I'm not a bot

Porselen eşya yapımı özkütle farkından yararlanılır mı

Yayınlanma: 12 Ekim 2021 Salı 21:15 Güncelleme: 23 Ekim 2022 Pazar 16:47 Özkütleden faydalanılan çalışma alanları nedir, günlük yaşamda özkütlenin kullanıldığı alanlar hakkında sizlere kısa bilgiler vereceğiz. Özkütle fizikteki en önemli konulardan biridir. Madde ve özellikleri konusunda öğrendiğimiz özkütle aslında gerçek hayatımızda da oldukça kullanılan bir kavramdır.Talaş gibi maddelerin diğer maddelerden ayrılmasında (suda yüzdürme tekniği) özkütle kullanılır.Kuyumculuk sektöründe altın tozlarının diğer maddelerden ayrılmasında özkütleden faydalanılır. Altının özkütlesi oldukça yüksektir.Yağ su karışımları özkütle yöntemiyle ayrılır. Saf maddelerin özkütlelerinden faydalanılan durumlar oldukça yaygındır.Sütten kaymak ayrılması özkütle ile olur. Kaymağın özkütlesi daha düşük olduğu için üstte toplanır.Suda yüzen ve yüzmeyen herhangi iki maddenin karışımını ayırmada özkütle farkından yararlanılarak ayrıştırma yapılır. Örneğin kum ile arpa bu şekilde ayrılabilir.Hastanelerde tahlil yaparken santrifüj yöntemiyle kan bileşenlerine özkütlelerine göre ayrılır.Sanayide birçok maddenin işlenmesinde özkütle bilgisinden yararlanılır.Gemicilikte gemi tasarımı özkütle hesaplamalarıyla yapılır.Porselen yapımında tozun kalitesini ölçmek için özkütle ölçümü yapılır. ◁ 10. Sınıf Ders Kitabı cevapları için tıklayınız ▷ Eğitim Sistem'i Google Haberler'de ücretsiz bir şekilde takip ederek bize destek olun. Yapmanız gereken oldukça basit. "Şimdi Takip Et" butonuna tıkladıktan sonra açılan sayfanın sağ üst tarafında yer alan yıldız simgesine dokunmanız yeterlidir.Şimdi Takip Et Önemli not: Yorum ve düşüncelerinizin bizim için çok değerli olduğunu biliyor musunuz? Yorumlarınızla soru cevaplarımıza katkıda bulunabilirsiniz. Maddeler sınıflandırılırken saf maddeler ve karışımlar olarak ikiye ayrılır. Aynı cins atom ya da moleküllerden oluşan maddeler, saf maddeler olarak tanımlanır ve sabit sıcaklıkta sabit bir özkütleleri vardır. Tuz, su, altın, oksijen vb. saf maddelerdir. Her türlü oranda bir araya gelip kimyasal özelliklerini kaybetmeden oluşan maddelere ise karışım denir. Karışımlar homojen veya heterojen olabilir, bunların sabit bir özkütlesi yoktur ve fiziksel yolla ayrıştırılabilir. Örneğin katı-katı karışımlarda özkütlesi küçük olan madde, özkütlesi büyük olan maddeden savurma yöntemi ile ayrılır. Fıstıkları kabuklarından rüzgârlı bir ortamda savurarak ayırabilirsiniz. Rüzgârda savrulan fıstıkların kabuklarından ayrılması Özkütleleri farklı olan ve suda çözünmeyen iki katı maddeyi ayırmak için özkütle farkından yararlanılır. Örneğin özkütlesi büyük olan kum dibe çöker, küçük olan talaş su üzerinde yüzer. Sıvı-sıvı maddelerin oluşturduğu karışımlarda da özkütle farkından yararlanılır. Ayırma hunisi kullanılarak yapılan ayırma işleminde özkütlesi büyük olan, huninin alt kısmında; özkütlesi küçük olan, üst kısmında toplanır. Su musluktan akıtılarak ayrım gerçekleşir. Zeytinyağı-su, mazot-su vb. karışımlar bu şekilde ayrılır. Özkütle kavramı, hayatın birçok alanında kolaylık sağlar. Özkütleden; kuyumculuk, porselen yapımı, ebru sanatı, hastanelerde yapılan tahlil işlemleri vb. alanlarında faydalanılır. Örneğin nehirlerin yavaş aktığı geniş bölümlerinde, taş ve kayaların çevresinde biriken altınlara ulaşmak için altın içeren karışım, eğik bir düzlemden akıtılır. Altın arama işlemi Altının özkütlesi sudan 19 kat daha büyük olduğu için eğik yüzeyden kaymaz. Diğer kırıntılar ise düzlemde aşağıya doğru sürüklenir. Bu sayede altın kırıntıları ayrılmış olur. Biriken altını toprak ve diğer kırıntılardan ayırmak için kullanılan altın tavası ve leğeninde sallama ve yıkama işlemleri uygulanır. Bu işlemlerin her biri, altının özkütlesinin büyük olmasına dayanır. Bu yazımız da ilginizi çekebilir Termometre ve Sıcaklık ÖlçümüGünlük hayatta kullanılan porselenler de özkütlenin belli bir değerde olması sonucu üretilir. Porselen üretiminde kullanılan doğal ham maddeler; kil, kuvars ve feldispattır (bir mineral grubunun genel adı). Bu maddeler belirli oranlarda karıştırılır. Porselenin su geçirmezliği, kalitesi, dayanıklılığı için karışımın özkütlesinin belirli bir değerde olması gerekir. Kilden çömlek yapımı İdeal özkütle değeri 2,5 g/cm3 civarındadır. Ardından karışım