E
S 40° Latitude	E	E/D	D	D/C	C/B	B	B	B	B/C	C	C/D	D/E
Indiana	E	E	E/D	D/C	C	C	C	C	C	C/D	D	D/E
Iowa	E	E	E/D	D/C	C	C/B	B	B	B/C	C/D	D	D/E
Kansas	E/D	D	D/C	C	C/B	B	B	B	B	B/C	C/D	D
Kentucky	E	E/D	D/C	C	C	C/B	B	B	B/C	C	C/D	D/E
Louisiana	D	D	D/C	C	C/B	B	B	B	B/C	C	C/D	D
Maine	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
Maryland	E	E/D	D	D/C	C	C	B/C	B/C	C	C/D	D	D/E
Massachusetts	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
Michigan	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
Minnesota	E	E	E/D	D/C	C	C	C	C	C	C/D	D/E	E
Mississippi	D	D	D/C	C	C/B	B	B	B	B/C	C	C/D	D
Missouri	E	E/D	D/C	C	C/B	B	B	B	B/C	C	C/D	D/E
Montana	E	E/D	D	D/C	C	C/B	B	B	B/C	C	C/D	D/E
Nebraska	E	E/D	D/C	C	C/B	B	B	B	B	B/C	C/D	D/E
Nevada:												
N 38° Latitude	E/D	D	D/C	C	C/B	B/A	A	A	A/B	B/C	C/D	D/E
S 38° Latitude	D	D/C	C/B	B	B/A	A	A	A	A	A/B	B/C	C/D
New Hampshire	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
New Jersey	E	E	E/D	D/C	C	C	C	C	C	C/D	D/E	E
New Mexico:												
N 34° Latitude	D	D/C	C	C/B	B/A	A	A	A/B	B	B/C	C/D	D
S 34° Latitude	D/C	C	C/B	B	B/A	A	A	A	A/B	B/C	C	C/D
New York	E	E	E/D	D/C	C	C	C	C	C	C/D	D/E	E
North Carolina	E/D	D	D/C	C	C/B	B	B	B	B/C	C	C/D	D/E
North Dakota	E	E	E/D	D/C	C	C/B	B	B	B/C	C/D	D/E	E
Ohio	E	E	E/D	D/C	C	C	C	C	C	C/D	D	D/E
Oklahoma	D	D	D/C	C	C/B	B	B	B	B	B/C	C/D	D
Oregon:												
E 122° Longitude	E	E/D	D	D/C	C/B	B	B	B	B	B/C	C/D	D/E
W 122° Longitude	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
Pennsylvania	E	E	E/D	D/C	C	C	C	C	C	C/D	D	D/E
Rhode Island	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
South Carolina	D	D	D/C	C	C/B	B	B	B	B/C	C	C/D	D
South Dakota	E	E/D	D	D/C	C	C/B	B	B	B	B/C	C/D	D/E
Tennessee	E/D	D	D/C	C	C	C/B	B	B	B/C	C	C/D	D/E

TABLE 2 *Concluded*

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Texas:												
E 99° Longitude	D/C	C	C	C/B	B	B	B	B	B	B/C	C	C/D
W 99° Longitude	D/C	C	C/B	B	B/A	A	A	A	A/B	B/C	C	C/D
Utah	E	E/D	D/C	C/B	B/A	A	A	A	A/B	B/C	C/D	D/E
Vermont	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
Virginia	E	E/D	D/C	C	C	C	B/C	B/C	C	C	C/D	D/E
Washington:												
E 122° Longitude	E	E	E/D	D/C	C	C/B	B	B	B/C	C/D	D/E	E
W 122° Longitude	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
West Virginia	E	E/D	D	D/C	C	C	C	C	C	C	C/D	D/E
Wisconsin	E	E	E/D	D	D/C	C	C	C	C	C/D	D/E	E
Wyoming	E	E/D	D/C	C	C/B	B/A	A	A/B	B	B/C	C/D	D/E

[A] Details of State Climatological Division by county as indicated:

California, North Coast—Alameda, Contra Costa, Del Norte, Humbolt, Lake, Marin, Mendocino, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, Trinity

California, Interior—Lassen, Modoc, Plumas, Sierra, Siskiyou, Alpine, Amador, Butte, Calaveras, Colusa, El Dorado, Fresno, Glenn, Kern (except that portion lying east of the Los Angeles County Aqueduct), Kings, Madera, Mariposa, Merced, Placer, Sacramento; San Joaquin, Shasta, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba, Nevada

California, South Coast—Orange, San Diego, San Luis Obispo, Santa Barbara, Ventura, Los Angeles (except that portion north of the San Gabriel Mountain range and east of the Los Angeles County Aqueduct)

California, Southeast—Imperial, Riverside, San Bernardino, Los Angeles (that portion north of the San Gabriel Mountain range and east of the Los Angeles County Aqueduct), Mono, Inyo, Kern (that portion lying east of the Los Angeles County Aqueduct)

TABLE 3 Gasoline Antiknock Indexes and Their Application

Leaded Gasoline (for Vehicles Which can or Must use Leaded Gasoline)	
Antiknock Index (RON + MON)/2, min[A]	Application
87	Meets antiknock requirements of most 1971 and later model vehicles that can use leaded gasoline and pre-1971 vehicles with low antiknock requirements.
89	Meets antiknock requirements of most 1970 and prior model vehicles that were designed to operate on leaded gasoline, and 1971 and later model vehicles that can use leaded gasoline and have high antiknock requirements.
93	For vehicles with very high antiknock requirements that can use leaded gasoline.
Unleaded Gasoline (for Vehicles Which can or Must use Unleaded Gasoline)	
Antiknock Index (RON + MON)/2, min[A]	Application
85	For vehicles with low antiknock requirements.
87[B]	Meets antiknock requirements of most 1971 and later model vehicles.
90	For most 1971 and later model vehicles with high antiknock requirements.

[A] Reductions for altitude are allowed in accordance with Fig. 1 of Specification D 439.

[B] In addition, motor octane number must not be less than 82.0.

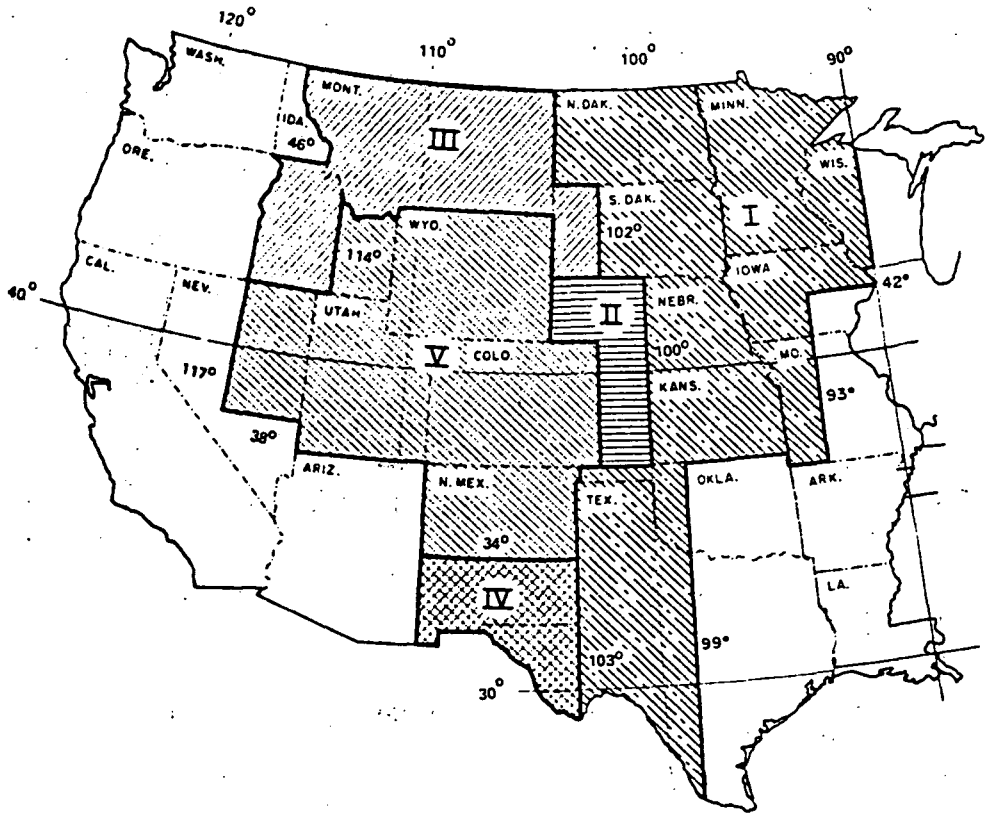

FIG. 1 Antiknock Index Reductions for Altitude.

Antiknock Index Reductions by Altitude Area

Area	Less than 89[A]	89 or Greater
I	0.7	0.5
II	1.5	1.5
III	2.2	1.5
IV	3.0	2.0
V	4.5	3.0

[A] Reductions also apply to Motor octane number requirement for gasolines with an antiknock index of 87 to 88.9. Current EPA promulgations for unleaded gasoline also regulate the Research octane altitude adjustment. See Annex A1.3.5 for details.

ANNEX

A1. SIGNIFICANCE OF ASTM SPECIFICATIONS FOR MOTOR GASOLINE

A1.1 General

A1.1.1 Specifications covering antiknock performance and volatility define the general character of a fuel. The other requirements limit minor components of undesirable nature to concentrations so low they will not have an adverse effect on engine performance.

A1.1.2 Motor gasoline is a complex mixture composed almost entirely of relatively volatile hydrocarbons which vary widely in their physical and chemical properties. Likewise the consuming units in which motor gasoline is used impose a wide variety of mechanical, physical, and chemical environments. Finally, the operating conditions under which the

consuming units utilize motor gasoline cover an extremely wide range. Thus the properties of motor gasoline must be properly balanced to give satisfactory engine performance over an extremely wide range. In many respects the prevailing quality standards for motor gasoline represent compromises so that all the numerous performance requirements may be satisfied adequately. The ASTM specifications are quality limits established on the basis of the broad experience and close cooperation of producers of motor gasoline, manufacturers of automotive equipment, and users of both commodities. However, as stated in Section 1, the values given are not intended as a definition of gasoline, nor do they include all types of gasoline or motor fuel satisfactory for motor vehicles.

A1.2 Antiknock Performance

A1.2.1 The fuel-air mixture in the cylinder of a spark-ignition engine will, under certain conditions, burn spontaneously in localized areas instead of progressing from the spark. This may cause an audible "ping" or knock. Antiknock index is a measure of a gasoline's resistance to knock. Antiknock index requirement depends on engine design and operating and atmospheric conditions. Gasoline with an antiknock index higher than actually required for knock-free operation does not improve performance. The actual loss of power and damage to an automotive engine due to knocking is generally not significant until the knock intensity becomes very severe. However, heavy and prolonged knocking may have an adverse effect in terms of power loss and possible damage to the engine.

A1.3 Octane Number

A1.3.1 There are two recognized laboratory engine test methods for evaluating the antiknock performance of motor fuels, namely, the Research Method and the Motor Method. The results of these tests of a fuel may generally be translated into approximate field performance, provided information is available on the equipment in which the fuel is to be used and the conditions of operation. However, there are exceptions, so that hard and fast rules cannot be defined, and the user must be guided by direct experience as to which method or combination of methods apply to his particular set of conditions. The following paragraphs define the two methods more specifically and describe their significance as applied to various kinds of equipment and operating conditions.

A1.3.2 The Research octane number is determined by a method that measures antiknock performance under mild operating conditions, that is, under conditions of relatively low inlet mixture temperature and relatively low engine speeds. It is indicative of fuel antiknock performance in full-scale engines operating at wide open throttle and low-to-medium engine speeds. In practice, these conditions would exist for most passenger cars and light-duty commercial vehicles during periods of full-throttle operation for all but the most severe conditions that might be encountered, such as accelerating to pass another vehicle at high car speed.

