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Advanced Thermally Stable Coal-Derived Jet Fuels Compositional Factors Affecting Thermal Degradation of Jet Fuels Dec 1992 177 pages

Authors: C. Song; S. Eser; H. H. Schobert; P. G. Hatcher; M. M. Coleman; PENNSYLVANIA STATE UNIV UNIVERSITY PARK DEPT OF MATERIALS SCIENCE AND ENGINEE RING

Full Text

... high temperature thermal stability of coal-derived and petroleum-based **jet fuels** in pyrolytic regime. Thermal stability refers to the resistance of fuel to chemical decomposition at high temperatures to ... , and providing information for enhancing instrinsic stability of **jet fuels**. The second task involves characterization of the solids including deposits, sediments and gums produced from **fuels** and model compounds at high temperatures. The third ... is to explore the means to enhance the thermal stability of **fuels** by examining the effects of various additives. The fourth task is ...

Immunotoxicity of Jet Fuels and Solvents Nov 2002 20 pages

Authors: J. A. Riedel; D. R. Mattie; AIR FORCE RESEARCH LAB WRIGHT-PATTERSON AFB OH HUMAN EFFECTIVENESS DIRECTORATE

Full Text

... a number of the complex components of the immune system. Changes in the immune system as the result of chemical exposure to **jet fuels** or other solvents are a concern for the occupational worker. This report reviewed studies involving the effects of **jet fuels** on the immune system; components of **jet** fuel or solvents with known immunotoxicity were also discussed. Personnel working with military and commercial **fuels** such as hydrazine, JP-8 and **Jet** A could be at risk for immunosuppression as this is a major effect of these **fuels**.

Development of Oxygen Scavenger Additives for Jet Fuels May 1, 1993 10 pages

Authors: Bruce Beaver; DUQUESNE UNIV PITTSBURGH PA

Full Text

In this project it is assumed that the thermal stability of most **jet fuels** would be dramatically improved by the efficient removal of a fuel's dissolved oxygen (in flight). It is proposed herein to stabilize the bulk fuel ... that successful completion of this project will result in the development of a new type of **jet** fuel additive which will enable current conventional **jet fuels** to obtain sufficient thermal stability to function as 'JP-900' **fuels**. In addition, it is postulated that the successful development of thermally activated oxygen scavengers will also ...

Combustion and Heat Transfer; Volume 1 - Advanced Jet Fuels Data Studies Apr 1998 225 pages

Authors: S. Zabarnick; D. R. Ballal; K. E. Binns; G. L. Dieterle; J. S. Ervin; DAYTON UNIV OH RESEARCH INST

Full Text

This report highlights studies performed in support of the development of advanced **jet fuels**, including JP-8+100, JP-900, and endothermic **fuels**. For the development of JP-8+100 fuel, we have tested hundreds of additives in ... fuel oxidation, deposition, and pyrolysis. We made progress in support of development of future **fuels** such as JP-900 and endothermic **fuels**. Data set summaries of the much of the data obtained during the contract period are contained in the accompanying volume entitled, "Combustion and Heat Transfer; Volume 2 - Advanced **Jet Fuels** Data Sets."

Advanced Thermally Stable, Coal-Derived, Jet Fuels Development Program Annual Report. Experiment System and Model Development Dec 1993 50 pages

Authors: E. A. Klavetter; S. J. Martin; W. Trott; T. J. O'Hern; SANDIA NATIONAL LABS ALBUQUERQUE NM

Full Text

A program entitled 'Thermally Stable **Jet Fuels** Development' was initiated in FY89 by the U.S. Air Force, Aero Propulsion ... , Pittsburgh Energy Technology Center. Thermal stability of aviation **fuels** is of concern because of the potential operation problems arising from fuel ... has been conducting efforts to develop instrumentation for monitoring characteristics of **jet** fuel degradation and solids deposition and develop ... instrumentation. This report describes the instrumentation development, data acquisition, and model parameter determination. **Jet fuels**, Thermal stability, Fuel degradation, Mass sensor ...

CHEMICAL COMPOSITION OF MICROIMPURITIES IN JET FUELS FROM SULFUROUS PETROLEUM Nov 19, 1964 12 pages

Authors: V. N. Zrelov; N. I. Marinchenko; FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH

Full Text

The microimpurities of the **jet fuels** from sulfurous petroleums consist of ash elements, tars, and 'structural' water. In the process of transportation, settling, and filtration of the **fuels** there occurs a separation of the microimpurities in accordance with their chemical composition ... the suspended state. Into the composition of the tarry part of the microimpurities of the **fuels**, along with oxygen compounds, there go up to 20--30% of oxidized compounds containing sulfur. In the process of the filtration of **fuels** there occurs a decrease in the quantity of

compounds containing sulfur in ...

