

Chapter 1 : Ruins Of The Synthetic Rubber Plant Of IG Farbenindustrie At Ludwigshafen | World War Photos

War plants disposal--synthetic rubber: hearing before a Subcommittee on Surplus Property of the Committee on Military Affairs, United States Senate, Seventy-ninth Congress, second session, pursuant to S. Res, a resolution to investigate the disposal of surplus government property and related problems, July 1,

Are you sure you want to delete this answer? Yes Sorry, something has gone wrong. None of the above. In the Communist-dominated national resistance group called the "League for the Independence of Vietnam" better known as the Viet Minh was formed. Ho Chi Minh returned to Vietnam and quickly assumed the leadership. He had been a Comintern agent since the s, but as the leader of an independent Vietnamese communist party, Ho freed himself from the control of the Soviet Union. The Viet Minh began to craft a strategy to seize control of the country at the end of the war. Ho appointed Vo Nguyen Giap as his military commander. These teams worked behind enemy lines in Indochina, giving support to indigenous resistance groups. The Viet Minh provided valuable intelligence on Japanese troop movements and rescued downed American pilots. The Pentagon, however, viewed Indochina as a sideshow to the more important theatre of the Pacific War. In , the Japanese overthrew the Vichy French administration and humiliated its colonial officials in front of the Vietnamese population. The Japanese began to encourage nationalism and granted Vietnam nominal independence. Following the Japanese surrender, Vietnamese nationalists, communists, and other groups hoped to take control of the country. The Japanese army transferred power to the Viet Minh. Emperor Bao Dai abdicated. Army officers stood beside him on the podium. In an exultant speech, before a huge audience in Hanoi, Ho cited the U. They are endowed by their Creator with certain inalienable rights; among these are Life, Liberty, and the pursuit of Happiness. The entire Vietnamese people are determined to sacrifice their lives and property in order to safeguard their independence and liberty. He based this hope in part on speeches by U. Roosevelt opposing a revival of European colonialism. As well, he was counting on a long series of anti-colonial U. It was recognized that France would play a crucial role in deterring communist ambitions in continental Europe. Thus, its colonial aspirations could not be ignored. The new government lasted only a few days. At the Potsdam Conference the allies decided that Vietnam would be occupied jointly by China and Great Britain, who would supervise the disarmament and repatriation of Japanese forces. The Chinese took control of the area north of the 16th parallel north. British forces arrived in the south in October and restored order. The first soldiers arrived on September 6, and increased to full strength over the following weeks. In addition, they re-armed Japanese prisoners of war, known as "Gremlin force". The British began to withdraw in December , but this was not completed until May The last British casualties in Vietnam were suffered in June Altogether 40 British and Indian troops were killed and over a hundred were wounded. Vietnamese casualties were]. The French prevailed upon them to turn over control. French officials immediately sought to reassert control. They negotiated with the Chinese Nationalists. By agreeing to give up its concessions in China, the French persuaded the Chinese to allow them to return to the north and negotiate with the Viet Minh. He was anxious for the Chinese to leave. In December , they reoccupied Hanoi. But they were ignored. On the eve of the war, Ho Chi Minh had warned a French official that "you can kill ten of my men for every one I kill of yours, but even at those odds, you will lose and I will win". A long and bloody struggle ensued, with French military casualties exceeding those of the U. The Pentagon Papers characterize the U. On the one hand, the U. During the war, Roosevelt had consistently stalled French demands for U. France, however, claimed that it could do so only after it regained control. In the wake of the Second World War, it was recognized that the Soviet Union would henceforth be a serious competitor to the West. America viewed the Soviet Union and its allies as a bloc. As far as Washington was concerned, the entire communist world was controlled by Moscow. This perception suited the French.

Chapter 2 : Polymer and the War Effort: " Sarnia Historical Society

Synthetic rubber became a military necessity in World War II. The Axis forces controlled 95 percent of the world's natural rubber supply, so the United States began a crash program to develop a synthetic alternative.