A1.3.3 The Motor octane number is determined by a method that measures antiknock performance under more severe operating conditions than are employed in the Research method, that is, under conditions of relatively high inlet mixture temperature and at relatively high engine speeds. It is indicative of fuel antiknock performance in full-scale engines operating at wide open throttle and high engine speeds. In practice, these conditions would exist for many passenger cars and light-duty commercial vehicles during periods of power accelerations at higher road speeds, such as in passing vehicles, or on hills. It would apply to many commercial heavy-duty vehicles during any period of high-power output.

A1.3.4 The antiknock performance of a fuel in some individual vehicles may correlate best with research octane number, while in others it may correlate best with motor octane number. However extensive correlation studies of laboratory ratings of gasolines with their road ratings indicate that, on balance, gasoline antiknock performance is best related to the average of the research and motor octane numbers, (RON + MON)/2. This formula is under continuing review and may have to be adjusted in the future if significant engine or fuel changes occur.

A1.3.5 Octane requirements of vehicles decrease as altitude increases, because of the reduction in mixture density caused by reduced atmospheric pressure. However, altitude does not affect octane requirements of all cars uniformly. In general, the decrease in octane requirement is larger for lower octane requirement vehicles.

A1.3.5.1 Cooperative and other tests have shown that the decrease in octane requirements with altitude is larger for 1971 and later model cars designed to use a gasoline with an Antiknock Index of 87 than for pre-1971 cars. The pre-1971 cars have higher compression ratios and generally use gasolines with an Antiknock Index of 89 and higher. Therefore, gasolines with Antiknock Indexes below 89 are adjusted by a different reduction factor than those with an Antiknock Index of 89 or greater.

A.1.3.5.2 Boundaries of the areas defined in Fig. 1 and the Antiknock Index reductions were established to protect cars driven from a higher to lower altitude (and hence higher octane requirement area) while using gasoline purchased in the higher altitude area.

A1.3.5.3 In addition to the adjustments shown on Fig. 1, current EPA promulgations for unleaded gasoline limit the Research octane number (RON) altitude adjustment. One grade of unleaded must have a minimum RON of 91 at altitudes below 2000 ft, a minimum RON of 90 at altitudes between 2000 and 3000 ft, a minimum RON of 89 at altitudes between 3000 and 4000 ft and a minimum RON of 88 at altitudes over 4000 ft.

A1.4 Antiknock Additives

A1.4.1 In addition to selecting the appropriate Antiknock Index to meet vehicle antiknock needs, a choice must be made between leaded and unleaded gasoline. Vehicles which must use unleaded gasoline are required by EPA regulation to be identified by permanent labels on the instrument panel and adjacent to the gasoline tank filler inlet reading "Unleaded Gasoline Only." Most 1975 and later model

passenger cars and light trucks are in this category. Most 1971-74 cars can use leaded or unleaded gasoline. Pre-1971 cars were designed for leaded fuel; however, unleaded gasoline of suitable Antiknock Index may generally be used in these cars, except that leaded gasoline may be required in some vehicles, particularly trucks, in extreme heavy duty service. Special instructions on fuel selection are normally provided in publications of vehicle manufacturers (for example, owner's manuals, service bulletins, etc.). Compounds other than lead alkyls may be used to increase the antiknock index of gasolines, but limits on maximum concentrations may exist due to either performance or legal requirement.

A1.5 Volatility

A1.5.1 In spark-ignition internal combustion engines, the gasoline is metered in liquid form through the carburetor where it is mixed with air and vaporized before entering the cylinders of the engine. Obviously, the volatility, the tendency to evaporate or change from a liquid to a gaseous state, is an extremely important characteristic of motor fuel.

A1.5.2 Gasolines may boil in fuel pumps, lines, or in carburetors at high operating temperatures and, if too much vapor is formed, cause a decrease in the fuel flow to the engine, resulting in some manifestation of vapor lock: loss of power, rough engine operation, or complete engine stoppage. Conversely, gasolines that do not vaporize readily enough may cause hard starting of cold engines and poor warm-up and acceleration, as well as unequal distribution of fuel to the individual cylinders. These conditions can be minimized by proper selection of volatility requirements, but cannot always be avoided. For example, during spring and fall a gasoline of volatility suitable for satisfactory starting at the low temperatures frequently encountered may be susceptible to vapor lock in some consuming units under some operating conditions during occasional hot periods.

A1.5.3 In the ASTM specifications, volatility limits are established in terms of vapor-liquid ratio, vapor pressure, and distillation test results. Provision is made for five volatility classes of gasoline based on performance requirements under different weather conditions. These classes differ with respect to the vaporization tendencies of the lighter fractions. The schedule for seasonal and geographical distribution indicates the appropriate volatility class or classes for each month in all areas of the United States, based on altitudes and on the probable air temperatures to be expected.

A1.5.3 For sea level areas outside of the United States, the following air temperatures are for guidance in selecting the appropriate volatility class:

Volatility Class	10th Percentile Minimum Daily Temperatures, °F (°C)	90th Percentile Maximum Daily Temperatures, °F (°C)
A	>60 (16)	≥110 (43)
B	>50 (10)	<110 (43)
C	>40 (4)	<97 (36)
D	>20 (−7)	<85 (29)
E	≤20 (−7)	<69 (21)

For areas above sea level, the 90 percentile maximum daily temperature should be increased by 2.4°F/1000 ft (4.4°C per thousand meters) of altitude before comparing it to the suggested sea level temperature. This correction compensates for changes in fuel volatility caused by changes in barometric pressure due to altitude.

A1.6 Vapor-Liquid Ratio

A1.6.1 Vapor-liquid (V/L) ratio is the ratio of the volume of vapor formed at atmospheric pressure to the volume of gasoline sampled in Method D 2533. The V/L ratio increases with temperature for any given gasoline.

A1.6.2 Vapor lock may occur when parts of the fuel system in an automobile are hot and gasoline is boiling in them, forming vapor which dilutes and obstructs the flow of liquid fuel. The temperature to which gasoline is subjected and the V/L ratio that can be tolerated without vapor lock vary both from car to car and with the operating conditions. The tendency of gasoline to cause vapor lock in typical passenger cars, as evidenced by loss of power during full-throttle accelerations at a uniform air temperature, is indicated by the gasoline temperature at V/L ratios of approximately 20. The temperature at which the maximum V/L ratio is specified for each ASTM volatility class is based on the air temperatures and the altitude associated with the use of the class.

A1.7 Vapor-Liquid Ratio (Estimated)

A1.7.1 Three procedures for estimating temperature-V/L values using Reid vapor pressure (Method D 323) and distillation (Method D 86) results are given in Appendix X1.

A1.8 Distillation

A1.8.1 The ASTM distillation test provides a measure, in terms of volatility, of the relative proportions of all the hydrocarbon components of a gasoline. The ASTM specification designates the maximum temperatures at which 10 %, 50 %, and 90 % of the fuel shall be evaporated under closely defined conditions of the prescribed test method and the maximum end point. These distillation characteristics, along with vapor pressure and V/L ratio characteristics, define and control: starting, warm-up, acceleration, vapor lock, crankcase dilution, and, in part, fuel economy and carburetor icing.

A1.8.2 The 10 % evaporated temperature should be low enough to ensure ready starting under normal temperature conditions. Generally it should be lower in the winter than in the summer, but it is obvious that gasoline used in vehicles such as buses, which are kept in warm garages in the winter, and are never allowed to cool while in service, do not require gasoline with so low a 10 % evaporated temperature as do the majority of privately owned passenger cars.

A1.8.3 Gasolines having the same 10 and 90 % evaporated temperatures may vary considerably in warm-up and acceleration quality because of differences in the boiling temperatures of the intermediate components or fractions. Good warm-up and acceleration properties can be assured by specifying, in

addition, a suitable maximum limit for the 50% evaporated temperature. The 90% evaporated and end point temperatures should be low enough to preclude excessive dilution of the crankcase lubricating oil.

A1.9 Corrosion

A1.9.1 The requirement that gasoline must pass the ASTM copper strip corrosion test (3 h at 122°F (50°C)) provides assurance that the product will not corrode the metal parts of fuel systems.

A1.10 Existent Gum

A1.10.1 Gum is the sticky or hard nonvolatile residue left on evaporation of gasoline. The ASTM test for existent gum measures the amount of this material in the gasoline at the time of the determination. When present in excess, gum may cause manifold deposits and sticking of intake valves.

A1.10.2 Many motor gasolines are deliberately blended with nonvolatile oils or additives, which remain as evaporation residues in the initial evaporation step in the ASTM test for existent gum. This latter method, however, now includes a heptane washing step which removes the heptane-soluble material in order to determine the existent gum.

A1.11 Sulfur

A1.11.1 The limitation on sulfur content provides protection against engine wear, depletion of lubricating oil additives, and corrosion of exhaust system parts.

A1.12 Oxidation Stability

A1.12.1 Induction period is used as a measure of the oxidation stability of gasoline, that is, resistance to gum formation in storage. Experience indicates that gasolines with an induction period equal to or greater than the ASTM specification requirement generally have acceptable short-term storage stability. It should be recognized, however, that induction period correlation with the formation of gum in storage may vary markedly under different storage conditions and with different gasolines.

APPENDIXES

X1. ESTIMATING TEMPERATURE-*V/L* VALUES

X1.1 Scope

X1.1.1 Three techniques are presented here for estimating temperature-*V/L* data on gasolines from Reid vapor pressure and distillation test results.[6] They are provided for use as a guide line when *V/L* data measured by Method D 2533 are not available. One method is designed for computer processing, one is a simpler linear technique, while the other is a nomogram form of this linear equation.

X1.1.2 These techniques are not optional procedures for measuring *V/L*. They are supplementary tools for estimating temperature-*V/L* relationships with reasonable accuracy when used with due regard for their limitations.

X1.1.3 Method D 2533 is the referee *V/L* procedure and shall be used when calculated values are questionable.

X1.1.4 These techniques are not intended for, nor are they necessarily applicable to, fuels of extreme distillation or chemical characteristics such as would be outside the range of normal commercial motor gasolines. Thus, they are not applicable in all instances to gasoline blending stocks or specially blended fuels.

X1.2 Computer Method

X1.2.1 *Summary*—The values of four intermediate functions, *A*, *B*, *C*, and *D*, are derived from the gasoline vapor pressure and distillation temperatures at 10, 20, and 50% evaporated. Values for *A*, *B*, *C*, and *D* may be obtained either from equations or from a set of charts. Estimated temperatures at *V/L* ratios 4, 10, 20, 30, and 45 are then calculated from *A*, *B*, *C*, and *D*. Estimated temperatures at intermediate *V/L* ratios may be obtained by interpolation.

X1.2.2 *Procedure:*

X1.2.2.1 Establish input data from Reid vapor pressure (Method D 323) and distillation (Method D 86) test results as follows:

E = distillation temperature, °F, at 10% evaporated,
F = distillation temperature, °F, at 20% evaporated,
G = distillation temperature, °F, at 50% evaporated,
$H = G - E$,
P = Reid vapor pressure, psi,
$Q = F - E$, and
$R = H/Q$, except that if H/Q is greater than 6.7, make $R = 6.7$.