Influence of Supercritical Conditions on Precombustion Chemistry and Transport Behavior of Jet Fuels Apr 1996 175 pages

Authors: N. Zhou; A. Krishnan; CFD RESEARCH CORP HUNTSVILLE AL

Full Text

... experimental/computational approach to model precombustion chemistry and transport behavior for hydrocarbon **fuels** under supercritical conditions was developed. Models for the computation of thermophysical ... turbulent regimes. The effects of turbulence and buoyancy were studied in detail. Advanced thermal stability models for **jet fuels** were incorporated into the code. Model predictions were compared with deposition data in the literature and with a concurrent experimental study. Experiments were performed at the University of Iowa and at Wright Laboratory using **jet fuels** and sulfur hexafluoride.

Combustion and Heat Transfer; Volume 2 - Advanced Jet Fuels Data Sets Apr 1998 137 pages

Authors: S. Zabarnick; D. R. Ballal; K. E. Binns; G. L. Dieterle; J. S. Ervin; DAYTON UNIV OH RESEARCH INST

Full Text

This report consists of data set summaries of tests performed in support of the development of advanced **jet fuels**, including JP-8+100, JP-900, and endothermic **fuels**. This includes data sets for the quartz crystal microbalance (QCM), the isothermal corrosion oxidation test (ICOT), the Phoenix rig, the fuel/materials ... The overall program accomplishments and details of the individual test devices employed during the contract period are contained in the accompanying volume entitled, "Combustion and Heat Transfer; Volume 1 - Advanced **Jet Fuels** Studies."

INSOLUBLE RESIDUES, FORMING DURING THE HEATING OF JET FUELS Dec 3, 1965 8 pages

Authors: G. F. Bolshakov; FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH

Full Text

... was to investigate the composition of insoluble residues, forming during the heating of **jet fuels** in contact with metals. The following **fuels** were studied: No. 1 TS-1 fuel, hydrogenated, with a total sulfur content of 0. ... Copper alloys (bronze and brass) accelerate the autooxidation processes of **fuels**, promoting the formation of deposits on the metal, and increase the corrosion activity of the **fuels**. Duralumin D1T and especially steel 12KHN3A produce a much lesser ... elements from the fuel composition would lead to a slowing down of residue formation processes in **fuels**. (Extracted)

An Analysis of the Two-Tier Cost Structure for Aviation Jet Fuels on the Naval Reserve's C-9 Airlift Services Program Jun 1993 112 pages

Authors: Robert N. Greenberg; NAVAL POSTGRADUATE SCHOOL MONTEREY CA

Full Text

The purpose of this thesis was to examine the two-tier cost structure for military and commercial contract aviation **jet fuels** and its effect on the Naval Reserve's C-9 Airlift Services Program. In the past, a single-tier system was in ... and paid for by the services. The analysis compared the differences in total **jet** fuel costs between the original and new cost structures. It also ... , based on different assumptions and scenarios under the two-tier system. Into-plane **jet** fuel, Contract fuel, Aviation **jet** fuel, **Jet** fuel pricing, Commercial **jet** fuel, Military **jet** fuel

Environmental Analysis of Possible Sulfur Increases in USAF Jet Fuels Feb 1975 22 pages

Authors: Dennis F. Naugle; AIR FORCE WEAPONS LAB KIRTLAND AFB NM

Full Text

This analysis addresses the question of whether environmental considerations should be the limiting constraint to possible increases in sulfur content of USAF **jet fuels**. Such increases are proposed in order to increase the availability of **jet fuels** such as JP-4. The current average sulfur content of 0.05% by weight and two hypothesized levels of 0.4 percent and 1.0 percent are analyzed in this study. Aircraft emissions and meteorological conditions around an airbase are maximized to produce predicted 'worst-case' ambient air quality levels.

Sorption of Selected Volatile Organic Constituents of Jet Fuels and Solvents on Natural Sorbents from Gas and Solutions Phases Aug 1988 212 pages

Authors: P. S. Rao; R. D. Rhue; Clifford T. Johnson; Richard A. Oguada; FLORIDA UNIV GAINESVILLE INST OF FOOD AND AGRICULTURAL SCIENCES

Full Text

Sorption of selected volatile organic constituents (VOC) of **jet fuels** and solvents on several natural sorbents from the gas and aqueous phases was investigated. The sorbates studied were: trans-1,2-dichloroethylene; 1,2-dichloroethane; trichloroethylene; 1,1,2,2-tetrachloroethane; toluene; ... were characterized by measuring VOC sorption at several temperatures. Sorption coefficients, Soils, Mineral surfaces, Aquifer materials, Organic chemical transport, Sorption equilibrium, Spectroscopic techniques, **Jet fuels**, Water pollution.