The synthetic rubber industry was established in Texas during World War II and developed so rapidly that by production amounted to more than 50 percent of a United States total of between 4, and 5, long tons annually. The major portion of synthetic rubber production during the war and thereafter was for Buna-S, a copolymer rubber made from butadiene and styrene, both products from petroleum sources. All of the synthetic rubber plants built during the war were government owned but were operated on a management-fee basis by private industry. After the war a few of these plants were sold, and others were maintained in standby condition in keeping with the Rubber Act, which required plants producing , long tons annually of general-purpose rubber and 21, tons of special-purpose rubber to be kept in operating status, and those producing , tons of general-purpose and 65, tons of special-purpose to be kept in standby condition. Expiration of the Rubber Act in June had a decided effect on the industry. The five original copolymer plants in Texas were U. The plant at Borger had been operated by B. Goodrich Company and U. Rubber before Phillips Petroleum acquired it in mid The operating capacity of each plant varied according to stockpiling needs and the current price and availability of natural rubber. As a result of this development, extensive changes in equipment were made at all plants. In half of the rated plant capacity of the Goodrich and Goodyear plants was in cold rubber, while the U. Rubber and General plants devoted their entire production to cold rubber. The latter three plants were also the only plants in the country that manufactured so-called "carbon black rubber," in which carbon black was incorporated directly into the latex rather than being milled into the finished rubber. Styrene is important in plastics as well as synthetic rubber. An additional type of synthetic rubber, butyl rubber, has been made in Texas. The carbon black industry of the state has been closely and directly related to the rubber industry, and its expansion has paralleled that of synthetic rubber. Another compound used in making Buna-S rubber was the petroleum-derived mercaptan produced by Phillips Chemical Company at Borger. The synthetic rubber industry of Texas attracted numerous rubber fabricators to the area, including the Wright Manufacturing Company, which established a large rubber-tile factory in Houston that used the Houston Goodyear plant as its main source of rubber supply. Between and workers employed in the rubber and plastic-products industries grew from just over 11, to almost 40,, and manufacturing establishments from to Bureau of Mines, Minerals Yearbook.

Chapter 3 : Synthetic rubber - Wikipedia

Rubber was used to make an incredible amount of things that were made for the war. Rubber was wrapped around every inch of military wiring used in the war. Sherman tanks were made with half a ton of rubber and some battleships contained 20, rubber parts.

In the 21st century, manufacturers use both synthetic and natural rubber. Natural Rubber Natural rubber comes from latex, a milky substance produced by rubber plants. The Pilot Products manufacturing firm says that to tap the trees, rubber workers fasten cups to the trunk, then drive a spout into the bark. Latex spurts out under pressure and can run through the spout for 4 hours. Manufacturers can use latex to make solid rubber or provide a rubber coating for products. For solid rubber, the manufacturer coagulates the latex with formic acid or lets it dry naturally, depending on the quality desired. For a coating -- "dipped goods" in industry speak -- the process reduces the latex into a concentrate. The Rubber Manufacturers Association says general-purpose synthetic rubber is produced by mixing soapsuds, butadiene -- a byproduct of oil refining -- and styrene, which can also come from oil refining. The manufacturer then coagulates the mix into crumbs. Industrial researchers have developed other methods of synthesizing rubber since the original breakthrough. Different manufacturing methods create rubber suitable for different purposes and products. Vulcanization The big weakness of rubber products in the 18th and early 19th century was temperature. Cold turned rubber brittle; heat reduced rubber goods to gluey sludge. In , Charles Goodyear changed that with vulcanization , a treatment that made rubber temperature-resistant. Vulcanization is still widely used in rubber manufacturing. The rubber is heated, then mixed with an additive such as sulfur, peroxide or bisphenol. This improves elasticity as well as weatherproofing the rubber. Manufacturers can use different additives to give the rubber slightly different properties. Making the Product The exact process for turning rubber into finished products varies depending on how the rubber will be used. For one example, Lee Rubber, a rubber-band manufacturer, describes how it manufactures rubber bands: The rubber is processed through an extruder, which shapes the material into a hollow tube. The manufacturer thrusts a pipe into the tubing, giving the tube the round shape of a rubber band. An autoclave steam-heats the rubber to vulcanize it. The pipe comes out. A high-speed cutter chops the rubber tube into bands.

Chapter 4 : What role did rubber play in the Vietnam War? : AskHistorians

Exxon says Uncle Sam built five more plants at its Baytown manufacture raw, war-related materials, such as synthetic rubber. It claims the government oversaw day-to-day operations of the plant, including waste disposal, and "generated substantial hazardous waste" during the s and s.