öğütülerek toz hâline getirilir ve yoğurularak porselen hamuru elde edilir. Elde edilen hamur, kaplara dökülüp şekil verildikten sonra fırınlanır. Tasarımı yapılan ürüne ulaşılmış olur. Özkütlenin bir diğer kullanım alanı ise Türk kâğıt süsleme sanatı olan ebru sanatıdır. Kendine has teknik ve malzeme ile yapılan ebru sanatı, teknedeki suyun üzerinde boyalarla yapılan desenin kağıda aktarılmasıdır. Saf su çok hareketli olduğu için teknede kullanılacak suyun özkütlesinin arttırılması gerekir. Bu durum boyanın yüzeyde tutunmasını ve dibe çökmemesini sağlamaktadır. Suyun, özkütlesini arttırmak için kitre (ülkemizin güney ve güneydoğu bölgelerinde kırlarda yetişen yabani bir dikenin özsuyu) gibi doğal maddelerle karıştırılır. Ebru, Türk kâğıt süsleme sanatı, 2014 yılı itibariyle ülkemiz adına UNESCO İnsanlığın Somut Olmayan Kültürel Mirası Temsili Listesi’ne kaydedilmiştir. Kaynak : Fen Lisesi Fizik 9. Sınıf Ders Kitabı Emeği Geçenler Abdullah AYDINAyşegül ÇELİKİsa YILMAZKamil SOYARSLANMurat ERATŞeyda BOZARSLAN Fizik Bilimi Ders Notları Özkütlenin ayırt edici bir özellik olduğunu öğrendik. Maddelerin özkütleleri belirli olduğuna göre bir cismin saf madde olup olmadığını özkütlesini hesaplayarak anlayabiliriz. Tahta parçasının su üzerinde yüzmesinin, demir paranın ise batmasının nedeni özkütlelerinin farklı olmasındandır. Gemilerin denizde yüzmesi deniz suyu ile geminin yapıldığı maddenin özkütlelerinin farklılığı sayesinde olur. Maddelerin özkütlelerinin farklı olması karışım hâlindeki maddeleri ayrıştırmakta kullanılır. Eskiden altın arayıcıları kum ile altın parçacıklarını özkütlelerinin farklı olması sayesinde ayrıştırmaktaydılar. Bu yöntemde; kum ve altın karışımının bulunduğu eğimli bir yüzeye su dökülür ve kumun suyla birlikte akması sağlanır. Böylece özkütlesi büyük olan altınının kumdan ayrışması sağlanmış olur. Günümüzde de kuyumculukta diğer maddelerle karışan altın parçacıkları aynı yöntemle ayrıştırılmaktadır. Demir tozları ile tahta parçalarını da su içerisine koyarak aynı yöntemle ayrıştırabiliriz. Kan ve idrar tahlili yapılırken maddelerin özkütlelerinin farklı olmasından yararlanılır. Hastane laboratuvarlarında kan ve idrar tahlillerini santrifüj aletleri (Resim 2.7) ile yapılmaktadır. Hızla döndürülen sıvı örnekleri içindeki maddeler özkütlelerinin farklılığına göre ayrışır. Tıpkı su ve zeytinyağında olduğu gibi kan ve idrarı oluşturan sıvılar özkütlelerinin farklı olması nedeniyle üst üste sıralandığı görülür. Böylece gerekli ölçüm ve değerlendirmeler yapılır Köylerimizde yoğurt ve sudan elde edilen bir karışım olan ayrandan tereyağının geleneksel usullerle üretilmesi özkütle farkı ile açıklanır (Resim 2.8). Yayık çalkalandıkça özkütlesi küçük olan yağ parçacıkları, ayranın üzerinde yer alır ve yağ parçacıkları yüzeyde birbirine yapışmış şekilde birikir ve toplanır. Böylece ayrandan tereyağ elde edilmiş olur ancak bazı sıvılar tanecikli yapıları ve tanecikler arasındaki boşlukları nedeniyle birbiri içinde karışır ve farklı bir özkütleye sahip olur. Su ve alkolü buna örnek verebiliriz. Alkolün üzerine su döktüğümüzde birbiri içinde çözünür ve yeni bir madde oluşur. Bu nedenle meydana gelen karışımın özkütlesi su ve alkolün özkütlesinden farklıdır. Benzer şekilde aynı kapta karıştırılan süt ve su da aynı şekilde bir karışım oluşturur. Geleneksel sanatlarımızdan olan ebru sanatı sanat ve bilimin iç içe olduğu bir sanat dalıdır. Resim 2.9’da ebru sanatının bir örneği görülmektedir. Ebru yapımında da özkütle kavramı önemli bir rol oynamaktadır. Ebru sanatında kitre adı verilen madde suya katılarak suyun yoğunluğu artırılmakta ve su üzerine damlatılan boyaların dibe çökmesi engellenmektedir. Daha sonra ise fırça yardımıyla boyalardan desenler oluşturularak çalışılmaktadır. Özkütle kavramının günlük hayattaki diğer bir örneği de porselen eşya yapımıdır (Resim 2.10). Killi topraktan imal edilen porselen eşyanın istenilen kalitede olması için porselen hamurunun belli bir özkütlede olması gerekir. Bu değer yaklaşık olarak 2,5g/cm^3 ’tür. Porselen eşya üreticileri hazırladıkları porselen hamurunun özkütlesini bu değere göre ayarlarlar. Daha sonra hazırladıkları bu hamura istedikleri şekli vererek yüksek sıcaklıkta fırınlarlar. Porselenden üretilen eşyaların fırınlanması onları dayanıklı hâle getirir.