Advanced Thermally-Stable, Coal-Derived, Jet Fuels Development Program, Annual Report: Experiment System and Model Development Feb 1993 93 pages

Authors: Elmer Klavetter; Steve Martin; Wayne Trott; Tim O'Hern; Gerald Nelson; WRIGHT LAB WRIGHT-PATTERSON AFB OH

Full Text

A program entitled 'Thermally-Stable **Jet Fuels** Development' was initiated in FY89 by the U.S. Air Force, Aero Propulsion and Power Directorate, working jointly with the Department of Energy, Pittsburgh Energy Technology Center. Thermal stability of aviation **fuels** is of concern because of the potential operation problems arising from fuel degradation under thermal ... . Sandia National Laboratories has been conducting efforts to develop instrumentation for monitoring characteristics of **jet** fuel degradation and solids deposition and develop models of those ...

Development of a Method to Determine The Autoxidation of Turbine Fuels May 1992 255 pages

Authors: George E. Fodor; David W. Naegeli; SOUTHWEST RESEARCH INST SAN ANTONIO TX BELVOIR FUELS AND LUBRICANTS RESEARCH FACILITY

Full Text

... ambient conditions from data obtained from accelerated oxidation experiments at elevated temperatures. The rates of peroxide formation in 10 model **jet fuels** were measured at several temperatures ranging from 43' to 120 deg c, with oxygen partial pressures ranging from approximately 10 to ... method has also been used to evaluate the effectiveness of several hindered phenolic antioxidants to inhibit the formation of peroxides in two **jet fuels** at temperatures of 1000 and 120 deg C and an oxygen partial pressure of 240 kPa (ca 20 psig). Antioxidants ...

Analysis of Deposit Precursors in Jet Fuels Using Fourier Transform Infrared Spectroscopy Jan 1993 53 pages

Authors: William Schulz; David B. Shehee; EASTERN KENTUCKY UNIV RICHMOND DEPT OF CHEMISTRY

Full Text

Thermal oxidation products from **jet fuels** will be formed in the presence of fuel and oxygen at elevated temperatures. Development of **fuels** that will not form solid residues depends on the development of a method to analyze the rate of oxidation of **fuels**. Gravimetric determination of fuel residues was imprecise and time consuming. Gas Chromatography - Mass Spectrometry (GC-MS) of oxidation products yields a great deal of fundamental information but is too specific to be used as a rapid method for determining the ...

THERMAL STABILITY OF JET FUELS Jul 17, 1961 6 pages

Authors: LIBRARY OF CONGRESS WASHINGTON DC AEROSPACE TECHNOLOGY DIV

Full Text

A study of the effect of mercaptans on the formation of insoluble sediment in **jet fuels** at elevated temperatures is reported. The study was conducted in three experimental series. Series 1 involved the testing of TC-1 **fuels** to determine the temperature of maximum sediment formation. Series 2 dealt with the effects of mercaptans and catalytic metals on sediment formation at 150 deg C. Series 3 extended the experiments of series 2 to the 100-300 deg C ring . Sediment formation increased with increasing mercaptan content, and the temperature of maximum sediment formation was 150 deg C.

Summary of Ignition Properties of Jet Fuels and Other Aircraft Combustible Fluids Sep 1975 62 pages

Authors: Joseph M. Kuchta; BUREAU OF MINES PITTSBURGH PA SAFETY RESEARCH CENTER

Full Text

This report was prepared at the request of the Air Force to summarize the various ignition properties of **jet fuels** and other aircraft combustible fluids. The initial part is devoted to theory and definitions that are pertinent to ignition phenomena and the application of any ... summarize the various data that are available on ignition energies, ignition quenching distances and ignition temperatures of aircraft **fuels**, engine oils, hydraulic fluids and lubricants. Data are presented on the following types of ignition sources: ...

THE EFFECT OF ULLAGE ON THE FLASH POINT AND LOWER FLAMMABILITY LIMIT TEMPERATURES OF JP-5 JET FUELS Nov 1966 12 pages

Authors: W. A. AFFENS; H. W. Carhart; NAVAL RESEARCH LAB WASHINGTON DC

Full Text

... a system. A simple apparatus has been used to test the effect of ullage on flash point and lower flammability limit temperatures of JP-5 **jet fuels**. Results indicate that both ullage and time to achieve equilibrium conditions are factors. In general, flammability limit temperatures decreased with decreasing ullage, the ... smaller ullages, flammability hazard is increased. In one instance, the extrapolated flammability temperature of a specification JP-5 **jet** fuel was 26F lower than its ASTM flash point as ullage approached zero. The data suggest ...