X1.2.2.2 If *A*, *B*, *C*, and *D*, are to be calculated, use the following equations:

$$A = 217.147 - 16.9527P + 0.822909P^2 - 0.0166849P^3 + 54.0436/P$$

$$B = -9.66363 + 0.910540Q - 0.0223260Q^2 + 0.000178314Q^3 + 0.823553/Q$$

$$S = -0.00525449 - 0.0532486/(P - 1.4) - 0.0170900/(P - 1.4)^2 + 0.0009677R - 0.0000195828R^2$$

[6] A correlation of temperature-*V/L* ratio data with vapor pressure and distillation data was developed in 1943 and restudied in 1963 by panels of the Coordinating Research Council, Inc. See "Correlation of Gasoline Vapor Forming Characteristics with Inspection Test Data," *CRC Report No. 159*, Jan. 28, 1943 (or SAE Transaction, Vol 52, August 1944, pp. 364–367) and "Study of CRC Calculated Temperature-V/L Technique," *CRC Report No. 370*, February 1963. The CRC correlation was modified by a task group of Technical Division A of Committee D-2 to adapt it for computer processing, as well as the linear equation and the nomogram.

$$-0.0704753R/P^2$$
$$+0.549224R/P^4 - 0.00961619R^2/P$$
$$+0.000910603R^3/P + 0.00203879R^2/P^2$$

$$C = 4.245P + 1.0/S$$

$$D = 1.12460 - 1.24135R + 0.238875R^2 - 0.0126750R^4 + 10.5273/R$$

X1.2.2.3 If A, B, C, and D, are to be obtained from charts, read them from Figs. X1.1, X1.2, X1.3, and X1.4, respectively.

X1.2.2.4 Calculate the estimated temperature at V/L ratios 4, 10, 20, 30, and 45 from the following equations:

$$T4 = A + B$$

$$T45 = F + 0.125H + C$$

$$T10 = T4 + 0.146341\,(T45 - T4) + D$$

$$T20 = T4 + 0.390244\,(T45 - T4) + 1.46519D$$

$$T30 = T4 + 0.634146\,(T45 - T4) + D$$

where:
$T4$, $T10$, $T20$, $T30$ and $T45$ are estimated temperatures at V/L ratios 4, 10, 20, 30, and 45.

X1.2.2.5 If the temperature at an intermediate V/L ratio is to be estimated, either plot the values calculated in X1.3.4 and read the desired value from a smooth curve through the points, or use the Lagrange interpolation formula as follows:

$$TX = T4\left(\frac{X-10}{4-10}\times\frac{X-30}{4-30}\times\frac{X-45}{4-45}\right) + T10\left(\frac{X-4}{10-4}\times\frac{X-30}{10-30}\times\frac{X-45}{10-45}\right) + T30\left(\frac{X-4}{30-4}\times\frac{X-10}{30-10}\times\frac{X-45}{30-45}\right) + T45\left(\frac{X-4}{45-4}\times\frac{X-10}{45-10}\times\frac{X-30}{45-30}\right)$$

where:
X = the desired V/L ratio between 4 and 45, and
TX = the estimated temperature at V/L ratio X.

X1.3 Linear Equation Method

X1.3.1 *Summary*—As given, these two equations provide only the temperatures (°C or °F) at which a V/L value of 20 exists. They make use of two points from the distillation curve, T_{10} and T_{50} (°C or °F), and the Reid vapor pressure (kPa or psi) of the gasoline with constant weighting factors being applied to each. Experience has shown that data obtained with these simple linear equations generally are in close agreement with those obtained by the computerized version given above. The limitations pointed out in X1.1.1 through X1.1.4 must be kept in mind when use is made of this procedure.

X1.3.2 *Procedure*—Obtain 10% evaporated and 50% evaporated points from the distillation curve (Method D 86) along with the Reid vapor pressure value (Method D 323); apply these directly in the equation.

$$T_{V/L=20} = 52.47 - 0.33\,(\text{RVP}) + 0.20\,T_{10} + 0.17\,T_{50}$$

where:
$T_{V/L=20}$ = temperature, °C, at V/L of 20:1,
RVP = Reid vapor pressure, kPa,
T_{10} = distillation temperature, °C, at 10% evaporated, and
T_{50} = distillation temperature, °C, at 50% evaporated.

or in the U.S. customary unit equation:

$$T_{V/L=20} = 114.6 - 4.1\,(\text{RVP}) + 0.20\,T_{10} + 0.17\,T_{50}$$

where:
$T_{V/L=20}$ = temperature, °F, at V/L of 20:1,
RVP = Reid vapor pressure, psi
T_{10} = distillation temperature, °F, at 10% evaporated, and
T_{50} = distillation temperature, °F, at 50% evaporated.

X1.4 Nomogram Method

X1.4.1 *Summary*—Two nomograms have been developed and are included herein (Figs. X1.5 and X1.6) to provide the same function as the linear equations procedure outlined above. Figure X1.5 is in SI units and Fig. X1.6 is in U.S. customary units. The nomograms are based on the two equations and the same limitations apply to their use in estimating V/L (20) temperatures.

X1.4.2 *Procedure*—Obtain 10% evaporated and 50% evaporated points from the distillation curve (Method D 86) along with the Reid vapor pressure (Method D 323). Select the SI unit (Fig. X1.5) or U.S. customary unit (Fig. X1.6) nomogram based on the units of T_{10}, T_{50}, and RVP. Using a straightedge, locate the intercept on the line between the "T_{10} and T_{50}" scales after selecting the applicable T_{10} and T_{50} values. From this intercept and the proper point on the "RVP" scale, a second intercept can be obtained on the "$T_{V/L=20}$" scale to provide the desired value directly.

X1.5 Precision

X1.5.1 The precision of agreement between temperature-V/L data estimated by any one of these three techniques and data obtained by Method D 2533 has not been established.