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Ceramic material This article is about the ceramic material. For other uses, see Porcelain (disambiguation). "Fine china" redirects here. For other uses, see Fine china (disambiguation). Chinese Jingdezhen porcelain moonflask with underglaze blue and red. Qianlong period, 1736 to 1796 A lithophane exploits the translucency of porcelain Nymphenburg porcelain group modelled by Franz Anton Bustelli, 1756 PorcelainChinese瓷TranscriptionsStandard MandarinHanyu PinyincíWade–Gilestz'ŭ2IPA[tsʰɨ̌]Yue: CantoneseYale RomanizationchìhJyutpingci4IPA[tsʰiː˩]Southern MinTâi-lôhûi Porcelain (/ˈpɔːrs(ə)lɪn/), also called china, is a ceramic material made by heating raw materials, generally including kaolinite, in a kiln to temperatures between 1,200 and 1,400 °C (2,200 and 2,600 °F). The greater strength and translucence of porcelain, relative to other types of pottery, arise mainly from vitrification and the formation of the mineral mullite within the body at these high temperatures. End applications include tableware, decorative ware such as figurines, and products in technology and industry such as electrical insulators and laboratory ware. The manufacturing process used for porcelain is similar to that used for earthenware and stoneware, the two other main types of pottery, although it can be more challenging to produce. It has usually been regarded as the most prestigious type of pottery due to its delicacy, strength, and high degree of whiteness. It is frequently both glazed and decorated. Though definitions vary, porcelain can be divided into three main categories: hard-paste, soft-paste, and bone china. The categories differ in the composition of the body and the firing conditions. Porcelain slowly evolved in China and was finally achieved (depending on the definition used) at some point about 2,000 to 1,200 years ago. It slowly spread to other East Asian countries, then to Europe, and eventually to the rest of the world. The European name, porcelain in English, comes from the old Italian porcellana (cowrie shell) because of its resemblance to the surface of the shell.[1] Porcelain is also referred to as "china" or fine china in some English-speaking countries, as it was first seen in imports from China during the 17th century.[2] Properties associated with porcelain include low permeability and elasticity; considerable strength, hardness, whiteness, translucency, and resonance; and a high resistance to corrosive chemicals and thermal shock. Soft-paste porcelain swan tureen, 1752–1756, Chelsea porcelain Flower centrepiece, 18th century, Spain Porcelain has been described as being "completely vitrified, hard, impermeable (even before glazing), white or artificially coloured, translucent (except when of considerable thickness), and resonant".[3] However, the term "porcelain" lacks a universal definition and has "been applied in an unsystematic fashion to substances of diverse kinds that have only certain surface-qualities in common".[4] Traditionally, East Asia only classifies pottery into low-fired wares (earthenware) and high-fired wares (often translated as porcelain), the latter also including what Europeans call "stoneware", which is high-fired but not generally white or translucent. Terms such as "proto-porcelain", "porcellaneous", or "near-porcelain" may be used in cases where the ceramic body approaches whiteness and translucency.[5] In 2021, the global market for porcelain tableware was estimated to be worth US$22.1 billion.[6] Chinese Imperial Dish with Flowering Prunus, Famille Rose overglaze enamel, between 1723 and 1735 Demonstration of the translucent quality of porcelain Main article: Hard-paste porcelain Hard-paste porcelain was invented in China, and it was also used in Japanese porcelain. Most of the finest quality porcelain wares are made of this material. The earliest European porcelains were produced at the Meissen factory in the early 18th century; they were formed from a paste composed of kaolin and alabaster and fired at temperatures up to 1,400 °C (2,552 °F) in a wood-fired kiln, producing a porcelain of great hardness, translucency, and strength.[7] Later, the composition of the Meissen hard paste was changed, and the alabaster was replaced by feldspar and quartz, allowing the pieces to be fired at lower temperatures. Kaolinite, feldspar, and quartz (or other forms of silica) continue to constitute the basic ingredients for most continental European hard-paste porcelains. Main article: Soft-paste porcelain Soft-paste porcelains date back to early attempts by European potters to replicate Chinese porcelain by using mixtures of clay and frit. Soapstone and lime are known to have been included in these compositions. These wares were not yet actual porcelain wares, as they were neither hard nor vitrified by firing kaolin clay at high temperatures. As these early formulations suffered from high pyroplastic deformation, or slumping in the kiln at high temperatures, they were uneconomic to produce and of low quality. Formulations were later developed based on kaolin with quartz, feldspars, nepheline syenite, or other feldspathic rocks. These are technically superior and continue to be produced. Soft-paste porcelains are fired at lower temperatures than hard-paste porcelains; therefore, these wares are generally less hard than hard-paste porcelains.[8][9] Main article: Bone china Although originally developed in England in 1748[10] to compete with imported porcelain, bone china is now made worldwide, including in China. The English had read the letters of Jesuit missionary François Xavier d'Entrecolles, which described Chinese porcelain manufacturing secrets in detail.