Endocrine Disruptors: An Evaluation of Solvents Deicers and Jet Fuels Oct 1997 149 pages

Authors: E. A. Merrill; T. R. Sterner; B. J. Larcom; OPERATIONAL TECHNOLOGIES CORP DAYTON OH

Full Text

... activity: organic solvents (trichloroethylene, trichloroethane, dichloroethane, methyl ethyl ketone, methyl isobutyl ketone and perchloroethylene), deicing and anti-icing agents (potassium acetate, sodium acetate, ethylene glycol,urea, propylene glycol, sodium formate and calcium magnesium acetate) and **jet fuels** and related hydrocarbons (toluene, ethylbenzene, xylene, **jet** fuel and diesel).

Repeated Dose Skin Irritation Study on Jet Fuels - Preliminary Dose Range Finding Study Jan 1999 25 pages

Authors: W. Baker; J. English; D. Dodd; J. McDougal; T. Miller; MANTECH-GEOCENTERS JOINT VENTURE DAYTON OH

Full Text

... scientific information is available on the effect of repeated skin contact with JP-8. Before initiating an investigation using the rat as an animal model for skin irritation with **jet fuels**, several laboratory procedures needed to be addressed. During this preliminary dose range finding study, an opportunity to preview the nature and severity of skin lesions to be encountered in a subchronic repeated dose **jet** fuel study was gained. Depending on the type of fuel and the frequency of application, a range of skin ...

LUBRICITY PROPERTIES OF HIGH-TEMPERATURE JET FUELS 1967 60 pages

Authors: J. K. Appeldoorn; I. B. Goldman; F. F. Tao; ESSO RESEARCH AND ENGINEERING CO LINDEN NJ PRODUCTS RESEARCH DIV

Full Text

The Micro-Ryder gear test was evaluated as a possible test device for **jet fuels**. Scuffing tests generally agreed with earlier wear tests in assessing the effects of fuel composition and operating variables. However, some differences were found: some sulfur compounds reduced scuffing, whereas they had not reduced wear; scuffing is frequently more severe in dry argon than in wet air, whereas in wear tests this was reversed. Water appears to be the important factor reducing scuffing. K-Monel showed some major differences ...

LUBRICITY PROPERTIES OF HIGH-TEMPERATURE JET FUELS Jul 1968 124 pages

Authors: J. K. Appeldoorn; F. F. Tao; I. B. Goldman; ESSO RESEARCH AND ENGINEERING CO LINDEN NJ PRODUCTS RESEARCH DIV

Previous studies on the friction and wear properties of **jet fuels** have been extended to metallurgies other than

Full Text

steel and to other kinds of wear, both abrasive and scuffing. Corrosive wear is found with most metals, even those that are nominally corrosion resistant, and can be controlled by using surface- active additives. Abrasive wear is triggered by corrosive wear and can be controlled indirectly by eliminating corrosive wear or indirectly by polar additives. Unlike corrosive wear, scuffing is most severe in dry inert atmospheres. Antiwear additives are usually also antiscuff agents.

Influence of Supercritical Conditions on Pre-Combustion Chemistry and Transport Behavior of Jet Fuels Feb 1993 60 pages

Authors: Anantha Krishnan; CFD RESEARCH CORP HUNTSVILLE AL

Full Text

... on the near wall profiles of velocity and temperature. Ideal gas approximations of supercritical flows can result in gross errors in predicting heat transfer rates. The development of this supercritical transport model provides a basis for incorporating complex models for pre-combustion chemistry in **jet fuels**.... Thermal stability, Supercritical flows, Transport properties, Heat transfer.

Survey of Jet Fuels Procured by the Defense Energy Support Center Jun 9, 1998 77 pages

Authors: DEFENSE ENERGY SUPPORT CENTER FORT BELVOIR VA

Full Text

This first report is a compilation of data which are representative of the quality of **jet fuels** (JP4, JP5, and JP8) purchased by the Defense Energy Support Center (DESC) worldwide. This information was obtained from our Petroleum Quality Information System (PQIS), an automated system which contains product quality history. This database contains over 6000 records of aviation fuel deliveries, which represents 8.5 billion gallons of product. The data contained in this report are summarized to provide ...

MOTOR, JET, AND ROCKET FUELS Apr 16, 1963 1010 pages

Authors: K. K. Papok; Ye G. Semenido; FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH

Full Text

"Motor and **Jet Fuels** and Rocket Propellants" is the fourth completely revised edition of the first volume of the book "Motor **Fuels**, Lubri cants, and Liquids," issued in 1957 ... the physicochemical and opera tional properties of aviation, **jet**, rocket, auto motive, diesel, and boiler **fuels**, as well as the basic problems relating to the qualities and ... book are devoted to the most important problems in the area of **fuels** corrosion and scale-formation properties, heat of ... for engineers and technicians working in areas in which **fuels** are used, as well as for those people engaged in ...