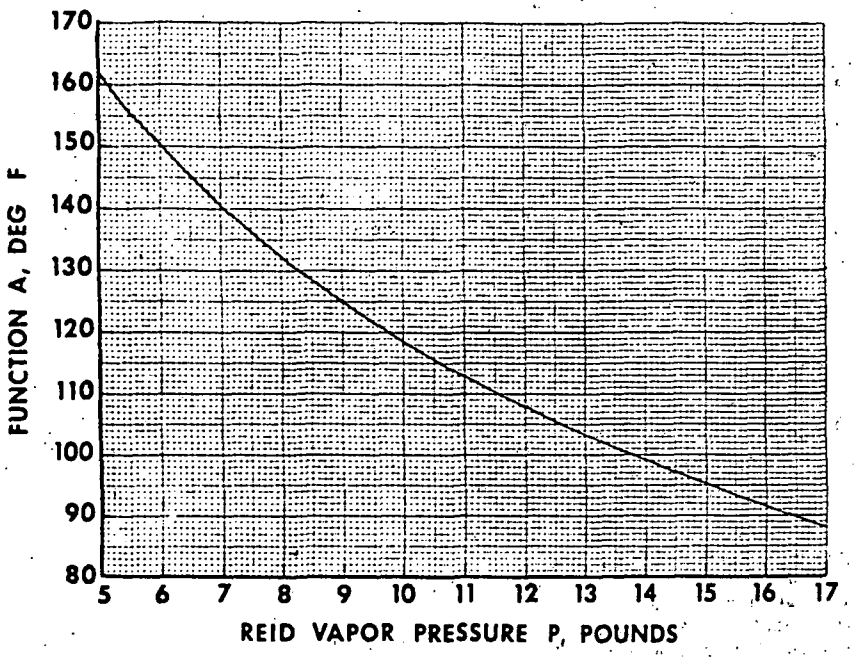

FIG. X1.1 Function *A* versus Reid Vapor Pressure *P*

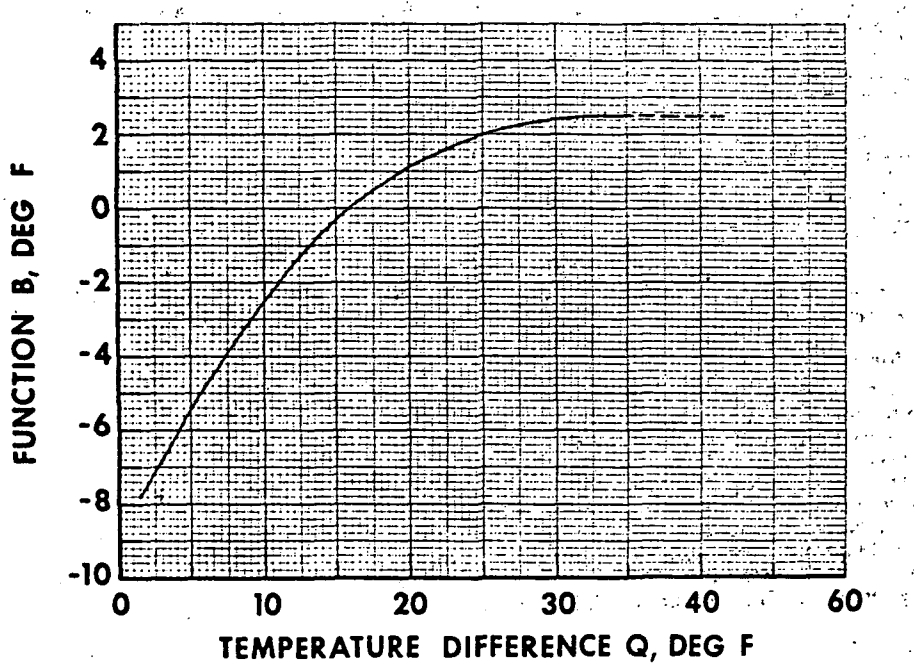

FIG. X1.2 Function *B* versus Distillation Temperature Difference *Q*

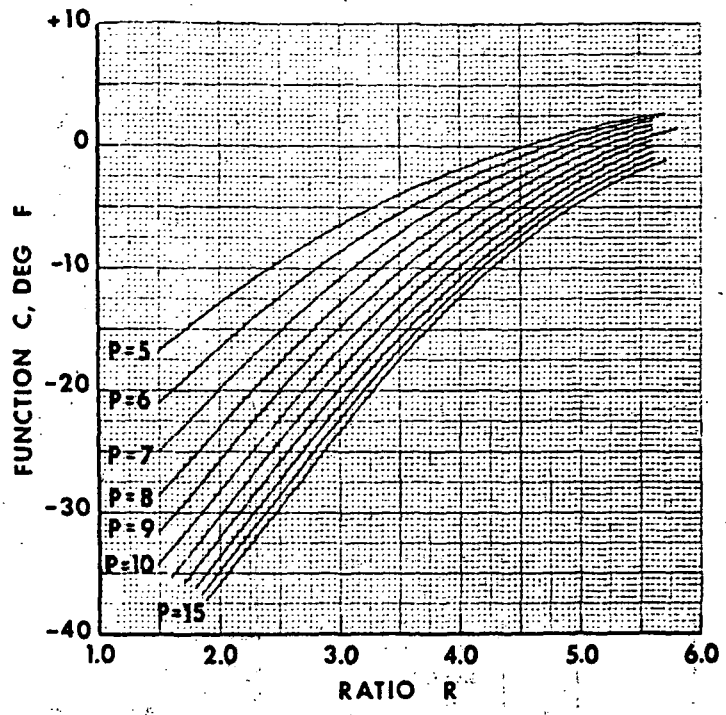

FIG. X1.3 Function *C* versus Ratio *R* and Reid Vapor Pressure *P*

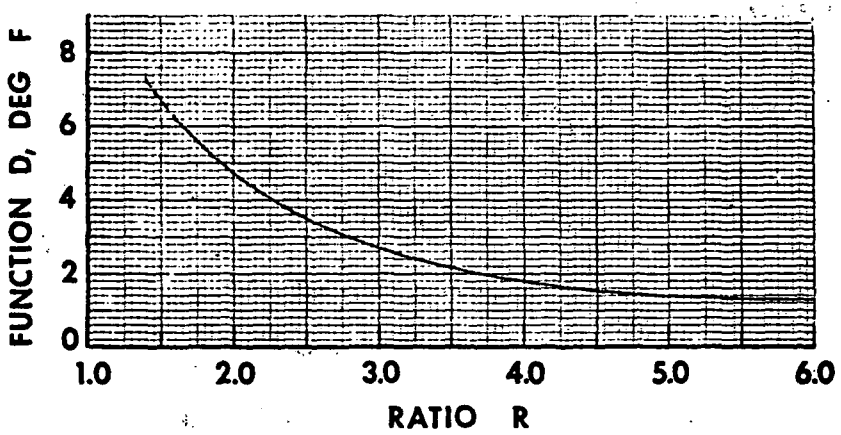

FIG. X1.4 Function *D* versus Ratio *R*

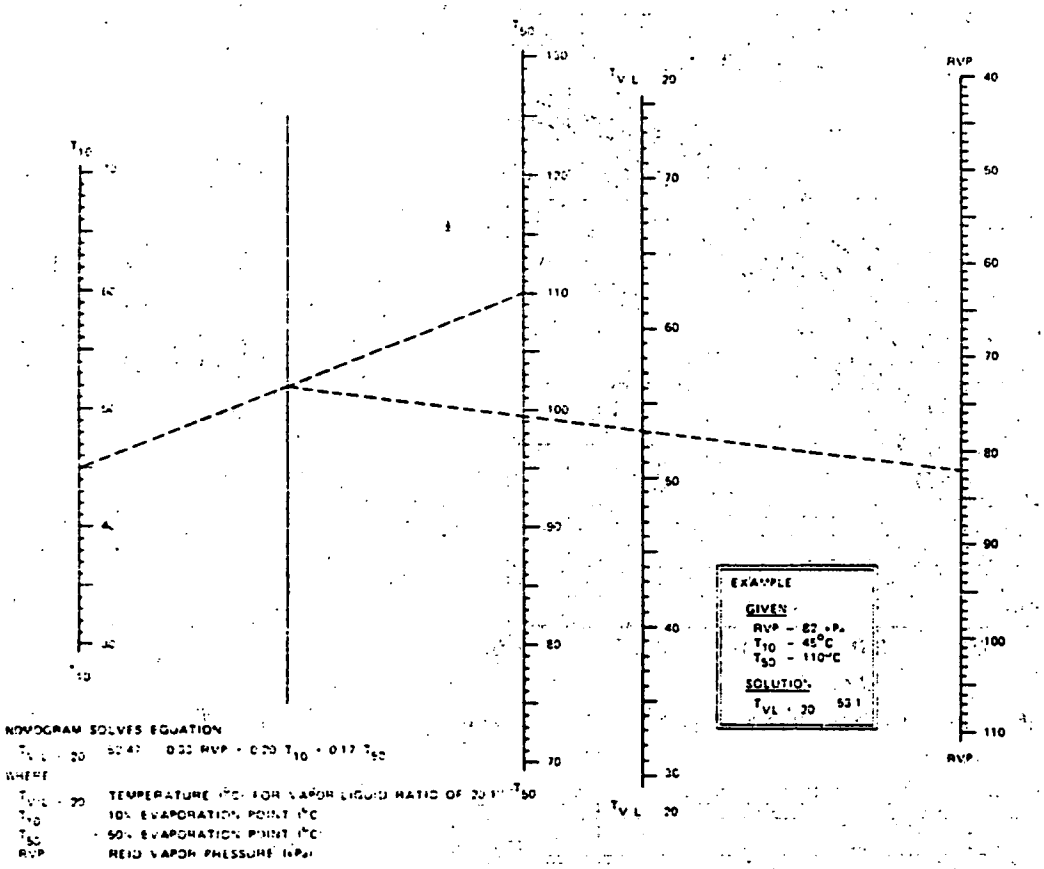

FIG. X1.5 Relationship Between Gasoline Volatility and Temperature for *V/L* Ratio at Sea Level—SI Units

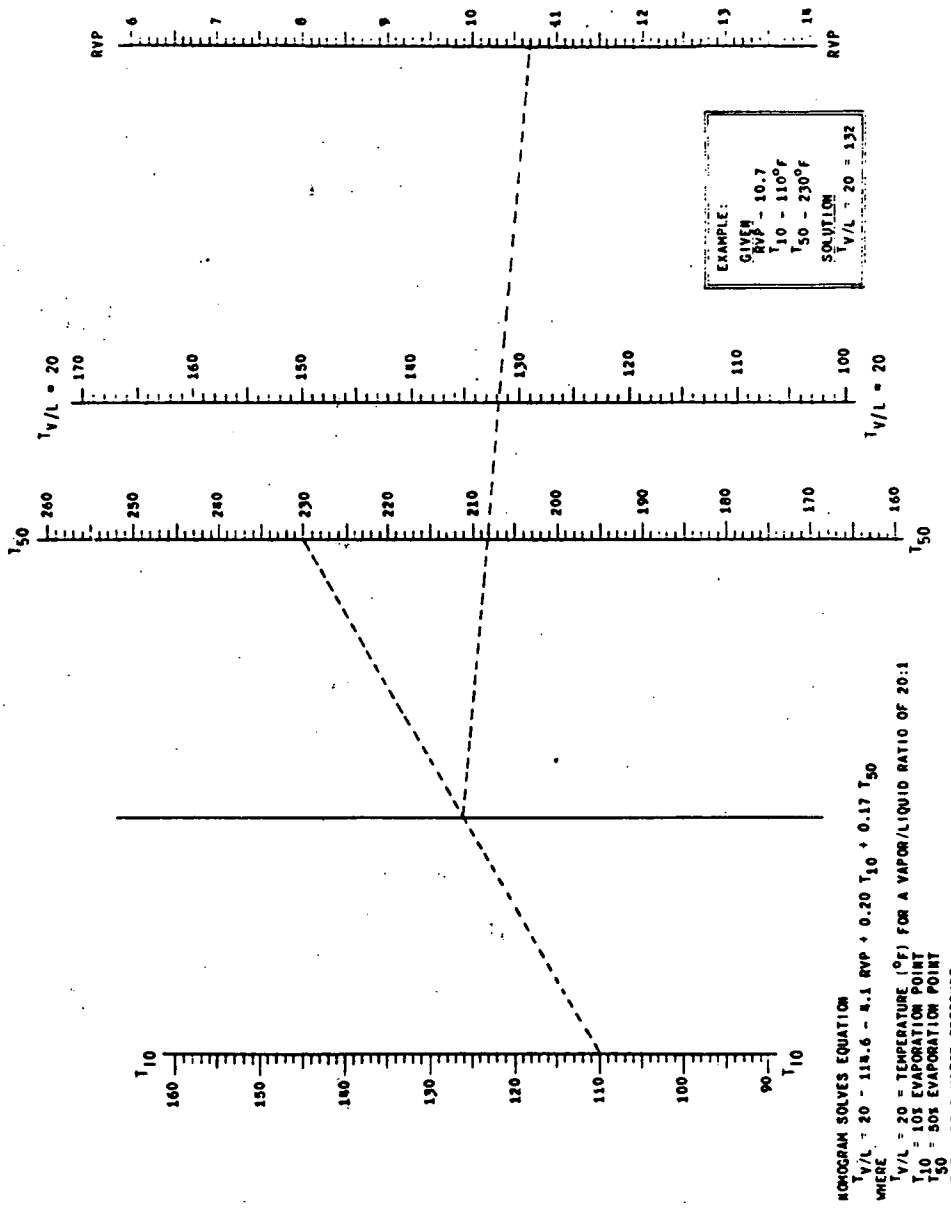

FIG. X1.6 Relationship Between Gasoline Volatility and Temperature for V/L Ratio of 20 at Sea Level—U.S. Customary Units

APPENDIX D

SELECTED PORTIONS OF THE TARIFF SCHEDULES OF THE UNITED STATES ANNOTATED (1985)

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			All other products, by whatever name known, not provided for in subpart A or C of this part, including acyclic organic chemical products, which are obtained, derived, or manufactured in whole or in part from any of the cyclic products having a benzenoid, quinoid, or modified benzenoid structure provided for in the foregoing provisions of this subpart or in subpart A of this part (con.):				
	406.84	00	Fumaric acid	Lb.	24.1% ad val.	20% ad val.	7¢ per lb. + 87% ad val.
A	406.86	00	Hexamethylene adipamide	Lb.	8.9% ad val.	7.1% ad val.	7¢ per lb. + 46% ad val.
	406.92	00	Hexamethylenediamine	Lb.	20.8% ad val.	20% ad val.	7¢ per lb. + 66.5% ad val.
A	406.96	00	Maleic anhydride	Lb.	1.1¢ per lb. + 15.6% ad val.	1¢ per lb. + 15.6% ad val.	7¢ per lb. + 50% ad val.
A	407.00	00	Methylcyclohexanone	Lb.	7% ad val.	5.9% ad val.	7¢ per lb. + 40% ad val.
			Other:				
	407.05	00	Products provided for in the Chemical Appendix to the Tariff Schedules	Lb.	1.7¢ per lb. + 16.8% ad val. 1/		7¢ per lb. + 53.5% ad val.
	407.07	00	Other	Lb.	13.5% ad val.		7¢ per lb. + 53.5% ad val.
			Mixtures in whole or in part of any of the products provided for in this subpart:				
A	407.09	00	Solvents which contain over 25 percent by weight of any of the products provided for in this subpart	Lb.	9.5% ad val., but not less than the highest rate applicable to any component material	7.4% ad val., but not less than the highest rate applicable to any component material	7¢ per lb. + 43.5% ad val., but not less than the highest rate applicable to any component material
			Other:				
	407.14	00	Mixtures of 1,3,6-Naphthalenetrisulfonic acid and 1,3,7-Naphthalenetrisulfonic acid	Lb.	1.7¢ per lb. + 12.5% ad val.		7¢ per lb. + 40% ad val.
A*	407.16		Other		1.7¢ per lb. + 13.6% ad val., but not less than the highest rate applicable to any component material. 2/3/		7¢ per lb. + 43.5% ad val., but not less than the highest rate applicable to any component material.
		05	Mixtures of 2,4- and 2,6-toluenediisocyanate	Lb.			
		10	Other	Lb.			

1/ Duty on 1,3-Bis[aminomethyl]cyclohexane temporarily suspended. See item 907.04 in part 1B, Appendix to the Tariff Schedules.

2/ Duty on mixtures containing not less than 90 percent by weight of stereoisomers of 2-isopropyl-5-methylcyclohexanol, but containing not more than 30 percent by weight of any one such stereoisomer temporarily suspended. See item 907.13 in part 1B, Appendix to the Tariff Schedules.