[11] One writer has speculated that a misunderstanding of the text could possibly have been responsible for the first attempts to use bone-ash as an ingredient in English porcelain,[11] although this is not supported by modern researchers and historians.[12][13][14][15][16] Traditionally, English bone china was made from two parts of bone ash, one part of kaolin, and one part of china stone, although the latter has been replaced by feldspars from non-UK sources.[17] Further information: Pottery Kaolin is the primary material from which porcelain is made, even though clay minerals might account for only a small proportion of the whole. The word paste is an old term for both unfired and fired materials. A more common terminology for the unfired material is "body"; for example, when buying materials a potter might order an amount of porcelain body from a vendor. The composition of porcelain is highly variable, but the clay mineral kaolinite is often a raw material. Other raw materials can include feldspar, ball clay, glass, bone ash, steatite, quartz, petuntse and alabaster. The clays used are often described as being long or short, depending on their plasticity. Long clays are cohesive (sticky) and have high plasticity; short clays are less cohesive and have lower plasticity. In soil mechanics, plasticity is determined by measuring the increase in content of water required to change a clay from a solid state bordering on the plastic, to a plastic state bordering on the liquid, though the term is also used less formally to describe the ease with which a clay may be worked. Clays used for porcelain are generally of lower plasticity than many other pottery clays. They wet very quickly, meaning that small changes in the content of water can produce large changes in workability. Thus, the range of water content within which these clays can be worked is very narrow and consequently must be carefully controlled. Main article: Pottery § Production Porcelain can be made using all the shaping techniques for pottery. Biscuit porcelain is unglazed porcelain treated as a finished product, mostly for figures and sculpture. Unlike their lower-fired counterparts, porcelain wares do not need glazing to render them impermeable to liquids and for the most part are glazed for decorative purposes and to make them resistant to dirt and staining. Many types of glaze, such as the iron-containing glaze used on the celadon wares of Longquan, were designed specifically for their striking effects on porcelain. Song dynasty celadon porcelain with a fenghuang spout, 10th century, China Porcelain often receives underglaze decoration using pigments that include cobalt oxide and copper, or overglaze enamels, allowing a wider range of colours. Like many earlier wares, modern porcelains are often biscuit-fired at around 1,000 °C (1,830 °F), coated with glaze and then sent for a second glaze-firing at a temperature of about 1,300 °C (2,370 °F) or greater. Another early method is "once-fired", where the glaze is applied to the unfired body and the two fired together in a single operation. In this process, "green" (unfired) ceramic wares are heated to high temperatures in a kiln to permanently set their shapes, vitrify the body and the glaze. Porcelain is fired at a higher temperature than earthenware so that the body can vitrify and become non-porous. Many types of porcelain in the past have been fired twice or even three times, to allow decoration using less robust pigments in overglaze enamel. Main article: Chinese ceramics The Fonthill Vase is the earliest Chinese porcelain object to have reached Europe. It was a Chinese gift for Louis the Great of Hungary in 1338. Porcelain was invented in China over a centuries-long development period beginning with "proto-porcelain" wares dating from the Shang dynasty (1600–1046 BCE). By the time of the Eastern Han dynasty (25–220 CE) these early glazed ceramic wares had developed into porcelain, which Chinese defined as high-fired ware.[18][19] By the late Sui dynasty (581–618 CE) and early Tang dynasty (618–907 CE), the now-standard requirements of whiteness and translucency had been achieved,[20] in types such as Ding ware. The wares were already exported to the Islamic world, where they were highly prized.[19][21] Eventually, porcelain and the expertise required to create it began to spread into other areas of East Asia. During the Song dynasty (960–1279 CE), artistry and production had reached new heights. The manufacture of porcelain became highly organised, and the dragon kilns excavated from this period could fire as many as 25,000 pieces at a time,[22] and over 100,000 by the end of the period.[23] While Xing ware is regarded as among the greatest of the Tang dynasty porcelain, Ding ware became the premier porcelain of the Song dynasty.[24] By the Ming dynasty, production of the finest wares for the court was concentrated in a single city, and Jingdezhen porcelain, originally owned by the imperial government, remains the centre of Chinese porcelain production. Porcelain wares, such as those similar to these Yongle-era porcelain flasks, were often presented as trade goods during the 15th-century Chinese maritime expeditions. (British Museum) By the time of the Ming dynasty (1368–1644 CE), porcelain wares were being exported to Asia and Europe. Some of the most well-known Chinese porcelain art styles arrived in Europe during this era, such as the coveted "blue-and-white" wares.[25] The Ming dynasty controlled much of the porcelain trade, which was expanded to Asia, Africa and Europe via the Silk Road. In 1517, Portuguese merchants began direct trade by sea with the Ming dynasty, and in 1598, Dutch merchants followed.[21] Some porcelains were more highly valued than others in imperial China. The most valued types can be identified by their association with the court, either as tribute offerings, or as products of kilns under imperial supervision.