Experimental and Detailed Numerical Studies of Fundamental Flame Properties of Gaseous and Liquid Fuels Dec 2006 120 pages

Authors: Fokion N. Egolfopoulos; CALIFORNIA UNIV LOS ANGELES

Full Text

... , flame temperature, and combustion mode. Both gaseous and liquid **fuels**, including **jet fuels** and their surrogates, ... limits were determined experimentally and numerically for **fuels** and reaction conditions that have not been ... both low and high molecular weight **fuels**, it was determined that diffusion and kinetics can have ... results enhance current understanding of the combustion behavior of **fuels** that are of relevance to air-breathing propulsion. Furthermore, the derived experimental ... data constitute a basis for partially validating combustion kinetics as well as proposed surrogates of **jet fuels**.

Combustion and Heat Transfer Studies Utilizing Advanced Diagnostics: Fuels Research Nov 1992 198 pages

Authors: D. R. Ballal; R. J. Byrd; S. P. Heneghan; C. R. Martel; T. F. Williams; DAYTON UNIV OH RESEARCH INST

Full Text

... that can operate at higher temperatures than current **fuels**. This research program had two objectives: to ... global chemistry and heat transfer models for predicting **jet** fuel thermal decomposition and deposition rate. ... static and flowing experiments on a variety of JP **fuels**. These experiments illuminated the role of antioxidants, peroxides, ... the oxidation of surrogate JP-8 and and **jet fuels**. We developed an autooxidation theory which distinguishes oxidative stability from thermal stability and ... chemistry and heat transfer models for predicting **jet** fuel deposition rates.... Fuel decomposition, Fuel ...

Acute Toxicity Evaluation of JP-8 Jet Fuel and JP-8 Jet Fuel Containing Additives Nov 1996 56 pages

Authors: R. E. Wolfe; E. R. Kinead; M. L. Feldmann; H. F. Leahy; W. W. Jederberg; MANTECH ENVIRONMENTAL TECHNOLOGY INC DAYTON OH

Full Text

... , the Air Force is developing an improved JP-8 **jet** fuel (JP-8 + 100). Two companies (Betz ... on JP-8 and the two JP-8 + 100 **jet fuels**. A single oral dose at 5 mg **jet** fuel/kg body weight to five male and ... F-344 rats, and a single dermal application of 2 g **jet** fuel/kg body weight applied to ... observation periods. Single treatment of 0.5 mL neat **jet** fuel to rabbit skin produced negative results ... a sensitization response following repeated applications of the **jet fuels**. Inhalation vapor exposure to JP-8, ... packages did not potentiate the acute effects normally associated with JP-8 **jet** fuel exposures.

Immunotoxicology of Exposure to JP-8 Jet Fuel Dec 1997 13 pages

Authors: David Harris; ARIZONA UNIV TUCSON

Full Text

Chronic **jet** fuel exposure could be detrimental to Air Force personnel, by not only adversely affecting ... disease, cancer and autoimmune dysfunctions. Chronic exposure to **jet** fuel has been shown to adversely affect human ... Currently, there are no standards for personnel exposure to **jet fuels** of any kind, let along JP-8 **jet** fuel. Kerosene based petroleum distillates have been ... 1.3 million workers were exposed to **jet fuels** in 1992. Thus, **jet** fuel exposure may not only have serious consequences for USAF ... number of civilian workers. Short-term (7 day) JP-8 **jet** fuel exposure causes lung injury as evidenced ...

Immunotoxicology of JP-8 Jet Fuel Nov 2000 17 pages

Authors: David T. Harris; ARIZONA UNIV TUCSON

Full Text

Chronic **jet** fuel exposure could be detrimental to Air Force personnel, not only by adversely affecting ... of infectious disease and cancer. Chronic exposure to **jet** fuel has been shown to adversely affect human liver ... . Currently, there are no standards for personnel exposure to **jet fuels** of any kind, let alone JP-8 **jet** fuel. Kerosene based petroleum distillates have been ... 1.3 million workers were exposed to **jet fuels** in 1992. Thus, **jet** fuel exposure may not only have serious consequences for USAF ... number of civilian workers. Short-term (7 day) JP-8 **jet** fuel exposure causes lung injury as evidenced ...

STORAGE STABILITY OF HIGH TEMPERATURE FUELS. PART 3. THE EFFECT OF STORAGE UPON THERMALLY INDUCED DEPOSITION OF SELECTED FUEL COMPONENTS AND ADDITIVES Jun 1970 95 pages

Authors: Marvin L. Whisman; John W. Goetzinger; Cecil C. Ward; BUREAU OF MINES BARTLESVILLE OK BARTLESVILLE ENERGY RESEARCH CENTER

Full Text

... of selected components and additives of high-temperature aircraft **fuels** to thermally induced deposits before and after 52 ... fuel constituents on thermal stability quality of these **jet fuels** during storage. The study utilizes a ... test apparatus to measure the thermal stability of test **fuels** and blends. The contribution of selected fuel components, ... counting techniques. Twenty-eight blends of the five test **fuels** with carbon-14-labeled fuel additives or components reached the ... special studies were conducted as preliminary investigations to continued research of **jet** fuel stability characteristics.