In , a team headed by Fritz Hofmann , working at the Bayer laboratory in Elberfeld , Germany, succeeded in polymerizing isoprene , the first synthetic rubber. This form of synthetic rubber provided the basis for the first large-scale commercial production by the tsarist empire, which occurred during World War I as a result of shortages of natural rubber. This early form of synthetic rubber was again replaced with natural rubber after the war ended, but investigations of synthetic rubber continued. Russian American Ivan Ostromislensky who moved to New York in did significant early research on synthetic rubber and a couple of monomers in the early 20th century. Political problems that resulted from great fluctuations in the cost of natural rubber led to the enactment of the Stevenson Act in This act essentially created a cartel which supported rubber prices by regulating production, but insufficient supply, especially due to wartime shortages, also led to a search for alternative forms of synthetic rubber. By the price of natural rubber had increased to the point that many companies were exploring methods of producing synthetic rubber to compete with natural rubber. In the United States, the investigation focused on different materials than in Europe, building on the early laboratory work of Fr Julius Nieuwland , a professor of chemistry at the University of Notre Dame , who developed the synthesis of neoprene. Studies published in written independently by Lebedev, the American Wallace Carothers and the German scientist Hermann Staudinger led in to one of the first successful synthetic rubbers, known as neoprene , which was developed at DuPont under the direction of E. Neoprene is highly resistant to heat and chemicals such as oil and gasoline , and is used in fuel hoses and as an insulating material in machinery. The company Thiokol applied their name to a competing type of rubber based on ethylene dichloride , [5] which was commercially available in In , German chemists synthesized the first of a series of synthetic rubbers known as Buna rubbers. These were copolymers , meaning the polymers were made up from two monomers in alternating sequence. Other brands included Koroseal, which Waldo Semon developed in , and Sovprene, which Russian researchers created in Goodrich Company scientist Waldo Semon developed a new and cheaper version of synthetic rubber known as Ameripol in Military trucks needed rubber for tires , and rubber was used in almost every other war machine. A large team of chemists from many institutions were involved, including Calvin Souther Fuller of Bell Labs. It still represents about half of total world production. Please help improve this section by adding citations to reliable sources. Unsourced material may be challenged and removed. May Learn how and when to remove this template message Solid-fuel rockets during World War II used nitrocellulose for propellants, but it was impractical and dangerous to make such rockets very large. During the war, California Institute of Technology Caltech researchers came up with a new solid fuel based on asphalt mixed with an oxidizer such as potassium or ammonium perchlorate , and aluminium powder. This new solid fuel burned more slowly and evenly than nitrocellulose, and was much less dangerous to store and use, but it tended to slowly flow out of the rocket in storage and the rockets using it had to be stockpiled nose down. After the war, Caltech researchers began to investigate the use of synthetic rubbers to replace asphalt in their solid fuel rocket motors. By the mids, large missiles were being built using solid fuels based on synthetic rubber, mixed with ammonium perchlorate and high proportions of aluminium powder. Such solid fuels could be cast into large, uniform blocks that had no cracks or other defects that would cause non-uniform burning. Ultimately, all large solid-fuel military rockets and missiles would use synthetic-rubber-based solid fuels, and they would also play a significant part in the civilian space effort. Additional refinements to the process of creating synthetic rubber continued after the war. The chemical synthesis of isoprene accelerated the reduced need for natural rubber, and the peacetime quantity of synthetic rubber exceeded the production of natural rubber by the early s. Synthetic rubber is used a great deal in printing on textiles, in which case it is called rubber paste. In most cases titanium dioxide is used with copolymerization and volatile matter in producing such synthetic rubber for textile use. Moreover, this kind of

preparation can be considered to be the pigment preparation based on titanium dioxide. By the s, most chewing gum companies had switched from using chicle to butadiene -based synthetic rubber which was cheaper to manufacture. May Learn how and when to remove this template message Chemical structure of cis-polyisoprene, the main constituent of natural rubber. Synthetic cis-polyisoprene and natural cis-polyisoprene are derived from different precursors by different chemical pathways. Natural rubber, coming from latex of *Hevea brasiliensis*, is mainly poly-cis- isoprene containing traces of impurities like protein, dirt etc. Although it exhibits many excellent properties in terms of mechanical performance, natural rubber is often inferior to certain synthetic rubbers, especially with respect to its thermal stability and its compatibility with petroleum products. Synthetic rubber, like other polymer s, is made from various petroleum-based monomers. The most prevalent synthetic rubbers are styrene-butadiene rubbers SBR derived from the copolymerization of styrene and 1,3-butadiene. Other synthetic rubbers are prepared from isoprene 2-methyl-1,3-butadiene, chloroprene 2-chloro-1,3-butadiene, and isobutylene methylpropene with a small percentage of isoprene for cross-linking. These and other monomers can be mixed in various proportions to be copolymerized to produce products with a range of physical, mechanical, and chemical properties. The monomers can be produced pure, and the addition of impurities or additives can be controlled by design to give optimal properties. Polymerization of pure monomers can be better controlled to give a desired proportion of cis and trans double bonds.

Chapter 5 : Was rubber a major cause of Vietnam war

Ruins Of The Synthetic Rubber Plant Of IG Farbenindustrie At Ludwigshafen «Next photo *The Fall of Germany - image of Previous photo*» Published at *px*.

Chapter 6 : Reason(s) for Vietnam war? Communism, tungsten, or rubber trees? | Yahoo Answers

By, synthetic rubber output exceeded , tonnes/year with the US government financing the construction of 15 SBR plants, two butyl rubber plants, 16 butadiene production facilities and five styrene plants costing about \$m, according to the IISRP.

Chapter 7 : The Manufacturing Process of Rubber | Sciencing

In, these four plants produced 2, tons of synthetic rubber. *By*, the United States was producing about , tons per year of synthetic rubber, 85 percent of which was GR-S rubber. Of that 85 percent, the four major companies were producing , tons per year (70%). Research continued after the war ended in August