[26] Since the Yuan dynasty, the largest and best centre of production has made Jingdezhen porcelain. During the Ming dynasty, Jingdezhen porcelain had become a source of imperial pride. The Yongle emperor erected a white porcelain brick-faced pagoda at Nanjing, and an exceptionally smoothly glazed type of white porcelain is peculiar to his reign. Jingdezhen porcelain's fame came to a peak during the Qing dynasty. A contemporary Japanese porcelain goblet (in the middle of the Go board) and a Chinese teapot and its cups (on the side) Main article: Japanese pottery and porcelain Although the Japanese elite were keen importers of Chinese porcelain from early on, they were not able to make their own until the arrival of Korean potters that were taken captive during the Japanese invasions of Korea (1592–1598). They brought an improved type of kiln, and one of them spotted a source of porcelain clay near Arita, and before long several kilns had started in the region. At first their wares were similar to the cheaper and cruder Chinese porcelains with underglaze blue decoration that were already widely sold in Japan; this style was to continue for cheaper everyday wares until the 20th century.[27] Hirado ware okimono (figurine) of a lion with a ball, Japan, 19th century Exports to Europe began around 1660, through the Chinese and the Dutch East India Company, the only Europeans allowed a trading presence. Chinese exports had been seriously disrupted by civil wars as the Ming dynasty fell apart, and the Japanese exports increased rapidly to fill the gap. At first the wares used European shapes and mostly Chinese decoration, as the Chinese had done, but gradually original Japanese styles developed. Nabeshima ware was produced in kilns owned by the families of feudal lords, and were decorated in the Japanese tradition, much of it related to textile design. This was not initially exported, but used for gifts to other aristocratic families. Imari ware and Kakiemon are broad terms for styles of export porcelain with overglaze "enamelled" decoration begun in the early period, both with many sub-types.[28] Nabeshima ware dish with hydrangeas, c. 1680–1720, Arita, Okawachi kilns, hard-paste porcelain with cobalt and enamels A great range of styles and manufacturing centres were in use by the start of the 19th century, and as Japan opened to trade in the second half, exports expanded hugely and quality generally declined. Much traditional porcelain continues to replicate older methods of production and styles, and there are several modern industrial manufacturers.[29] By the early 1900s, Filipino porcelain artisans working in Japanese porcelain centres for much of their lives, later on introduced the craft into the native population in the Philippines,[30] although oral literature from Cebu in the central Philippines have noted that porcelain were already being produced by the natives locally during the time of Cebu's early rulers, prior to the arrival of colonizers in the 16th century.[31] Main article: Korean pottery and porcelain Jar and tall stand with perforated base (in Silla) Olive green glaze was introduced in the late Silla Dynasty. Most ceramics from Silla are generally leaf-shaped, which is a very common shape in Korea. Korean celadon comes in a variety of colors, from turquoise to putty. Additionally, in the late 13th century, the Inlay technique of expressing pigmented patterns by filling the hollow parts of pottery with white and red clay was frequently used.[32] The main difference from those in China is that many specimens have inlay decoration under the glaze.[33] Goryeo ware Most Korean ceramics from the Joseon Dynasty (1 -1910) are of excellent decorative quality. It usually has a melon shape and is asymmetrical.[33] Section of a letter from François Xavier d'Entrecolles about Chinese porcelain manufacturing techniques, 1712, re-published by Jean-Baptiste Du Halde in 1735 Imported Chinese porcelains were held in such great esteem in Europe that in English china became a commonly used synonym for the Italian-derived porcelain. The first mention of porcelain in Europe is in Il Milione by Marco Polo in the 13th century.[34] Apart from copying Chinese porcelain in faience (tin glazed earthenware), the soft-paste Medici porcelain in 16th-century Florence was the first real European attempt to reproduce it, with little success. Early in the 16th century, Portuguese traders returned home with samples of kaolin, which they discovered in China to be essential in the production of porcelain wares. However, the Chinese techniques and composition used to manufacture porcelain were not yet fully understood.[22] Countless experiments to produce porcelain had unpredictable results and met with failure.[22] In the German state of Saxony, the search concluded in 1708 when Ehrenfried Walther von Tschirnhaus produced a hard, white, translucent type of porcelain specimen with a combination of ingredients, including kaolin and alabaster, mined from a Saxon mine in Colditz.[35][7] It was a closely guarded trade secret of the Saxon enterprise.[7][36] In 1712, many of the elaborate Chinese porcelain manufacturing secrets were revealed throughout Europe by the French Jesuit father Francois Xavier d'Entrecolles and soon published in the Lettres édifiantes et curieuses de Chine par des missionnaires jésuites.[37] The secrets, which d'Entrecolles read about and witnessed in China, were now known and began seeing use in Europe.