GAS TURBINE AND JET ENGINE FUELS Nov 9, 1960 8 pages

Authors: W. L. Streets; PHILLIPS PETROLEUM CO BARTLESVILLE OK

Full Text

... cresyl-phosphate to a synthetic 1.0% S base fuel. The corrosion inhibitors used were two commercial additives approved for use in military **jet fuels**. Tri- cresyl-phosphate was included to provide a P compound of known species. This effort was made to check possibilities of accelerated rates of S corrosion of turbine hot section components when P containing corrosion inhibitors were added to high sulfur **jet fuels**. Tests showed no accelerated deterioration of flame tubes by any of these 3 materials, with some slight indication of a reduction in ...

ABRASIVE PROPERTIES OF MICROCONTAMINATION AND OXIDATION PRODUCTS OF JET FUELS, Jan 13, 1966 11 pages

Authors: V. A. Piskunov; V. N. Zrelov; FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH

Full Text

... from thermooxidation origin in fuel are the cause of abrasive wear of the hydraulic channels and **jet** nozzles of the fuel-regulating apparatus of **jet** engines. The extent of the abrasive wear of the fuel-regulating apparatus of the engines depends on the amount and make-up of the ... determinable by the conditions of the transportation, storage, and application of the **fuels** and their thermal stability. For lowering the abrasive action ... residues, it is necessary to increase the fineness of the filtration and improve the thermal stability of the **fuels** (additives, etc.).

GAS TURBINE AND JET ENGINE FUELS Jan 15, 1963 22 pages

Authors: W. L. Streets; PHILLIPS PETROLEUM CO BARTLESVILLE OK

Full Text

The fourth bimonthly period continued the study of the effects of sulfur in **jet fuels** on the durability of **jet** engine hot section components. The effort involved evaluation of the tensile strengths of Udimet 500, Waspalloy, Haynes Alloy ... (1) very little SO2 is converted to SO3 at temperatures typical of those existing in **jet** engine combustion and turbine sections, (2) the oxidation of SO2 to ... quite markedly by the oxides of chromium and iron, both of which are plentiful in **jet** engines - this is significant only below about 1700F, (3) significant conversion of SO2 to ...

Evaporation of Jet Fuels Sep 1999 87 pages

Authors: Charles E. Hack; AIR FORCE INST OF TECH WRIGHT-PATTERSONAFB OH SCHOOL OF ENGINEERING

Full Text

Determining the fate and transport of JP-8 **jet** fuel is a complex and important problem. As part of the startup procedures for **jet** engines, fuel is passed through aircraft engines before combustion is ... droplet evaporation models and the calculation of the evaporation of a film of **jet** fuel from a surface. The existing models are compared in order ... hydrocarbon groups. Due to the complexity of the mixture of aviation **fuels**, a mixture of the predominant species were chosen as ... most appropriate model for predicting the amount and composition of **jet** fuel reaching the ground crew and to extend ...

HIGH TEMPERATURE HYDROCARBON FUELS RESEARCH IN AN ADVANCED AIRCRAFT FUEL SYSTEM SIMULATOR ON FUEL AFFB-8-67 Sep 1967 108 pages

Authors: Harold Goodman; Royce P. Bradley; Theodore G. Sickles; NORTH AMERICAN AVIATION INC LOS ANGELES CA LOS ANGELES DIV

Full Text

At elevated temperatures hydrocarbon **jet fuels** tend to form deposits which decrease heat exchanger efficiency and plug screens and filter elements. A small-scale device is required which has been demonstrated to be applicable to all qualities of hydrocarbon **jet fuels** and will quantify this tendency in terms meaningful to fuel system designers. In this report, the thermal stability of a fuel (AFFB-8-67) is ... a static system (i.e., an 'empty' wing tank) does not rank **fuels** the same as a dynamic system (i.e., engine system). Therefore, a dual type (static ...

Behavior of Fuels at Low Temperatures Sep 1980 29 pages

Authors: E. A. Frame; SOUTHWEST RESEARCH INST SAN ANTONIO TXBELVOIR **FUELS** AND LUBRICANTS RESEARCHFACILITY

... low temperatures. This report contains test data on the low-temperature behavior of five test **fuels** - JP-4, JP-5, JP-8, DF- A, and DF-1 as well as two additional test **fuels** made by adding icing inhibitor (ethylene glycol monomethyl ether) to the DF-A and DF-1. Four additional **fuels** were obtained from Alaska (JP-4, **Jet** A-1, DF-A,

Full Text

and JP-5) and low temperature behavior of these field samples ... . This report contains (1) a brief summary of industry practice in handling **fuels** at low temperatures, (2) inspection properties of test **fuels**, (3) viscosities and conductivities of ...

