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Sodium sulphate boiling point

The path of the exposure effect of short-term ingestion can cause adverse effects on the gastrointestinal tract. Inhalation of evaporation risk of 20 ° C is negligible. The nuisance concentration of airborne particles can, however, reach quickly. The effect of long-term or repetitive sodium sulfate exposure (Na2SO4) is that the sodium salt of anhydrous sulfuric acid sulfate is a solid white crystalline, also known as thenardite mineral, Na2SO4.7H2O was transformed into mirabilite, a natural mineral form of decahydrate, about two-thirds of the world's sodium sulfate production was derived from chemical process products such as hydrochloric acid production. In 1625, Johann Rudolf Glauber discovered sodium sulfate from an Austrian fountain, so there was a hydration pattern called Glauber's salt, because of its medicinal properties, he named it sal mirabilis (miracle salt), crystals were used as a multipurpose laxative until the 1900s. At the food level, excretion is mainly in the urine. Sulfate is found in all body cells with the highest concentrations in connective tissue, bones and cartilage. Sulfate plays a role in several important metabolic pathways, including those involved in the detoxification process. Sodium sulfate has two natural types and by the product, also known as synthetic. Natural sodium sulfate is produced from naturally occurring saline and crystal deposits found to be an element of salt lake, such as the Great Salt Lake in Utah. Synthetic sodium sulfate has been recovered as a product of various manufacturing processes. In the top 50 surveys of basic organic and anindawachemical chemicals made in the United States, sodium sulfate bearing mineral deposits are young geological, mainly in the post-glacier era of sodium sulfate is widespread, occurring and is a common component of seawater and saline or many alkaline lakes. The economic reserves of natural sodium sulfate are approximately 3.3 billion tons of natural sodium sulfate produced worldwide. Meet the anticipated demand for centuries. The amount of synthetic sodium sulfate depends on the longevity of the production company recovered by the product sulfate. Surface depression or uninsured lakes and fed by fountains that flow through volcanic rocks containing sulfide minerals often provide soluble sulfate. Features of molecular formula Sodium sulfate Na2SO4 Molecular weight 142.04gm/mole (anhydrous), 322.20gm/mol (decahydrous), 322.20gm/mol (deca 1.464gm/ml (decahydrate), refractive index 1.468 (anhydrous), 1.394 (decahydrate) soluble in glycerol and iodide water and non-soluble in ethanol using sodium sulfate, dried organic sulphur, used in liquid. As a filler in home washing detergent, the powder is a fin agent, which removes small air bubbles from the molten glass. Glauber's salt, decahydrate is used as a laxative which eliminates certain drugs such as acetaminophen from the body. For defrosted windows in carpet condiments, flour production is an additive for cow food. In the production of detergents and in the kraft process of pulp. Frequently asked questions What happens when sodium sulfate reacts with barium chloride? Sodium sulfate reacts with barium chloride. The chemical equation for this reaction is obtained from: BaCl2 + Na2SO4 -> BaSO4 + 2NaCl This reaction occurs because sodium sulfate is an electric-bonded sulfate. Write a short note on the solubility of sodium sulfate in water at a temperature of 0 ° C. The solubility of sodium sulfate in water is 47.6 g per liter. When heated to 20 ° C, its solubility increases rapidly to 139 grams per liter. Finally, at a temperature of 100 ° C, the solubility of sodium sulfate in water corresponds to 427 grams per liter. How can sodium sulfate be prepared? Sodium sulfate can be prepared through the Hargreaves process, as shown below: 4NaCl + 2H2O + 2SO2 + O2. -> 2Na2SO4 + Chemical compound 4HCl Chemical compounds Sodium sulfate Other Names Sodium Sulfate of Sodium Theendite (Mineral)Glauber Salt (decahydrate)Sal mirabilis (decahydrate)Mirabilite (decahydrate mineral)Disodium no. 7727-73-3 (decahydrate) Model N 3D (JSmol) Interactive Image ChEBI CHEBI:32149 Y ChEMBL 233406 Y ChemSpider 22844 Y ECHA Card 100.028.928 number E514(i) (acidity) ...) PubChem CID 24436 หมายเลข RTECS WE1650000 UNII 36KCS0R750 แดชบอร์ด Y CompTox (EPA) DTXSID1021291 InChi InChi = 1S / 2Na.H2O4S / c; 1-5(2,3)4/h;;(H2,1,2,3,4)/g2\*+1;/p-2 YKey: PMZURENOXWZQFD-UHFFFAOYSA-L YInChI=1S/2Na.H2O4S/c;; 1-5(2,3)4/h;;(H2,1,2,3,4)/g2\*+1;/p-2Key: PMZURENOXWZQFD-UHFFFAOYSA-L SMILES [Na+] [O-] S([O-])(=O)=O Properties Chemical formula Na2SO4 Molar mass 142.04 g/mol (anhydrous)322.20 g/mol (decahydrate) Appearance white crystalline solid hygroscopic Odor odorless Density 2.664 g/cm3 (decahydrate) Melting point 884 °C (1,623 °F; 1,157 K) (anhydrous) 32.38 °C (decahydrate) Boiling point 1.429 °C (2.604 °F: 1.702 K) (anhydrous) Solubility in water anhydrous: 4.76 g/100 mL (0 °C)28.1 g/100 mL (25 °C)[1]42.7 g/100 mL (20 °C) Solubility insoluble in ethanol soluble in glycerol, water and hydrogen iodide Magnetic susceptibility (x) -52.0.10-6 cm3/mol Refractive index (nD) 1.468 (anhydrous) 1.394 (decahydrate) Structure Crystal structure orthorhombic (anhydrous) [2] monoclinic (decahydrate) Pharmacology ATC code A06AD13 (WHO) A12CA02 (WHO) Hazards Main hazards Irritant Safety data sheet See : Data pageICSC 0952 NFPA 704 (IW85 W) 0 1 0 30 ้วาบไฟสารประกอบที่เกี่ยวข้องไม่ติดไฟอื่น ๆ ไอออนโซเดียม selenateSodium tellurate ประจบวกอื่น ๆ ลิเธียมซัลเฟตโลเพตลซ์ลฟ์ สารประกอบที่เกี่ยวข้องโซเดียม bisulfate โครงสร้างหน้าข้อมลเสริมและดัชนีการหักเหของแสง (n). ค่าคงที่อิเล็กทริก (ɛr) ฯลฯ พฤติกรรมเฟส Thermodynamicdata – ของเหลว- ก๊าซข้อมูลสเปกตรัมยูวี, IR, NMR, MS ยกเว้นในกรณีที่ระบุไว้เป็นอย่างอื่นข้อมูลจะได้รับสำหรับวัสดุในสถานะมาตรฐานของพวกเขา (ที่ 25 °C [77 °F], 100 kPa) ตรวจสอบ Y (YN คืออะไร?) Infobox Reference sodium sulfate (also known as sodium sulfate or soda sulfate) is an inorganic compound with Na2SO4 formula, as well as several related hydrates. With annual production of 6 million tons, decahydrate is a major commodity chemical production of detergents and in the kraft process of pulp. The Anhydrous sodium sulfate form, known as thenardite rare mineral, is used as a drying agent in organic synthesis. Heptaheadet sodium sulfate, which is a very rare form. Sodium sulfate dekaydrote, also known as mirabilite mineral, is widely used by the chemical industry. Also known as Glauber's salt, the decahydrate history of sodium sulfate is known as glauber's salt after the Dutch/German chemist and apothecary Johann Rudolf Glauber (1604-1670) was discovered in 1625 in an Austrian fountain. He named it sal mirabilis (magic salt) because of its medicine. Crystals were used as laxatives for general purpose until more complex alternatives came about in the 1900s[4][5] In the 18th century, Glauber's salt was initially used as a raw material for industrial production of soda ash (sodium carbonate) by reaction to potash (potassium carbonate). The demand for soda ash increase in line. [6] The chemical properties of sodium sulfate that is bonded with general static electricity. The existence of sulfate-free ions in the solution is indicated by the formation of an insoluble sulfate, easily soluble, when these solutions are treated with salt. Ba2 + or Pb2+ : Na2SO4 + BaCl2 - 2 NaCl + BaSO4 Sodium Sulfate is not active on most oxidizing or reduced substances, where high temperatures can be converted into sodium sulfide by reducing carbothermal (high temperature heat with charcoal, etc.:[7] Na2SO4 + 2 C  $\rightarrow$  Na2S + 2 CO2. Sodium sulfate reacts with sulfuric acid to provide sodium bisulfate acid salts:[8][9] Na2SO4 + H2SO4  $\Rightarrow$  2 NaHSO4 sodium sulfate reacts with sulfuric acid to provide sodium bisulfate reacts with sulfuric acid to provide sodium bisulfate acid salts:[8][9] Na2SO4 + 2 C  $\rightarrow$  Na2S + 2 CO2. Sodium sulfate reacts with sulfuric acid to provide sodium bisulfate acid salts:[8][9] Na2SO4 + 2 C  $\rightarrow$  Na2S + 2 CO2. patterns. The only alumni formed by the common trivalent metals are NaAl(SO4)2 (unstable above 39 °C) and NaCr(SO4)2, in contrast to potassium sulfate, which form a very stable aluminium. Salt coupled with other alkaline metal sulfate is known, including Na2SO4 · The formation of glacerite by the reaction of sodium sulfate to potassium chloride is used as the basis of the method of the production of potassium sulfate fertilizers. Other double salts include 3Na2SO4. [12] The physical properties of sodium sulfate are characterized by abnormal solubility in water. Solubility in water increases more than tenfold between 0 °C to 32.384 °C, which is up to 49.7 g / 100 mL, at this point the solubility curve changes, slope and solubility becomes almost independent of temperature 32.384 °C, this corresponds to the crystalline water discharge and the solubility of moistened salt, acting as the correct temperature reference for the thermometer calibration. The graph shows the solubility of Na2SO4 with temperature, the structural crystals of decahydrate consist of [Na(OH2)6]+ ions with these octadrial octahedra molecules, sharing the edges so that eight of the 10 water molecules are bound to sodium, and the other two are separated by hydrogen bonded with sulfate. These positive ions are linked to sulfate ions through hydrogen bonds. Na-O distance about 240 Decahydrate sodium sulfate crystals are also unusual among hydrated salts in the availability of measurable residual entropy (entropy at absolute center) of 6.32 J · This is the ability to distribute water more rapidly compared to most moisturizers. Global sodium sulfate production, which is almost exclusively in the form of decahydrate, is approximately 5.5 to 6 million tons per year (Mt/a) in 1985. [18] After 2000, natural production increased to 4 Mt/a and chemical production decreased to 1.5 to 2 Mt/a, with a total of 5.5 to 6 Mt/a. Two-thirds of the natural source of decahydrate production of the earth (Glauber's salt) comes from a natural form of mirabilite, for example, found in a lake bed south of Saskatchewan. In the 1990s, Mexico and Spain were the world's main producers of natural sodium sulfate (each of about 500,000 tons) with Russia, the United States and Canada, about 350,000 tons, about 1 billion tons of natural resources. Major producers of 200,000 to 1.5 million tons/year in 2006 include Searles Valley Minerals (California, USA), The New York Times and The New York Times. Industrial minerals in the air (Saskatchewan, Canada), Química del Rey (Coahuila, Mexico), Minera de Santa Marta and Criaderos Minerales Y Derivados, also known as Grupo Crimidesa (Burgos, Spain), Minera de Santa Marta (Toledo, Spain), Sulquisa (Madrid, Spain), Chengdu Shanlian Tianquan KwonChem (Tianquan County, Sichuan, China), Jiangsu, China), Nafin Chemical Industry Group [zh] [16] Anhydrous sodium sulfate occurs in arid environments as thenardite minerals. Both minerals are less common than mirabilite [citation], the chemical industry is about one-third of the world's sodium sulfate produced as a result of the devastating effects of the chemical spill. Most of this production contains chemicals in the main process and only saves a little. By the industry's efforts, the production of sodium sulfate is during the production of hydrochloric acid, either from sodium chloride (salt) and sulfuric acid in the Mannheim process or from sulphur dioxide in the hargreave process. Sodium sulfate is formed by these processes called salt cakes. 2 NaCl + H2SO4 -> 2 HCl + Na2SO4 Hargreaves: 4 NaCl + 2 SO2 + O2 + 2 H2O -> 4 HCl + 2 Na2SO4 The second major sodium sulfate production is the process in which excess sodium hydroxide is neutralized by sulfuric acid. This method is also a routine and convenient laboratory preparation 2 NaOH(aq) + 2 H2O(I) ΔH = -112.5 kJ (high exothermic). In the laboratory, it can also be synthesized from the reaction between sodium bicarbonate and magnesium sulfate 2NaHCO3 + MgSO4 → Na2SO4 + Mg(OH)2+2CO2. Previously, sodium sulfate was also a result of the ying-good 100s. Alternatively, sodium sulfate or occurs in the production of lithium carbonate, chelate agent, resorcinol, ascorbic acid, silica pigment, nitric acid and phenols. Many sodium sulfates are usually purified through a decahydrate form, since anhydrous forms tend to attract iron compounds and organic compounds. Anhydrous forms are easily produced from moisturizing patterns by