[37] Meissen plate from the famous Swan Service made for Count Brühl, minister to king Augustus III of Poland, 1737-1742 Von Tschirnhaus along with Johann Friedrich Böttger were employed by Augustus II, King of Poland and Elector of Saxony, who sponsored their work in Dresden and in the town of Meissen. Tschirnhaus had a wide knowledge of science and had been involved in the European quest to perfect porcelain manufacture when, in 1705, Böttger was appointed to assist him in this task. Böttger had originally been trained as a pharmacist; after he turned to alchemical research, he claimed to have known the secret of transmuting dross into gold, which attracted the attention of Augustus. Imprisoned by Augustus as an incentive to hasten his research, Böttger was obliged to work with other alchemists in the futile search for transmutation and was eventually assigned to assist Tschirnhaus.[35] One of the first results of the collaboration between the two was the development of a red stoneware that resembled that of Yixing. A workshop note records that the first specimen of hard, white and vitrified European porcelain was produced in 1708. At the time, the research was still being supervised by Tschirnhaus; however, he died in October of that year. It was left to Böttger to report to Augustus in March 1709 that he could make porcelain. For this reason, credit for the European discovery of porcelain is traditionally ascribed to him rather than Tschirnhaus.[38] The Meissen factory was established in 1710 after the development of a kiln and a glaze suitable for use with Böttger's porcelain, which required firing at temperatures of up to 1,400 °C (2,552 °F) to achieve translucence. Meissen porcelain was once-fired, or green-fired. It was noted for its great resistance to thermal shock; a visitor to the factory in Böttger's time reported having seen a white-hot teapot being removed from the kiln and dropped into cold water without damage. Although widely disbelieved this has been replicated in modern times.[39] In 1744, Elizabeth of Russia signed an agreement to establish the first porcelain manufactory; previously it had to be imported. The technology of making "white gold" was carefully hidden by its creators. Peter the Great had tried to reveal the "big porcelain secret", and sent an agent to the Meissen factory, and finally hired a porcelain master from abroad.[40] This relied on the research of the Russian scientist Dmitry Ivanovich Vinogradov. His development of porcelain manufacturing technology was not based on secrets learned through third parties, but was the result of painstaking work and careful analysis. Thanks to this, by 1760, Imperial Porcelain Factory, Saint Petersburg became a major European factories producing tableware, and later porcelain figurines.[41] Eventually other factories opened: Gardner porcelain, Dulyovo (1832), Kuznetsovsky porcelain, Popovsky porcelain, and Gzhel.[citation needed] During the twentieth century, under Soviet governments, ceramics continued to be a popular artform, supported by the state, with an increasingly propagandist role.[42][43] One artist, who worked at the Baranovsky Porcelain Factory and at the Experimental Ceramic and Artistic Plant in Kyiv, was Oksana Zhnikrup, whose porcelain figures of the ballet and the circus were widely known.[44] Capodimonte porcelain jar with three figures of Pulcinella from the commedia dell'arte, soft-paste, 1745–50. Chantilly porcelain, soft-paste, 1750-1760 Main article: Soft-paste porcelain The pastes produced by combining clay and powdered glass (frit) were called Frittenporzellan in Germany and frita in Spain. In France they were known as pâte tendre and in England as "soft-paste".[45] They appear to have been given this name because they do not easily retain their shape in the wet state, or because they tend to slump in the kiln under high temperature, or because the body and the glaze can be easily scratched. Experiments at Rouen produced the earliest soft-paste in France, but the first important French soft-paste porcelain was made at the Saint-Cloud factory before 1702. Soft-paste factories were established with the Chantilly manufactory in 1730 and at Mennecy in 1750. The Vincennes porcelain factory was established in 1740, moving to larger premises at Sèvres[46] in 1756. Vincennes soft-paste was whiter and freer of imperfections than any of its French rivals, which put Vincennes/Sèvres porcelain in the leading position in France and throughout the whole of Europe in the second half of the 18th century.[47] Doccia porcelain of Florence was founded in 1735 and remains in production, unlike Capodimonte porcelain which was moved from Naples to Madrid by its royal owner, after producing from 1743 to 1759. After a gap of 15 years Naples porcelain was produced from 1771 to 1806, specializing in Neoclassical styles. All these were very successful, with large outputs of high-quality wares. In and around Venice, Francesco Vezzi was producing hard-paste from around 1720 to 1735; survivals of Vezzi porcelain are very rare, but less so than from the Hewelke factory, which only lasted from 1758 to 1763. The soft-paste Cozzi factory fared better, lasting from 1764 to 1812. The Le Nove factory produced from about 1752 to 1773, then was revived from 1781 to 1802.