Dermal Absorption of JP-8 Jet Fuel and Its Components Mar 1999 27 pages

Authors: James McDougal; Daniel L. Pollard; Carol M. Garrett; Robert M. Davis; Tomas E. Miller; MANTECH-GEOCENTERS JOINT VENTURE DAYTON OH

Full Text

The dermal absorption of **jet fuels** in general and JP-8 in particular is not well understood, even though the use by government and industry, worldwide, is over 59 ... is exposed repeatedly or for prolonged periods, but whether systemic toxicity from dermal absorption of **fuels** may occur is unknown. The purpose of this investigation was to measure the flux of JP-8 and ... hr (tridecane). Permeability coefficients, which can be used to estimate the absorption of components from other **fuels**, were also calculated. These fluxes suggest that JP-8 will not cause systemic toxicity. ...

GAS TURBINE AND JET ENGINE FUELS Jul 17, 1961 13 pages

Authors: W. L. Streets; PHILLIPS PETROLEUM CO BARTLESVILLE OK

Full Text

The effects sulfur in **jet fuels** and ingested sea water on the durability of **jet** engine hot section components were studied. Attempts were made to determine the reason for higher flame tube corrosion rates observed during operation with ingested natural Gulf sea water as compared to synthetic sea water. Efforts were also initiated toward the development of a suitable test method for the evaluation of the effect of fuel S and sea water on simulated turbine inlet guide vane durability. Preliminary experiments were made with cart-wheel shaped simulated guide vanes ...

Development of Stabilizing Additives for Super-Critical Jet Fuel Jul 24, 1995 15 pages

Authors: Bruce Beaver; DUQUESNE UNIV PITTSBURGH PA

Full Text

In this proposal it is argued that the thermal stability of most **jet fuels** would be dramatically improved by the efficient removal of a fuel's dissolved oxygen (in flight). It is envisioned that a thermally activated reaction between the oxygen scavenging additive and dissolved oxygen will ... will be limited. To date our data has identified several potential additive candidates which meet our preliminary specifications. With continued funding suitable stabilizing additives for super-critical **jet fuels** will be developed. jg p.1

Coordinating Support of Fuels and Lubricant Research and Development (R&D) 2, Delivery Order 0001: Water Separation Methods Study Dec 2004 93 pages

Authors: William F. Taylor; COORDINATING RESEARCH COUNCIL INC ALPHARETTA GA

Full Text

... test method and of the effectiveness of other water separation test methods. The effect of fuel quality on coalescence was measured in the Navy Coalescence Tester (NCT) using **jet** fuel field samples and **jet** fuel samples prepared to simulate additive and contamination effects. The **jet fuels** evaluated in the NCT were then tested using the various water separation test methods, and the results compared against the actual coalescence results. The Interface Rating for the ASTM D 1094 Water Reaction ...

Advanced Thermally Stable Coal-Based Jet Fuels Oct 2007 40 pages

Authors: Harold H. Schobert; PENNSYLVANIA STATE UNIV UNIVERSITY PARK ENERGY INST

Full Text

This report summarizes briefly the key results of a project for the development of coal-based **jet** fuel. The initial focus of the project was the development of a high heat sink fuel, JP-9OO, that could be used for thermal ... JP-8. Deposition from thermal stressing of the fuel in various reactors was invariably lower than JP-8 or JP-8+lOO. Mechanisms of oxidative deposit formation for both **jet** and diesel **fuels** are proposed to account for the fact that the chemistry involved in both storage and thermal oxidative deposit formation in middle distillates is similar. The fuel was successfully tested in ...

Advanced Thermally Stable Coal-Based Jet Fuels Feb 2008 40 pages

Authors: Harold Schobert; PENNSYLVANIA STATE UNIV UNIVERSITY PARK ENERGY INST

Full Text

This report summarizes briefly the key results of a project for the development of coal based **jet** fuel. The initial focus of the project was the development of a high heat sink fuel, JP 900, that could be used for thermal ... JP-8. Deposition from thermal stressing of the fuel in various reactors was invariably lower than JP-8 or JP-8+1OO. Mechanisms of oxidative deposit formation for both **jet** and diesel **fuels** are proposed to account for the fact that the chemistry involved in both storage and thermal oxidative deposit formation in middle distillates is similar. The fuel was successfully tested in ...