3/ Duty on mixtures of 3-ethylbiphenyl (m-ethylbiphenyl) and 4-ethylbiphenyl (P-ethylbiphenyl) temporarily suspended. See item 907.14 in part 1B, Appendix to the Tariff Schedules.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Aldehydes:				
A	427.40	00	Acetaldehyde	Lb.	8% ad val.		71% ad val.
A	427.42	00	Aldol or acetaldol	Lb.	5.9% ad val.	5.1% ad val.	32.5% ad val.
A	427.44	00	Butyraldehyde	Lb.	20.1% ad val.	20% ad val.	61.5% ad val.
A	427.45	00	Chloroacetaldehyde	Lb.	4% ad val.	3.7% ad val.	25% ad val.
A	427.46	00	Crotonaldehyde	Lb.	9.2% ad val.	7.2% ad val.	60% ad val.
A	427.48	00	Formaldehyde (including solutions)	Lb.	0.43¢ per lb.		1.75¢ per lb.
	427.52	00	Furfural	Lb.	Free		Free
A	427.53	00	Glyoxal	Lb.	4% ad val.	3.7% ad val.	25% ad val.
A	427.54	00	Paracetaldehyde	Lb.	6.9% ad val.	5.8% ad val.	40% ad val.
A	427.56	00	Paraformaldehyde	Lb.	5.9% ad val.	5.1% ad val.	32.5% ad val.
A	427.58	00	Other	Lb.	6.4% ad val.	5.6% ad val.	37% ad val.
			Ketones:				
A	427.60	00	Acetone	Lb.	1% ad val.	Free	20% ad val.
A	427.62	00	Ethyl methyl ketone	Lb.	3.3% ad val.	3.1% ad val.	20% ad val.
A	427.64		Other	.....	4% ad val.		20% ad val.
		10	Isophorone	Lb.			
		20	Methyl isobutyl ketone	Lb.			
		30	Other	Lb.			
			Alcohols, monohydric, unsubstituted:				
A	427.70	00	Allyl	Lb.	0.4¢ per lb. + 7.5% ad val.	7.5% ad val.	45% ad val.
A	427.72	00	Amyl	Lb.	8.6% ad val.	7.2% ad val.	37.5% ad val.
A	427.74		Butyl	.....	8.8% ad val.		50.5% ad val.
		10	n-butyl	Lb.			
		20	Isobutyl	Lb.			
		30	Other	Lb.			
A	427.82	00	Crotonyl	Lb.	7.1% ad val.	6% ad val.	41.5% ad val.
A	427.84	00	Decyl	Lb.	4% ad val.	3.7% ad val.	25% ad val.
	427.88	00	Ethyl for nonbeverage purposes	Gal.	3% ad val. 1/		20% ad val.
A	427.92	00	Fusel oil	Lb.	1.35¢ per lb.	1.3¢ per lb.	6¢ per lb.
A	427.94	00	Hexyl	Lb.	4.1% ad val.	3.7% ad val.	20.5% ad val.
			Methyl:				
	427.96	00	Imported only for use in producing synthetic natural gas (SNG) or for direct use as a fuel	Gal.	Free		18¢ per gal.
A	427.97	00	Other	Gal.	18.4% ad val.	18% ad val.	46% ad val.
A	427.98		Octyl	.....	4% ad val.	3.7% ad val.	25% ad val.
		10	2-Ethyl-1-hexanol	Lb.			
		20	Other	Lb.			
A	428.04	00	Propargyl	Lb.	6.5% ad val.	5.5% ad val.	37% ad val.
A	428.06		Propyl	.....	14% ad val.		66% ad val.
		10	n-propyl	Lb.			
		20	Isopropyl	Lb.			
A	428.12	00	Other	Lb.	4% ad val.	3.7% ad val.	25% ad val.

1/ Certain imports of ethyl alcohol are subject to additional duties. See item 901.50 in part 1A, Appendix to the Tariff Schedules.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			Subpart E. - Chemical Mixtures				
			Mixtures not specially provided for:				
	432.10	00	Mixtures that are in whole or in part of hydrocarbons derived in whole or in part from petroleum, shale oil, or natural gas.....	Lb.....	5% ad val., but not less than the highest rate applicable to any component material		25% ad val., but not less than the highest rate applicable to any component material
			Other:				
A	432.15	00	Pesticides.....	Lb.....	4% ad val., but not less than the highest rate applicable to any component material	3.7% ad val., but not less than the highest rate applicable to any component material	25% ad val., but not less than the highest rate applicable to any component material
A	432.25	00	Other.....	Lb.....	4% ad val., but not less than the highest rate applicable to any component material 1/	3.7% ad val., but not less than the highest rate applicable to any component material 1/	25% ad val., but not less than the highest rate applicable to any component material

1/ Duty on mixtures of 5-chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazolin-3-one, magnesium chloride, and magnesium nitrate temporarily suspended. See item 906.52 in part 1B, Appendix to the Tariff Schedules, and general headnote 3(d)(ii).

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
			PART 10. - PETROLEUM, NATURAL GAS, AND PRODUCTS DERIVED THEREFROM 1/				
			Part 10 headnotes:				
			1. Any product described in this part and also in part 1 of this schedule is classifiable in said part 1, except fuel oils, motor fuel, and lubricating oils and greases, containing by weight not over 25 percent of any product described in said part 1. This part does not cover -- (i) paraffin and other petroleum waxes (see part 13B of this schedule), or (ii) petroleum asphalts (see part 1J of schedule 5).				
			2. For the purposes of this part -- (a) "Reconstituted crude petroleum" (items 475.05 and 475.10) is a product which is essentially the equivalent of crude petroleum and which is made by adding fuel oil, naphtha, or other petroleum fractions to crude or topped crude petroleum; and (b) "Motor fuel" (item 475.25) is any product derived primarily from petroleum, shale, or natural gas, whether or not containing additives, which is chiefly used as a fuel in internal-combustion or other engines.				
			3. For the purposes of items 475.65 and 475.70 of this part -- (a) a product is considered to be in liquid form if --				

1/ Pres. Proc. 4766 of June 19, 1980, continues through December 31, 1980, the suspension of the system of license fees on petroleum and petroleum products established by Pres. Proc. 4210 (38 F.R. 9645) of February 1, 1975 and rescinds Pres. Proc. 4744 of April 2, 1980, in its entirety. However, the temporary suspension of duties pursuant to Pres. Proc. 4655 of April 6, 1979, as extended, has expired and such duties are, therefore, reimposed on July 1, 1980. For details of the February 1, 1975 action, including the system of fees for licenses, see Pres. Proc. 4210 (38 F.R. 9645), as modified by Pres. Proc. 4227 (38 F.R. 16195), Pres. Proc. 4317 (39 F.R. 35103), Pres. Proc. 4341 (40 F.R. 3965), Pres. Proc. 4355 (40 F.R. 10437), Pres. Proc. 4370 (40 F.R. 19420), Pres. Proc. 4377 (40 F.R. 23429), Pres. Proc. 4412 (41 F.R. 1037), Pres. Proc. 4543 (42 F.R. 64849), and Pres. Proc. 4629 (43 F.R. 58077).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
	475.15 (con.)		Natural gas, methane, ethane, propane, butane, and mixtures thereof (con.):				
		25	Propane with a minimum purity of 90 liquid volume percent	Bbl.			
		35	Butane with a minimum purity of 90 liquid volume percent	Bbl.			
			Other:				
		45	Mixtures containing more than 90 liquid volume percent of propane and butane	Bbl.			
		50	Mixtures containing more than 90 liquid volume percent of ethane and propane	Bbl.			
		55	Other	X			
	475.25		Motor fuel	.....	1.25¢ per gal.		2.5¢ per gal.
			Gasoline:				
		24*	Leaded	Bbl.			
		28*	Unleaded	Bbl.			
		30*	Jet fuel, naphtha-type	Bbl.			
		50*	Jet fuel, kerosene-type	Bbl.			
		60*	Other	Bbl.			
	475.30	00*	Kerosene derived from petroleum, shale oil, or both (except motor fuel)	Bbl.....	0.25¢ per gal.		0.5¢ per gal.
	475.35	00*	Naphthas derived from petroleum, shale oil, natural gas, or combinations thereof (except motor fuel)	Bbl.....	0.25¢ per gal.		0.5¢ per gal.
	475.40	00*	Mineral oil of medicinal grade derived from petroleum, shale oil, or both	Gal.....	0.2¢ per gal.		0.5¢ per gal.
			Lubricating oils and greases, derived from petroleum, shale oil, or both, with or without additives:				
	475.45	00*	Oils	Bbl.....	2¢ per gal.		4¢ per gal.
			Greases:				
A	475.55	00*	Containing not over 10 percent by weight of salts of fatty acids of animal (including marine animal) or vegetable origin	Lb.....	6.9% ad val.	5.8% ad val.	20% ad val.
A	475.60	00*	Other	Lb.....	0.7¢ per lb. + 6.8% ad val.	0.6¢ per lb. + 5.7% ad val.	2¢ per lb. + 20% ad val.

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty 2	Effective Period
		PART 1. - TEMPORARY LEGISLATION Subpart A. - Temporary Provisions for Additional Duties Subpart A headnotes: 1. The duties provided for in this subpart are cumulative duties which apply in addition to the duties, if any, otherwise imposed on the articles involved. The duties provided for in this subpart apply only with respect to articles entered during the period specified in the last column. 2. [Headnote deleted] 3. [Headnote deleted]				

Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty 2	Effective Period
901.50	1/	Ethyl alcohol (provided for in item 427.88, part 2D, schedule 4) when imported to be used in producing a mixture of gasoline and alcohol or a mixture of a special fuel and alcohol for use as fuel, or when imported to be used otherwise as fuel.....	1/	60¢ per gal.	60¢ per gal.	On or before 12/31/92
		Subpart B. - Temporary Provisions Amending The Tariff Schedules				
		Subpart B headnotes: 1. Any article described in the provisions of this subpart, if entered during the period specified in the last column, is subject to duty at the rate set forth herein in lieu of the rate provided therefor in schedules 1 to 8, inclusive. 2. For purposes of item 903.25-- (a) the term "culled carrots" refers to those carrots which fail to meet the requirements of the United States Department of Agriculture for carrots of grades "U.S. No. 1" or "U.S. No. 2" (See 7 CFR sections 2851.4141 and 2851.4142); and (b) the total quantity of carrots which may be entered under item 903.25 during the period specified in that item shall not exceed 20,000 tons.				

1/ See Appendix statistical headnote 1 and subpart A headnote 1.

APPENDIX E

U.S. CUSTOMS SERVICE TREASURY DECISION
T.D. 66-23(13)

T.D. 66-23(13) *Motor fuel. Standards for classification of naphtha-type and kerosene-type materials as motor fuel.*—The following table captioned "CRITICAL PROPERTIES OF MATERIALS CHIEFLY USED AS MOTOR FUELS IN INTERNAL COMBUSTION OR OTHER ENGINES IN THE UNITED STATES" is published for the guidance of customs officers in identifying petroleum materials which are chiefly used as motor fuels as defined in *Schedule 4, Part 10, Headnote 2(b)*, and classifiable under the provision for Motor fuel, in *item 475.25*, TSUS. Classification of an imported petroleum product as a Motor fuel under *item 475.25*, TSUS, would be indicated if for each of the properties listed in the table for a given type of motor fuel, the corresponding properties of the imported product fall within the ranges set out in the table for that type of motor fuel. The standards for motor fuels contained herein supersede any standards previously published by the Bureau for petroleum materials chiefly used as motor fuels. These standards in the table will be reviewed periodically and revised, when appropriate, to reflect any change in chief use of such materials.

CRITICAL PROPERTIES OF MATERIALS CHIEFLY USED AS MOTOR FUELS IN INTERNAL COMBUSTION OR OTHER ENGINES IN THE UNITED STATES

(For Use in Classifying Imported Naphtha-Type or Kerosene-Type Materials)

		Aviation		
			Turbine Fuels	
	Automotive		*Military JP-4*	*Military JP-*
	Gasoline all grades	*Gasoline all grades*	*Commercial JET B*	*Commercial JET A & A1*
	Minimum to Maximum Range Limits			
Gravity, °API, ASTM D-287	56. 3-67. 7	64. 0-76. 2	49. 1-56. 5	36. 5-46. 0
Distillation, ASTM D-86				
°F at 10% D+L	103-135	138-165	180-246	352-394
°F at 50%	185-233	174-220	232-360	392-432
°F at 90%	301-358	213-260	331-468	424-495
Reid Vapor Pressure, psi ASTM D-323	7. 5-13. 2	5. 8-7. 0	2. 0-2. 9	0. 0-0. 5
Octane (Research) ASTM DO908	83. 1-103. 3	81-105	-	-
Octane (Motor) ASTM D-357	79. 5-99. 6	81-105	-	-
Freeze Point, °F, ASTM D-1477	-	-	(−110)-(−76)	(−69)-(−48
Olefins, Volume %, ASTM D-1319	-	-	0-2. 9	0. 0-4. 5
Appearance	Clear and Bright			

Bureau letter dated January 19, 1966. (418.114)

APPENDIX F

U.S. CUSTOMS SERVICE TREASURY DECISION T.D. 83-173

U.S. Customs Service

Treasury Decisions

(T.D. 83-173)

Motor Fuel-Standards for Classification of Petroleum Materials Used as Motor Fuel

Customs officers are required by the Tariff Schedules of the United States (TSUS) (19 U.S.C. 1202) to identify petroleum materials which are chiefly used as motor fuels as defined in Headnote 2(b), Part 10, Schedule 4, TSUS, and classifiable under the provision for motor fuel in item 475.25, TSUS. Classification of an imported petroleum product as a motor fuel under item 475.25, TSUS, would be indicated if it can be satisfactorily demonstrated to Customs that the product meets one of the following current ASTM specifications: D439 for Automotive Gasoline; D1655 for Aviation Turbine fuels; or D910 for Aviation Gasolines. Customs officers may obtain copies of these ASTM specifications from the Customs Laboratory in their area or from the Director, Technical Services Division, U.S. Customs Service Headquarters, 1301 Constitution Ave., Washington D.C. 20229. The current ASTM D439, D1655, and D910 specifications supersede any previously published by Customs for petroleum materials chiefly used as motor fuels, and also supersede all previous ASTM publications of those standards.