[48] The first soft-paste in England was demonstrated by Thomas Briand to the Royal Society in 1742 and is believed to have been based on the Saint-Cloud formula. In 1749, Thomas Frye took out a patent on a porcelain containing bone ash. This was the first bone china, subsequently perfected by Josiah Spode. William Cookworthy discovered deposits of kaolin in Cornwall, and his factory at Plymouth, established in 1768, used kaolin and china stone to make hard-paste porcelain with a body composition similar to that of the Chinese porcelains of the early 18th century. But the great success of English ceramics in the 18th century was based on soft-paste porcelain, and refined earthenwares such as creamware, which could compete with porcelain, and had devastated the faience industries of France and other continental countries by the end of the century. Most English porcelain from the late 18th century to the present is bone china. In the twenty-five years after Briand's demonstration, a number of factories were founded in England to make soft-paste tableware and figures: Chelsea (1743)[49][50] Bow (1745)[51][52][53] St James's (1748)[53][54] Bristol porcelain (1748) Longton Hall (1750)[55] Royal Crown Derby (1750 or 1757)[56][57] Royal Worcester (1751) Lowestoft porcelain (1757)[58] Wedgwood (1759) Spode (1767) A string of 8 insulators on a 66 kV transmission line Porcelain has been used for electrical insulators since at least 1878,[59] with another source reporting earlier use of porcelain insulators on the telegraph line between Frankfurt and Berlin.[60] It is widely used for insulators in electrical power transmission system due to its high stability of electrical, mechanical and thermal properties even in harsh environments.[61] A body for electrical porcelain typically contains varying proportions of ball clay, kaolin, feldspar, quartz, calcined alumina and calcined bauxite. A variety of secondary materials can also be used, such as binders which burn off during firing.[62] UK manufacturers typically fired the porcelain to a maximum of 1200 °C in an oxidising atmosphere,[63] whereas reduction firing is standard practice at Chinese manufacturers.[64] In 2018, a porcelain bushing insulator manufactured by NGK in Handa, Aichi Prefecture, Japan was certified as the world's largest ceramic structure by Guinness World Records. It is 11.3 m in height and 1.5 m in diameter.[65][66] The global market for high-voltage insulators was estimated to be worth US$4.95 billion in 2015, of which porcelain accounts for just over 48%.[67] Evaporating dishes made of chemical porcelain A type of porcelain characterised by low thermal expansion, high mechanical strength and high chemical resistance. Used for laboratory ware, such as reaction vessels, combustion boats, evaporating dishes and Büchner funnels. Raw materials for the body include kaolin, quartz, feldspar, calcined alumina, and possibly also low percentages of other materials. A number of International standards specify the properties of the porcelain, such as ASTM C515.[68][69] Dakin Building, Brisbane, California, faced with porcelain tiles A porcelain tile has been defined as 'a ceramic mosaic tile or paver that is generally made by the dust-pressed method of a composition resulting in a tile that is dense, fine-grained, and smooth with sharply formed face, usually impervious and having colors of the porcelain type which are usually of a clear, luminous type or granular blend thereof.'[70] Manufacturers are found across the world[71] with Italy being the global leader, producing over 380 million square metres in 2006.[72][73] Historic examples of rooms decorated entirely in porcelain tiles can be found in several palaces including ones at Galleria Sabauda in Turin, Museo di Doccia in Sesto Fiorentino, Museo di Capodimonte in Naples, the Royal Palace of Madrid and the nearby Royal Palace of Aranjuez.[74] and the Porcelain Tower of Nanjing. More recent examples include the Dakin Building in Brisbane, California and the Gulf Building in Houston, Texas, which when constructed in 1929 had a 21-metre-long (69 ft) porcelain logo on its exterior.[75] Porcelain chamber pots from Vienna. Because of its durability, inability to rust and impermeability, glazed porcelain has been in use for personal hygiene since at least the third quarter of the 17th century. During this period, porcelain chamber pots were commonly found in higher-class European households, and the term "bourdaloue" was used as the name for the pot.[76] Whilst modern sanitaryware, such as toilets and washbasins, is made of ceramic materials, porcelain is no longer used and vitreous china is the dominant material.[77] Bath tubs are not made of porcelain, but of enamel on a metal base, usually of cast iron. Porcelain enamel is a marketing term used in the US, and is not porcelain but vitreous enamel.[78] Dental porcelain bridge Dental porcelain is used for crowns, bridges and veneers. A formulation of dental porcelain is 70-85% feldspar, 12-25% quartz, 3-5% kaolin, up to 15% glass and around 1% colourants.[79] This is a dynamic list and may never be able to satisfy particular standards for completeness. You can help by adding missing items with reliable sources. The Americas Brazil Germer Porcelanas Finas Porcelana Schmidt United States Blue Ridge CoorsTek, Inc. Franciscan Lenox Lotus Ware Pickard China Asia China Ding ware Jingdezhen porcelain Iran Maghsoud Group of Factories, (1993–present)[80] Zarin Iran Porcelain Industries, (1881–present)[81] Japan Hirado ware Kakiemon Nabeshima ware Narumi Noritake Malaysia Royal Selangor South Korea Haengnam Chinaware Hankook Chinaware Sri Lanka Dankotuwa Porcelain Noritake Lanka Porcelain Royal Fernwood Porcelain Taiwan Franz Collection Turkey Yildiz Porselen (1890–1936, 1994–present) Kütahya Porselen (1970–present) Güral Porselen (1989–present) Porland Porselen (1976–present) Istanbul Porselen (1963 – early 1990s) Sümerbank Porselen (1957–1994) United Arab Emirates RAK Porcelain Vietnam Minh Long I porcelain (1970–present)[82] Bát Tràng porcelain (1352–present) Europe Austria Vienna Porcelain Manufactory, 1718–1864 Vienna Porcelain Manufactory Augarten, 1923–present Croatia Inkerpor (1953–present) Czech Republic Haas & Czjzek, Horní Slavkov (1792–2011) Thun 1794, Klášterec nad Ohří (1794–present) Český porcelán a.s., Dubí, Eichwelder Porzellan und Ofenfabriken Bloch & Co. Böhmen (1864–present) Rudolf Kämpf, Nové Sedlo (Sokolov District) (1907–present) Denmark