International Conference on Stability and Handling of Liquid Fuels (3rd) : Conference Proceedings Held in London, England on 13-16 September 1988. Volume 1 Dec 7, 1988 435 pages

Authors: INSTITUTE OF PETROLEUM LONDON (UNITED KINGDOM)

Full Text

The 3rd International Conference on Stability and Handling of Liquid **Fuels** followed two previous Conferences held in Tel Aviv, Israel (1983) and San Antonio, Texas, USA (1986). Fifty-six papers presented at the Conference dealt with the storage and thermal stability of gasolines, **jet fuels**, diesel **fuels**, residual **fuels** and crude oils. Certain aspects of the handling of these materials were also considered, and a session was devoted to the problems of microbiological growth in liquid **fuels**.

A Flash Vaporization System for Detonation of Hydrocarbon Fuels in a Pulse Detonation Engine Aug 24, 2005 261 pages

Authors: Kelly C. Tucker; AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF ENGINEERING AND

MANAGEMENT

Full Text

... concentrating on obtaining detonations in a pulse detonation engine (PDE) with low vapor pressure, kerosene based **jet fuels**. These **fuels** have a low vapor pressure and the performance of a liquid hydrocarbon fueled PDE is significantly ... eliminate the time required to evaporate the fuel droplets. Four **fuels** are tested: n-heptane, isooctane, aviation gasoline, and JP-8. The **fuels** vary in volatility and octane number and present a clear picture on the ... show the FVS quickly provided a detonable mixture for all of the **fuels** tested without coking or clogging the fuel lines. Combustion ...

Making Clean Gasoline: The Effect on Jet Fuels Sep 1992 73 pages

Authors: Robert W. Salthouse; LOGISTICS MANAGEMENT INST BETHESDA MD

Full Text

... fear possible declines in the quality and availability of **jet** fuel. Currently, the Air Force plans to convert from naphtha-based JP-4 **jet** fuel to distillate-based JP-8 **jet** fuel. Despite the extent of ... conclude that neither the quality nor the availability of **jet** fuel purchased by the military is likely to change ... divert excess aromatic compounds into **jet** fuel. However, refiners are unlikely to do ... two reasons. First, existing **jet** fuel specification - 'smoke point' and a maximum ... refiners' ability to increase the volume of aromatics in **jet** fuel. Second, the manufacture of aromatics to improve ...

The Behavior of Water in Jet Fuels and the Clogging of Micronic Filters at Low Temperatures Jan 11, 1950 48 pages

Authors: John A. Krynitsky; John W. Crellin; Homer W. Carhart; NAVAL RESEARCH LAB WASHINGTON DC

Full Text

A study of the behavior of water in **fuels**, and its effect on the clogging of micronic type filters, especially at low temperatures has been made. A method for the determination of water in **fuels** using the Karl Fischer reagent has been developed and used in the determination of the solubility of water in several **fuels** and pure hydrocarbons from 32 deg F to 120 deg F. The effect of aromatic content, rates of saturation and disappearance of suspended water from **fuels** have been investigated. A small scale apparatus was devised for the study of the clogging ...

GAS TURBINE AND JET ENGINE FUELS Mar 10, 1962 26 pages

Authors: W. L. Streets; PHILLIPS PETROLEUM CO BARTLESVILLE OK

Full Text

The final three months under Contract NO(w)61-0590-d have been spent continuing the study of effects of sulfur in **jet fuels** and ingested sea water on the durability of engine "hot section" components.

GAS TURBINE AND JET ENGINE FUELS Aug 24, 1962 33 pages

Authors: William L. Streets; PHILLIPS PETROLEUM CO BARTLESVILLE OK

Full Text

The effects of sulfur in **jet fuels** on the durability of engine 'hot section' components were studied. Fuel sulfur content was determined in relation to the loss of metal from Udimet 500, Waspalloy, Stellite 25, Hastelloy R-235, Rene 41 and Inconel X simulated turbine inlet guide vanes in the two-inch high pressure research combustor under conditions producing approximately 2000F exhaust gas. Extended duration metal durability testing was conducted with the atmospheric pressure Phillips Microburner using Udimet 500, Waspalloy, Stellite 25 and Rene 41 simulated guide ...

GAS TURBINE AND JET ENGINE FUELS Mar 1963 91 pages

Authors: R. M. Schirmer; W. L. Streets; PHILLIPS PETROLEUM CO BARTLESVILLE OK

Full Text

... guide vanes using specimens fabricated from five typical current-generation alloys including Udimet 500, Waspalloy, Rene 41, Hastelloy R-235 and Haynes Alloy 25. A second project consisted of a study of test methods for evaluating the burning quality of **jet fuels**. Twelve-hour duration tests were conducted with the Phillips 2- Inch Research Combustor operated at a pressure of 12 and 2000F exhaust gas temperature showed that: (1) guide vane metal loss is approximately a linear ...

Total Results: **185**

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