This ruling revokes T.D. 66-23(13).

Dated: August 17, 1983.

HARVEY B. FOX,
Director.
Classification and Value Division

APPENDIX G

SELECTED PORTIONS OF THE CONVERSION OF THE TSUS INTO THE FORMAT OF THE HARMONIZED SYSTEM, AS OF SEPTEMBER 1984

TARIFF SCHEDULE OF THE UNITED STATES ANNOTATED

(Converted to the Harmonized System and reflecting final MTN concession rates of duty)

Heading	Stat. Suffix	Article Description	Units of Quantity	Rates of Duty 1 General	Rates of Duty 1 Special	Rates of Duty 2
2205		Vermouth and other wine of fresh grapes flavored with plants or aromatic substances:				
2205.10		In containers holding 2 liters or less:				
2205.10.30	00	Vermouth	liter...	5.5¢/liter 1/		33¢/liter 1/
2205.10.60	00	Other	liter...	6.6¢/liter 1/		33¢/liter 1/
2205.90		Other:				
		Vermouth:				
2205.90.20	00	In containers each holding not over 4 liters	liter...	5.5¢/liter 1/		33¢/liter
2205.90.40	00	In containers each holding over 4 liters	liter...	8.5¢/liter 1/		33¢/liter
2205.90.60	00	Other	liter...	6.6¢/liter		33¢/liter
2206.00		Other fermented beverages (for example cider, perry, mead):				
2206.00.15	00	Cider, whether still or sparkling	liter...	0.8¢/liter 1/		1.3¢/liter 1/
2206.00.30	00	Prune wine	liter.. v pf.liter	6.9¢/liter + 49¢/pf. liter on ethyl alcohol content 1/		18.5¢/liter + $1.32/pf. liter on ethyl alcohol content 1/
2206.00.45	00	Rice wine or sake	liter...	6.6¢/liter 1/		33¢/liter 1/
		Other:				
2206.00.60	00	Effervescent wine	liter...	30.9¢/ liter 2/		$1.59/ liter 2/
2206.00.90	00	Other	liter...	6.6¢/liter 2/		33¢/liter 2/
2207		Undenatured ethyl alcohol of an alcoholic strength by volume of 80 percent vol. or higher; ethyl alcohol and other spirits, denatured, of any strength:				
2207.10		Undenatured ethyl alcohol of an alcoholic strength by volume of 80 percent vol. or higher:				
2207.10.30	00	For beverage purposes	pf.liter	29.6¢/pf. liter 3/		$1.32/pf. liter 3/
2207.10.60	00	For nonbeverage purposes	liter...	3% 4/		20% 4/
2207.20.00	00	Ethyl alcohol and other spirits, denatured, of any strength	liter...	3% 4/		20% 4/

1/ Imports under this subheading may be subject to Federal Excise Tax (26 U.S.C. 5001 and 5041) as follows:
(1) 17¢ per wine gallon on still wines containing not more than 14 percent of alcohol by volume;
(2) 67¢ per wine gallon on still wines containing more than 14 percent and not exceeding 21 percent of alcohol by volume
(3) $2.25 per wine gallon on still wines containing more than 21 percent and not exceeding 24 percent of alcohol by volume;
(4) $3.40 per wine gallon on champagne and other sparkling wines; and
(5) $2.40 per wine gallon on artificially carbonated wines.

2/ Imports under this subheading may be subject to Federal Excise Taxes (26 U.S.C. 5041 and 5051) as follows:
(1) If fermented from malt, a tax of $9 per barrel of 31 gallons, and at a like rate for any other quantity or for fractional parts of a barrel;
(2) If fermented from other than malt, a tax at the rates shown in footnote 1 above.

3/ Imports under this subheading may be subject to a Federal Excise Tax (26 U.S.C. 5001) of $10.50 per proof gallon and a proportionate tax at the like rate on all fractional parts of a proof gallon.

4/ Certain imports of ethyl alcohol are subject to additional duties. See subheading 9901.00.50.

CHAPTER 27

MINERAL FUELS, MINERAL OILS AND PRODUCTS OF THEIR DISTILLATION; BITUMINOUS SUBSTANCES; MINERAL WAXES

27-1

Notes

1. This chapter does not cover:

   (a) Separate chemically defined organic compounds, other than pure methane and propane which are to be classified in heading 2711;

   (b) Medicaments of heading 3003 or 3004; or

   (c) Mixed unsaturated hydrocarbons of heading 3301, 3302 or 3805.

2. References in heading 2710 to "petroleum oils and oils obtained from bituminous minerals" include not only petroleum oils and oils obtained from bituminous minerals, but also similar oils, as well as those consisting mainly of mixed unsaturated hydrocarbons, obtained by any process, provided that the weight of the nonaromatic constituents exceeds that of the aromatic constituents.

   However, the references do not include liquid synthetic polyolefins of which less than 60 percent by volume distills at 300°C, after conversion to 1,013 millibars when a reduced-pressure distillation method is used (chapter 39).

Subheading Notes

1. For the purposes of subheading 2701.11, "anthracite" means coal having a volatile matter limit (on a dry, mineral-matter-free basis) not exceeding 14 percent.

2. For the purposes of subheading 2701.12, "bituminous coal" means coal having a volatile matter limit (on a dry, mineral-matter-free basis) exceeding 14 percent and a calorific value limit (on a moist, mineral-matter-free basis) equal to or greater than 5,833 kcal/kg.

3. For the purposes of subheadings 2707.10, 2707.20, 2707.30, 2707.40 and 2707.60, the terms "benzene", "toluene", "xylene", "naphthalene" and "phenols" apply to products which contain more than 50 percent by weight of benzene, toluene, xylene, naphthalene or phenols, respectively.

Additional U.S. Notes

1. (a) Crude petroleum oils, crude oils obtained from bituminous minerals and reconstituted crude petroleum shall, if products of Canada, be admitted free of duty and any entry therefor shall be liquidated or reliquidated accordingly if, on or before the 180th day after the date of entry, documentation is filed with the customs officer concerned establishing that, pursuant to a commercial exchange agreement between the United States and Canadian refiners which has been approved by the Secretary of Energy--

   (i) an import license for the products covered by such entry has been issued by the Secretary; and

   (ii) an equivalent amount of domestic or duty-paid foreign crude petroleum oils, crude oils obtained from bituminous minerals or reconstituted crude petroleum have, pursuant to such commercial exchange agreement and to an export license issued by the Secretary of Commerce, been exported from the United States to Canada and have not previously been used to effect the duty-free entry of like Canadian products under this U.S. note.

   (b) The Secretary of the Treasury, after consulting with the Secretary of Commerce and the Secretary of Energy, shall issue such rules or regulations as may be necessary governing the admission of Canadian products pursuant to the provisions of this U.S. note.

2. For the purposes of heading 2710, "petroleum oils" includes only products having:

   (a) A Congealing Point (ASTM D 938-76) of less than 30°C; or

   (b) If the Congealing Point is not less than 30°C:

      (i) a density at 70°C of less than 0.942 and a Worked Cone Penetration (ASTM D 217-68) or a Cone Penetration (ASTM D 937-77) at 25°C of not less than 350; or

      (ii) if the density at 70°C is not less than 0.942 having a Needle Penetration (ASTM D 5-73) at 25°C of not less than 400.

3. For the purposes of subheading 2710.00.15, "motor fuel" is any product derived primarily from petroleum, shale or natural gas, whether or not containing additives, which is principally used as a fuel in internal-combustion or other engines.

4. For the purposes of this chapter, "motor fuel blending stock" (subheading 2710.00.18) is any product derived primarily from petroleum, shale oil or natural gas, whether or not containing additives, which is principally used for direct blending in the manufacture of motor fuel.

TARIFF SCHEDULE OF THE UNITED STATES ANNOTATED

(Converted to the Harmonized System and reflecting final MTN concession rates of duty)

27-4

Heading	Stat. Suffix	Article Description	Units of Quantity	Rates of Duty 1 General	Rates of Duty 1 Special	Rates of Duty 2
2708		Pitch and pitch coke, obtained from coal tar or from other mineral tars:				
2708.10.00	00	Pitch	kg.	Free		Free
2708.20.00	00	Pitch coke	kg.	Free		Free
2709.00		Petroleum oils and oils obtained from bituminous minerals, crude: (1)				
2709.00.10	00	Testing under 25 degrees A.P.I.	bbl.	5.25¢/bbl		21¢/bbl
2709.00.20	00	Testing 25 degrees A.P.I. or more	bbl.	10.5¢/bbl		21¢/bbl
2710.00		Petroleum oils and oils obtained from bituminous minerals, other than crude; preparations not elsewhere specified or included, containing by weight 70 percent or more of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations:				
		Distillate and residual fuel oils (including blended fuel oils):				
2710.00.05		Testing under 25 degrees A.P.I.	.....	5.25¢/bbl		21¢/bbl
	10	Having a Saybolt Universal viscosity at 37.8°C of 45 seconds or more but not more than 125 seconds (No. 4-type fuel oils)	bbl			
	20	Having a Saybolt Universal viscosity at 37.8°C of more than 125 seconds (heavy fuel oils)	bbl			
	50	Other	bbl			
2710.00.10		Testing 25 degrees A.P.I. or more	.....	10.5¢/bbl		21¢/bbl
	10	Having a Saybolt Universal viscosity at 37.8°C of less than 45 seconds (light fuel oils)	bbl			
	20	Having a Saybolt Universal viscosity at 37.8°C of 45 seconds or more but not more than 125 seconds (No. 4-type fuel oils)	bbl			
	50	Having a Saybolt Universal viscosity at 37.8°C of more than 125 seconds (heavy fuel oils)	bbl			
2710.00.15		Motor fuel	.....	52.5¢/bbl		$1.05/bbl
	10	Gasoline	bbl			
	20	Jet fuel, naphtha-type	bbl			
	30	Jet fuel, kerosene-type	bbl			
	50	Other	bbl			
(1) 2710.00.18	00	Motor fuel blending stock	bbl.	52.5¢/bbl		$1.05/bbl
2710.00.20	00	(1) Kerosene (except motor fuel or motor fuel blending stock)	bbl.	10.5¢/bbl		21¢/bbl
2710.00.25	00	(1) Naphthas (except motor fuel blending stock blending stock)	bbl.	10.5¢/bbl		21¢/bbl
		Lubricating oils and greases, with or without additives:				
2710.00.30	00	Oils	bbl.	84¢/bbl		$1.68/bbl
		Greases:				
2710.00.35	00	Containing not over 10 percent by weight of salts of fatty acids of animal (including marine animal) or vegetable origin	kg.	5.8%		20%
2710.00.40	00	Other	kg.	1.3¢/kg + 5.7%		4.4¢/kg + (1) 20%

TARIFF SCHEDULE OF THE UNITED STATES ANNOTATED

(Converted to the Harmonized System and reflecting final MTN concession rates of duty)