Aluminia Bing & Grøndahl Denmark porcelain P. Ipsens Enke Kastrup Vaerk Kronjyden Porcelænshaven Royal Copenhagen (1775–present) GreenGate Finland Arabia France Saint-Cloud porcelain (1693–1766) Chantilly porcelain (1730–1800) Vincennes porcelain (1740–1756) Mennecy-Villeroy porcelain (1745–1765) Sèvres porcelain (1756–present) Revol porcelain (1789–present) Limoges porcelain Haviland porcelain Germany Current porcelain manufacturers in Germany Hungary Hollóháza Porcelain Manufactory (1777–present) Herend Porcelain Manufacture (1826–present) Zsolnay Porcelain Manufacture (1853–present) Italy Richard-Ginori 1735 Manifattura di Doccia (1735–present)[83] Capodimonte porcelain (1743–1759) Naples porcelain (1771–1806) Manifattura Italiana Porcellane Artistiche Fabris (1922–1972) Mangani SRL, Porcellane d'Arte (Florence) Lithuania Jiesia[84] Netherlands[a] Haagsche Plateelbakkerij Rozenburg [nl] (1883–1916) Loosdrechts Porselein Weesp Porselein Norway Egersund porcelain Figgjo (1941–present) Herrebøe porcelain Porsgrund Stavangerflint Poland AS Ćmielów Fabryka Fajansu i Porcelany[85] Polskie Fabryki Porcelany "Ćmielów" i "Chodzież" S.A.[86] Kristoff Porcelana[87] Lubiana S.A.[88] Portugal Vista Alegre Sociedade Porcelanas de Alcobaça Costa Verde (company), located in the district of Aveiro Russia Imperial Porcelain Factory, Saint Petersburg (1744–present) Verbilki Porcelain (1766–present), Verbilki near Taldom Gzhel ceramics (1802–present), Gzhel Dulevo Farfor (1832–present), Likino-Dulyovo Spain Buen Retiro Royal Porcelain Factory (1760–1812) Real Fábrica de Sargadelos (1808–present, intermittently) Porvasal Sweden Rörstrand Gustavsberg porcelain Switzerland Suisse Langenthal United Kingdom Aynsley China (1775–present) Belleek (1884–present) Bow porcelain factory (1747–1776) Caughley porcelain Chelsea porcelain factory (c. 1745; merged with Derby in 1770) Coalport porcelain Davenport Goss crested china Liverpool porcelain Longton Hall porcelain Lowestoft Porcelain Factory Mintons Ltd (1793–1968; merged with Royal Doulton) Nantgarw Pottery New Hall porcelain Plymouth Porcelain Rockingham Pottery Royal Crown Derby (1750/57–present) Royal Doulton (1815–2009; acquired by Fiskars) Royal Worcester (1751–2008; acquired by Portmeirion Pottery) Spode (1767–2008; acquired by Portmeirion Pottery) Saint James's Factory (or "Girl-in-a-Swing", 1750s) Swansea porcelain Vauxhall porcelain Wedgwood, (factory 1759–present, porcelain 1812–1829, and modern. Acquired by Fiskars) Blue and white porcelain List of porcelain manufacturers

^ Notwithstanding its company name, "De Koninklijke Porceleyne Fles N.V." of Delft, The Netherlands, is a manufacturer of Delftware, a variety of faience, not of porcelain. ^ "Porcelain, n. and adj". Oxford English Dictionary. Retrieved 18 Jun 2018. ^ OED, "China"; An Introduction to Pottery. 2nd edition. Rado P. Institute of Ceramic / Pergamon Press. 1988. Usage of "china" in this sense is inconsistent, & it may be used of other types of ceramics also. ^ Harmonized commodity description and coding system: explanatory notes, Volume 3, 1986, Customs Co-operation Council, U.S. Customs Service, U.S. Department of the Treasury ^ Definition in The Combined Nomenclature of the European Communities defines, Burton, 1906 ^ Valenstein, S. (1998). A handbook of Chinese ceramics, pp. 22, 59-60, 72, Metropolitan Museum of Art, New York. ISBN 9780870995149. Archived September 9, 2016, at the Wayback Machine ^ 'Porcelain Tableware Market - Outlook To 2031'. 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University of California Press. ISBN 978-0-520-94538-8. Retrieved 24 April 2014. Gleeson, Janet, The Arcanum: The Extraordinary True Story of the Invention of European Porcelain, 1998, Bantam Press. ISBN 978-0-59304-348-6 Guy, John (1986). Guy, John (ed.). Oriental trade ceramics in South-East Asia, ninth to sixteenth centuries: with a catalogue of Chinese, Vietnamese and Thai wares in Australian collections (Illustrated, revised ed.). Oxford University Press. ISBN 9780195825930. Retrieved 24 April 2014. Rackham, Bernard. A Book of Porcelain at Project Gutenberg Valenstein, S. (1998). A Handbook of Chinese ceramics, Metropolitan Museum of Art, New York. ISBN 978-0-87099-514-9. Wikimedia Commons has media related to Porcelain. How porcelain is made How bisque porcelain is made ArtLex Art Dictionary – Porcelain Retrieved from " Günlük yaşamda özkütleden yararlanmaya aşağıdaki örnekleri verebiliriz. Kuyumculukta altın kırıntılarını yabancı maddelerden ayırmak için özkütle farkından yararlanılır. ... Kimya laboratuvarlarında katı madde kırıntılarından oluşan karışımlar, yine özkütle farklılığına dayanan bir yöntemle bileşenlerine ayrılır. Aynı maddeden daha fazla almak Özkütleyi artırır mı? Sabit hacimde madde miktarı artarsa özkütle de artar. ... III. Maddeler için ayırt edici bir özelliktir. Madde miktarı artarsa kütle artar mı? Hacim sabitken kütle artarsa yoğunluk (öz kütle) da artmış olur. Örnek : hacim = 10 cm^3, kütle 20 gr ise bu durumda yoğunluk 2 g/cm^3 olur. Hacim = 10 cm^3, kütle 30 gr olursa yoğunluk artar, 3 g/cm^3 olur. Özkütle ayırt edici bir özellik mi? Özkütle, ayırt edici bir özellik olduğuna göre: *Madde miktarına bağlı değildir.Sabit sıcaklıkta ve basınçta kütlesi veya hacmi artırılan bir maddenin özkütlesi değişmez. ... Özkütle sıcaklıkla değişir.Bir maddenin sıcaklığı artırıldığında o maddenin genellikle hacmi de artar.Hacim arttığı için de özkütle azalır. Her maddenin özkütlesi var mıdır? Cevap. Özkütle, maddenin karakteristik özelliği olduğu için Her maddenin bir özkütlesi vardır. Her maddenin özkütlesi farklı mıdır? Aslında her maddenin kendine özgü yoğunluğu vardır. Yani hiç yoğunluğu aynı madde bulamazsınız. Bu yüzden aynı yoğunluğa sahip olan maddeler aslında aynı maddelerdir.