benign global warming. Major sodium sulfate producers 50-80 Mt/a in 2006 include Elementis Chromium industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Lenzing AG (200 Mt/a, Rayon Industry, Lenxing, Austria), Addiseo (formerly Rhodia, Metion Industry, Castle Hayne, NC, US), Ad Les Roches-Roussillon, France), Elementis (Chromium Industry, Stockton-on-Tees, UK), Shikoku Chemicals (Tokushima, Japan) and Sodium Sulfate liquid may be brought to dryness, indicated here by the lack of The commodity industry has priced the U.S. at \$30 per tonne in the 1970s, up to \$90 per tonne for salt cake quality, and \$130 for better grades, sodium sulfate is a very cheap material. The biggest use is fillers in home laundry detergents, consuming about 50% of global production. This use is waning because domestic consumers are switching to compact or liquid detergents that do not include sodium sulfate, especially in the United States and Canada, is in the kraft process for wood pulp production. Organic matter contained in black liqueur From this process to being burned to produce heat, it is necessary to push the reduction of sodium sulfate into sodium sulfate makeup was enormous. Thus, the use of sodium sulfate in the U.S. and Canadian pulp industries fell from 1.4 million tons per year in 1970 to just about 150,000 tons in 2006. Sodium sulfate is used as a fin agent to remove small bubbles from molten glass. The Glass Industry in Europe was consumed from 1970 to 2006, with a

stable of 110,000 tons per year. Sodium sulfate helps to adjust the level. Unlike alternative sodium chloride, it does not erode the stainless steel vessels used in dyeing. This application in Japan and the United States consumed about 100,000 tons of sodium sulfate in 2006. It is also known as the E514 additive number[22] heat storage capacity to store high heat in phases, transitioning from solid to liquid and temperature change phase at the advantage of 32 °C (90°F), making this material especially suitable for low grade solar thermal storage for later emission in thermal applications in the area. In some applications, the material is included in the heating tiles placed in the attic area, while in other applications. Salt is included in cells surrounded by solar hot water. Phase changes allow the mass of materials needed for efficient heat storage (the heat of the fusion of decahydrate sodium sulfate is 82 kJ/mol or 252 kJ/kg[23]) with the additional advantage of temperature consistency as long as there is sufficient material at the right distance. For cooling applications, the mixture containing general sodium chloride salt (NaCl) reduces the melting point to 18 °C (64 °F), the heat of the fused NaCl · It is more effective, but slow-acting, than its similar magnesium sulfate agent. Sodium sulfate is added to the solution until the crystals are no longer gathered. Two video clips (see above) show that clump crystals flow freely when the sample dries. It is effective for removing certain drugs, such as paracetamol (acetaminophen), from the body, for example. In 1953, sodium sulfate was proposed for thermal storage in passive solar heating systems. This takes advantage of the unusual melting properties and high heat of crystallization. Other uses for sodium sulfate include frosted windows, flour production as additives in carpet dressings and as additives for cow food, at least one Company Thermaltake makes laptops, computers, cold mats (iXoft Notebook Cooler) using sodium sulfate decahydrate inside padded plastic sheets. The material gradually turns into liquid and circulates, adjusts the laptop temperature evenly and acts as an insulator. Safety, although sodium sulfate is generally considered non-toxic, [22] This risk can be prevented by using eye protection and paper masks. Unlimited transport and no risk phrases or safety phrases. Reference ^ National Biotechnology Information Center [30] Summary of PubChem Compound for CID 24436, Sodium Sulfate. Accessed Nov 2, 2020. ^Zachariasen, W. H.; Sigler, G. (1932) Crystalline structure of sodium sulfate sulfate Na2SO4 Zeitschrift für Kristallphysik, Kristallchemie. 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