29-6

Heading	Stat. Suffix	Article Description	Units of Quantity	Rates of Duty 1 General	Rates of Duty 1 Special	Rates of Duty 2
		II. ALCOHOLS AND THEIR HALOGENATED, SULFONATED, NITRATED OR NITROSATED DERIVATIVES				
2905		Acyclic alcohols and their halogenated, sulfonated, nitrated or nitrosated derivatives:				
		Saturated monohydric alcohols:				
2905.11		Methanol (Methyl alcohol):				
2905.11.10	00	Imported only for use in producing synthetic natural gas (SNG) or for direct use as a fuel	liter	Free		4.8c/liter
2905.11.20	00	Other	liter	18%		46%
2905.12.00	00	Propan-1-ol (Propyl alcohol) and propan-2-ol (Isopropyl alcohol)	kg	14%		66%
2905.13.00	00	Butan-1-ol (n-Butyl alcohol)	kg	8.8%		50.5%
2905.14.00		Other butanols		8.8%		50.5%
	10	2-Methylpropan-1-ol (Isobutyl alcohol)	kg			
	50	Other	kg			
2905.15.00	00	Pentanol (Amyl alcohol) and isomers thereof	kg	7.2%		37.5%
2905.16.00		Octanol (Octyl alcohol) and isomers thereof		3.7%		25%
	10	2-Ethylhexan-1-ol	kg			
	50	Other	kg			
2905.17.00	00	Dodecan-1-ol (Lauryl alcohol), hexadecan-1-ol (Cetyl alcohol) and octadecan-1-ol (Stearyl alcohol)	kg	5%		25%
2905.19.00		Other		3.7%		25%
	10	Decyl alcohol and isomers thereof	kg			
	20	Hexyl alcohol and isomers thereof	kg			
	50	Other	kg			
		Unsaturated monohydric alcohols:				
2905.21.00	00	Allyl alcohol	kg	7.5%		45%
2905.22		Acyclic terpene alcohols:				
2905.22.10	00	Geraniol	kg	3%		45%
2905.22.20	00	Isophytol	kg	3.7%		25%
2905.22.50		Other		4.8%		45%
	10	Citronellol	kg			
	50	Other	kg			
2905.29.00	00	Other	kg	3.7%		25%
		Diols:				
2905.31.00	00	Ethylene glycol (Ethanediol)	kg	12%		63%
2905.32.00	00	Propylene glycol (Propane-1,2-diol)	kg	11.5%		51%
2905.39		Other:				
2905.39.10	00	Butylene glycol	kg	11.5%		51%
2905.39.20	00	Neopentyl glycol	kg	6.7%		54.5%
2905.39.50	00	Other	kg	12.3%		54.5%
		Other polyhydric alcohols:				
2905.41.00	00	2-Ethyl-2-(hydroxymethyl)propane-1,3-diol (Trimethylolpropane)	kg	3.7%		25%
2905.42.00	00	Pentaerythritol	kg	3.7%		25%
2905.43.00	00	Mannitol	kg	5.8%		50%
2905.44.00	00	D-glucitol (Sorbitol)	kg	5.8%		50%
2905.49		Other:				
2905.49.10	00	Derivatives of polysaccharides and rare saccharides	kg	5.8%		50%
2905.49.20	00	Triols and tetrols	kg	3.7%		25%
2905.49.50	00	Other	kg	12.3%		54.5%
2905.50		Halogenated, sulfonated, nitrated or nitrosated derivatives of acyclic alcohols:				
2905.50.10	00	Derivatives of monohydric alcohols	kg	5.5% 1/		39%
2905.50.50	00	Other	kg	12.3%		54.5%

1/ Duty on certain chemicals used in the production of photographic couplers temporarily suspended (see chapter 99).

SUBCHAPTER I

TEMPORARY LEGISLATION PROVIDING FOR ADDITIONAL DUTIES

99-3

U.S. Note

1. The duties provided for in this subchapter are cumulative duties which apply in addition to the duties, if any, otherwise imposed on the articles involved. The duties provided for in this subchapter apply only with respect to articles entered during the period specified in the last column.

TARIFF SCHEDULE OF THE UNITED STATES ANNOTATED

(Converted to the Harmonized System and reflecting final MTN concession rates of duty)

99-4

Heading	Stat. Suf-fix	Article Description	Units of Quantity	Rates of Duty 1	Rates of Duty 2	Effective Period
9901.00.50	1/	Ethyl alcohol (provided for in subheadings 2207.10.60 and 2207.20 of chapter 22) when imported to be used in producing a mixture of gasoline and alcohol or a mixture of a special fuel and alcohol for use as fuel, or when imported to be used otherwise as fuel.....	1/	❶13.21¢/liter	❶13.21¢/liter	On or before 12/31/92

1/ See chapter 99 statistical note 1 and subchapter I, U.S. legal note 1.

APPENDIX H

COPIES OF PROPOSED BILLS H.R. 3785, H.R. 4232, AND S.2479, CONCERNING TARIFF TREATMENT OF CATALYTIC NAPHTHA

I

98TH CONGRESS
1ST SESSION

H. R. 3785

To suspend for one year the duty on catalytic naphtha.

IN THE HOUSE OF REPRESENTATIVES

AUGUST 4, 1983

Mr. BROOKS introduced the following bill; which was referred to the Committee on Ways and Means

---

A BILL

To suspend for one year the duty on catalytic naphtha.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That subpart B of part 1 of the Appendix to the Tariff Schedules of the United States (19 U.S.C. 1202) is amended by inserting in numerical sequence the following new item:

"	907.13	Catalytic naphtha (provided for in item 407.16, part 1B, schedule 4).....	Free	No change	On or before the close of the 1-year period beginning on the date of the enactment of this item.	".

SEC. 2. The amendment made by the first section of this Act shall apply with respect to articles entered, or withdrawn from warehouse for consumption, on or after the fifteenth day after the date of the enactment of this Act.

O

I

98TH CONGRESS
1ST SESSION

H. R. 4232

To amend the Tariff Schedules of the United States to clarify the classification of any naphtha described as both a petroleum product and a benzenoid chemical.

IN THE HOUSE OF REPRESENTATIVES

OCTOBER 27, 1983

Mr. BROOKS introduced the following bill; which was referred to the Committee on Ways and Means

---

A BILL

To amend the Tariff Schedules of the United States to clarify the classification of any naphtha described as both a petroleum product and a benzenoid chemical.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. Subpart B of part 1 of schedule 4 of the Tariff Schedules of the United States (19 U.S.C. 1202) is amended by inserting in numerical sequence the following new item:

"	407.17	Naphthas derived from petroleum, shale oil, natural gas, or combinations thereof (except motor fuel) which contain by weight over 5 percent of products described in this subpart.....	0.25¢ per gal.	No change	0.5¢ per gal.	".

SEC. 2. The amendment made by section 1 shall apply with respect to articles entered, or withdrawn from warehouse for consumption, on or after the date of the enactment of this Act.

○

II

98TH CONGRESS
2D SESSION

S. 2479

To amend the Tariff Schedules of the United States to clarify the classification of any naptha described as both a petroleum product and a benzenoid chemical.

IN THE SENATE OF THE UNITED STATES

MARCH 27 (legislative day, MARCH 26), 1984

Mr. BENTSEN introduced the following bill; which was read twice and referred to the Committee on Finance

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A BILL

To amend the Tariff Schedules of the United States to clarify the classification of any naptha described as both a petroleum product and a benzenoid chemical.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) subpart B of part 1 of schedule 4 of the Tariff Schedules of the United States (19 U.S.C. 1202) is amended by inserting in numerical sequence the following new item:

"	407.17	Naptha derived from petroleum, shale oil, natural gas, or combinations thereof (except motor fuel) which contains by weight over 5 percent of products described in this subpart.....	0.25¢ per gal.	No change	0.5¢ per gal.	"

(b) The amendment made by this section shall apply with respect to articles entered, or withdrawn from warehouse for consumption, on or after the 15th day after the date of the enactment of this Act.

O

APPENDIX I

COPIES OF PROPOSED BILLS H.R. 5455 AND S.2900, CONCERNING TARIFF TREATMENT OF UNFINISHED GASOLINE AND MOTOR FUEL BLENDING STOCKS

I

98TH CONGRESS
2D SESSION

H. R. 5455

To amend the Tariff Schedules of the United States to clarify the classification of unfinished gasoline.

IN THE HOUSE OF REPRESENTATIVES

APRIL 12, 1984

Mr. GLICKMAN introduced the following bill; which was referred to the Committee on Ways and Means

---

A BILL

To amend the Tariff Schedules of the United States to clarify the classification of unfinished gasoline.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That part 10 of schedule 4 of the Tariff Schedules of the United States (19 U.S.C. 1202) is amended—

(1) by inserting the following at the end of headnote 2:

"(c) 'unfinished gasoline' (item 475.25) is any gasoline which can be used as a fuel in internal combustion or other engines, but is outside the ASTM octane range."; and

(2) by amending item 475.25 by inserting ", including unfinished gasoline" after "Motor fuel".

SEC. 2. The amendments made by the first section of this Act shall apply with respect to articles entered, or withdrawn from warehouse for consumption, on or after the date of enactment of this Act.

O

II

98TH CONGRESS
2D SESSION

S. 2900

To amend the Tariff Schedules of the United States to clarify the classification of unfinished gasoline.

IN THE SENATE OF THE UNITED STATES

AUGUST 1 (legislative day, JULY 30), 1984

Mr. WILSON introduced the following bill; which was read twice and referred to the Committee on Finance

---

A BILL

To amend the Tariff Schedules of the United States to clarify the classification of unfinished gasoline.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. Part 10 of schedule 4 of the Tariff Schedules of the United States (19 U.S.C. 1202) is amended—

(1) by inserting the following at the end of headnote 2:

"(c) 'Motor fuel blending stock' (item 475.27) is any product derived primarily from petroleum, shale oil, or natural gas, except napthas, whether or not containing additives,

which is chiefly used for direct blending in the manufacture of motor fuel."; and

(2) by adding in numerical sequence a new item 475.27 called "Motor fuel blending stock", with a column 1 rate of 1.25¢ per gallon and a column 2 rate of 2.50¢ per gallon; and

(3) by amending item 475.30 by inserting "or motor fuel blending stock" after "fuel".

SECTION 2. The amendments made by the first section of this Act shall apply with respect to articles entered, or withdrawn from warehouse for consumption, on or after January 1, 1984.

APPENDIX J

COPY OF LETTER TO THE CHAIRMAN OF THE HOUSE WAYS AND MEANS COMMITTEE FROM THE U.S. TRADE REPRESENTATIVE, PRESENTING PROPOSED ADMINISTRATION ALTERNATIVE TO HOUSE BILLS H.R. 4232 AND H.R. 5455

May 23, 1984

The Honorable Dan Rostenkowski
Chairman, Committee on Ways and Means
U.S. House of Representatives
Washington, D.C. 20515

Dear Dan:

This is in response to your requests for comments on H.R. 4232, a bill to clarify the classification of naphthas, and H.R. 5455, a bill to clarify the classification of unfinished gasoline. These bills would have the effect of decreasing the tariffs on certain motor fuel blending stocks which are currently classified as chemical mixtures.

H.R. 4232 is intended to lower the tariff rate applicable to gasoline blending stocks which contain greater than 5 percent dutiable benzenoid chemicals by weight, the so-called "catalytic naphthas." These materials may contain up to 10 or 15 percent dutiable benzenoids covered under part 1 of Schedule 4 of the Tariff Schedules of the United States (TSUS), but are not economical to process for chemical use. Rather, they are usually blended directly into the gasoline pool because of the octane-enhancing properties of the benzenoid (aromatic) component. Since they exceed the 5 percent limit on benzenoid content and do not meet the definition of any of the petroleum products specified in headnote 1 of part 10 of Schedule 4 of the TSUS, they are subject to the much higher tariff levels of part 1.

H.R. 5455 is intended to modify the classification of gasoline imports which do not meet current U.S. specifications for gasoline but which can be blended with other components to meet these specifications. Since there is no other classification in part 10 of Schedule 4 of the TSUS (petroleum products) which covers such imports, they fall under the more general provisions in part 2 of Schedule 4 and are dutiable at higher rates as chemical mixtures.

The Administration does not object to the intent of H.R. 4232 and H.R. 5455. Both bills are intended to correct anomalies in which an intermediate product is dutiable at a higher rate than the finished product manufactured from it. Such a situation discourages the processing of these intermediate materials and consequent adding of value in the United States. However, the combined effect of H.R. 4232 and H.R. 5455 would be to create another anomaly in which higher-octane, gasoline blending stocks would be dutiable at the lowest petroleum rate and lower-octane blending stocks would be dutiable at the highest rate. This distorts the normal relationship between high- and low-octane

motor fuel blending stock in refining economics. We believe it would be more appropriate to establish a single classification for all motor fuel blending stock with a tariff set at the same rate as that for motor fuel.

Consultations have been held among the agencies concerned with this situation as well as with technical experts from industry in order to reach a consensus on the best approach to the problem. Based on these consultations, the Administration suggests establishment of a new tariff line (item 475.27) to be called "motor fuel blending stock", dutiable at 1.25 cents per gallon, the same rate as that applied to motor fuel (item 475.25). Headnote 1 to part 10 of TSUS Schedule 4 would be amended by adding "motor fuel blending stock" to the list of products which may contain up to 25 percent benzenoid chemicals under the petroleum headings. Headnote 2 would be amended by adding the following definition of motor fuel blending stock:

> (c) "Motor fuel blending stock" (item 475.27) is any product derived primarily from petroleum, shale oil, or natural gas, whether or not containing additives, which is chiefly used for direct blending in the manufacture of motor fuel.

These modifications will provide an effective resolution of the problems which H.R. 4232 and H.R. 5455 were designed to address. A proposal for these and other conforming changes to part 10 of Schedule 4 of the TSUS have been provided to the Committee staff. The Departments of Commerce, Energy, and Treasury, the Customs Service, and the U.S. International Trade Commission concur in this proposal.

The Office of Management and Budget advises that they have no objection to the presentation of these comments from the standpoint of the Administration's program.

Very truly yours,

WILLIAM E. BROCK

SCHEDULE 4. - CHEMICALS AND RELATED PRODUCTS
Part 10. - Petroleum, Natural Gas, and Products Derived Therefrom

GSP	Item	Stat. Suf-fix	Articles	Units of Quantity	Rates of Duty 1	Rates of Duty LDDC	Rates of Duty 2
	475.15 (con.)		Natural gas, methane, ethane, propane, butane, and mixtures thereof (con.):				
		25	Propane with a minimum purity of 90 liquid volume percent	Bbl.			
		35	Butane with a minimum purity of 90 liquid volume percent	Bbl.			
			Other:				
		45	Mixtures containing more than 90 liquid volume percent of propane and butane	Bbl.			
		50	Mixtures containing more than 90 liquid volume percent of ethane and propane	Bbl.			
		55	Other	X			
	475.25		Motor fuel	.....	1.25c per gal.		2.5c per gal.
		20	Gasoline	Bbl.			
		30	Jet fuel, naphtha-type	Bbl.			
		50	Jet fuel, kerosene-type	Bbl.			
		60	Other	Bbl.			
	475.30	00	Kerosene derived from petroleum, shale oil, or both (except motor fuel)	Bbl.....	0.25c per gal.		0.5c per gal.
	475.35	00	Naphthas derived from petroleum, shale oil, natural gas, or combinations thereof (except motor fuel)	Bbl.....	0.25c per gal.		0.5c per gal.
	475.40	00	Mineral oil of medicinal grade derived from petroleum, shale oil, or both	Gal.....	0.2c per gal.		0.5c per gal.
			Lubricating oils and greases, derived from petroleum, shale oil, or both, with or without additives:				
	475.45	00	Oils	Bbl.....	2c per gal.		4c per gal.
			Greases:				
A	475.55	00	Containing not over 10 percent by weight of salts of fatty acids of animal (including marine animal) or vegetable origin	Lb.....	7.4% ad val.	5.8% ad val.	20% ad val.
A	475.60	00	Other	Lb.....	0.7c per lb. + 7.3% ad val.	0.6c per lb. + 5.7% ad val.	2c per lb. + 20% ad val.
	475.27		Motor fuel blending stock	Bbl.	1.25¢ per gal.		2.5¢ per gal.

or motor fuel blending stock

Note: For explanation of the symbol "A" or "A*" in the column entitled "GSP", see general headnote 3(c).

GSP	Item	Stat. Suffix	Articles	Units of Quantity	Rates of Duty 1	LDDC	2
			PART 10. - PETROLEUM, NATURAL GAS, AND PRODUCTS DERIVED THEREFROM 1/				
			Part 10 headnotes:				
			1. Any product described in this part and also in part 1 of this schedule is classifiable in said part 1, except fuel oils, motor fuel, and lubricating oils and greases, containing by weight not over 25 percent of any product described in said part 1. This part does not cover — (i) paraffin and other petroleum waxes (see part 13B of this schedule), or (ii) petroleum asphalts (see part 1J of schedule 5).				
			2. For the purposes of this part — (a) "Reconstituted crude petroleum" (items 475.05 and 475.10) is a product which is essentially the equivalent of crude petroleum and which is made by adding fuel oil, naphtha, or other petroleum fractions to crude or topped crude petroleum; and (b) "Motor fuel" (item 475.25) is any product derived primarily from petroleum, shale, or natural gas, whether or not containing additives, which is chiefly used as a fuel in internal-combustion or other engines; and				
			3. For the purposes of items 475.65 and 475.70 of this part -- (a) a product is considered to be in liquid form if —				

motor fuel blending stock,

(c) "Motor fuel blending stock" (item 475.27) is any product derived primarily from petroleum, shale oil, or natural gas, whether or not containing additives, which is chiefly used for direct blending in the manufacture of motor fuel.

1/ Pres. Proc. 4766 of June 19, 1980, continues through December 31, 1980, the suspension of the system of license fees on petroleum and petroleum products established by Pres. Proc. 4210 (38 F.R. 9645) of February 1, 1975 and rescinds Pres. Proc. 4744 of April 2, 1980, in its entirety. However, the temporary suspension of duties pursuant to Pres. Proc. 4655 of April 6, 1979, as extended, has expired and such duties are, therefore, reimposed on July 1, 1980. For details of the February 1, 1975 action, including the system of fees for licenses, see Pres. Proc. 4210 (38 F.R. 9645), as modified by Pres. Proc. 4227 (38 F.R. 16195), Pres. Proc. 4317 (39 F.R. 35103), Pres. Proc. 4341 (40 F.R. 3965), Pres. Proc. 4355 (40 F.R. 10437), Pres. Proc. 4370 (40 F.R. 19420), Pres. Proc. 4377 (40 F.R. 23429), Pres. Proc. 4412 (41 F.R. 1037), Pres. Proc. 4563 (42 F.R. 64849), and Pres. Proc. 4629 (43 F.R. 58077).

APPENDIX K

COPY OF LETTER TO THE CHAIRMAN OF THE HOUSE SUBCOMMITTEE ON TRADI
FROM CONGRESSMAN BROOKS, OPPOSING THE PROPOSED ADMINISTRATION
ALTERNATIVE TO HOUSE BILLS H.R. 4232 AND H.R. 5455

K BROOKS
DISTRICT, TEXAS

COUNTIES:
CHAMBERS
GALVESTON
IS (S.E. SECTOR)
EFFERSON

COMMITTEES:
JUDICIARY
GOVERNMENT OPERATIONS
CHAIRMAN
LEGISLATION AND NATIONAL SECURITY SUBCOMMITTEE
CHAIRMAN

Congress of the United States
House of Representatives
Washington, D.C. 20515

June 4, 1984

The Honorable Sam Gibbons, Chairman
House Subcommittee on Trade
1111 Longworth Building
Washington, D.C. 20515

Dear Mr. Chairman:

It is my understanding that the U.S. Trade Representative (USTR), William Brock, has contacted your Subcommittee regarding my bill, H.R. 4232, to amend the tariff schedules of the United States to clarify the classification of any naphtha described as both a petroleum product and a benzenoid chemical. I am writing to strongly oppose the modifications in this legislation as recommended by USTR.

In introducing this legislation, I sought to correct an anomaly in current tariff laws by which intermediate products, like catalytic naphtha and akylates, are assessed a higher rate of duty than finished products, namely finished gasoline. The present, higher tariff on catalytic naphtha derives from its benzenoid content, even though the product itself is not broken down by users for the benzenoid component. H.R. 4232 takes the logical approach that naphthas which may contain a negligible amount of benzenoids, but which are also petroleum products used as gasoline blendstocks, should be assessed at the same duty rate as is pure naphtha, $.0025 per gallon. USTR's proposed changes--in an effort to correct problems that have arisen with off-specification gasoline--not only ignores this logic, but actually aggravates the problems which my legislation attempts to correct.

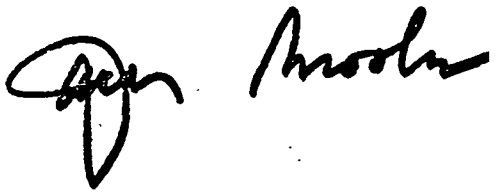
By making gasoline blendstock components dutiable at the same rate as finished gasoline, financial incentives for exporting countries to ship these products to the U.S. market will disappear. If the tariff on finished gasoline were the same as that on unfinished motor gasoline components, it would be more advantageous for foreign refiners to export only finished gasoline, which they already produce more cheaply than our own refiners, to the detriment mainly of independent gas producers. As I'm sure you are aware, generally only large U.S. gasoline refiners produce these intermediate substances, but they are unwilling to sell blendstocks like catalytic naphtha and alkylate to independent oil companies and gasoline blenders. The proposal being made by USTR could, therefore, effectively choke off the foreign imports while doing nothing to encourage large refiners to open up the domestic market, thereby seriously threatening the continued viability of small, independent refiners competing in the marketplace. In the end, it will be the American consumer that will suffer from the lack of competition.

I believe that USTR's proposal will also exacerbate another major problem with current tariff laws which my bill seeks to correct. As stated above, cata-

lytic naphtha is now subject to a ridiculously high duty becasue of its benzenoid content, despite the fact that it is not economically viable to break down the benzenoid components for sale by themselves. Apparently, Customs assigned the higher duty rate based on benzenoid content, ignoring the end-use of this product as an intermediate gasoline blendstock. By lumping together all motor fuel blendstocks into a single definition as "materials chiefly used in direct blending and the manufacture of motor gasolines," I can foresee endless administrative questions arising. Not only will the U.S. Customs Service have to determine "chief use," but such a definition will also further add to a problem of basing tariffs on components rather than on end-use. For example, light naphtha is often, but not solely, imported for motor gasoline blending, and Customs officials would again face the difficulty of determining whether light naphtha would be defined as naphtha and dutiable at $.0025 or as motor fuel blending stocks, dutiable at $.0125. Other, similar products would be equally hard to classify. Under my bill, on the other hand, this type of substance is clearly defined and dutiable at a reasonable rate, based on the concept of end-use.

Again, I strongly urge your Subcommittee's approval of H.R. 4232 without modification, so that logical clarification of our tariff laws in this area can finally be achieved to the benefit of our nation's already threatened, independent refiners and gasoline blenders. Thank you for your attention to this matter, and with every good wish, I am

Sincerely,



cc: The Honorable Dan Rostenkowski

FROM: JACK BROOKS, M.C.
NINTH DISTRICT, TEXAS