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Fractional distillation of crude oil worksheet answers test pdf printable

In order to separate crude oil into its components, it needs to be heated through a process called fractional distillation. Each different hydrocarbon is much more useful - and much more valuable - if we can separate them out. The teacher versions (also editable) give answers to all questions. Download the teacher version including answers to all questions as MS Word or pdf. As the gas rises up the fractionating column, it cools. Here is a diagram that shows how crude oil is separated: Crude oil is pumped into the bottom of the fractionating column, and heated to about 350°C. Higher level Download the student worksheet as MS Word or pdf. Foundation level Download the student worksheet as MS Word or pdf. These have even higher boiling points, such as pentadecane (15 carbon atoms): How does chain length affect the properties of the hydrocarbons? This is the structure of ethane: Petrol contains molecules like hexane, octane and decane. Crude oil is a mixture of hydrocarbons (substances made of carbon and hydrogen only). Lighter molecules with shorter chains need less energy for the forces to be broken, so they are easily separated. Crude oil is a mixture of hydrocarbons (substances made of carbon and hydrogen only). These molecules are larger, so the boiling temperature is a bit higher. Each of these fractions (refinery gas, petrol, naptha and so on) is still a mixture, but each fraction only contains a few, very similar, types of hydrocarbon. Make sure you know the names of the fractions, and what they are used for. Download the teacher version including answers to all questions as MS Word or pdf. In order to continue enjoying our site, we ask that you confirm your identity as a human. What are the different fractions like? Fraction Number of carbon atoms Boiling point (°C) Viscosity (1 = low, 10 = high) Flammability (1 = hard to light, 10 = burns easily) Energy content (1 = low, 10 = high) Refinery gas 1 to 4 below 25 0 (gas) 10 5 Petrol 5 to 10 80 to 100 1 8 6 Naphtha 8 to 12 110 to 150 2 7 7 Kerosene 10 to 16 180 to 250 4 5 8 Diesel 16 to 20 260 to 350 6 4 9 Residue more than 20 more than 350 10 2 10 How does chain length affect the properties of the hydrocarbons? There's a lot to think about when you are learning about fractional distillation. When it gets cool enough, some of the gas condenses back into liquid. The smaller chains are also able to flow over each other better, meaning that they will be less viscous (viscous means sticky, like treacle). Shorter molecules flow more easily, longer molecules are more viscous. Download the teacher version including answers to all questions as MS Word or pdf. Knowledge check worksheets Provide a series of questions on crude oil to assess learners' knowledge and understanding of this topic at both foundation and higher levels. Calculation questions are included to give opportunities to practise mathematical skills within this topic. Let's move on to some questions now. Download the teacher version including answers to all questions as MS Word or pdf. The forces are broken while boiling. The molecules in each fraction are similar enough to be useful, even when mixed together. This is the structure of hexane: Diesel contains even larger hydrocarbon molecules, with between 15 and 20 carbon atoms in the backbone. The liquid is collected where it forms, and pumped out. This lesson includes 13 additional questions and 3 additional question variations for subscribers. The worksheets could be used for individual student work in class or at home. Here is a table of some of the properties of the different fractions. Longer molecules have higher boiling points The component hydrocarbon molecules are long chains held together by intermolecular forces (inter means between). Refinery gas contains molecules such as methane, ethane and propane - very small molecules with a very low boiling temperature. You don't need to memorise the numbers in detail (mostly they are on arbitrary scales, and people don't always agree about where to put the boundaries between the different fractions), but the patterns are important. This is hot enough for most of the liquid oil to turn to gas. They have low boiling points. Heavy molecules, like the ones in bitumen, have longer chains and more energy is needed to separate them. They have high boiling points. Higher level Download the student worksheet as MS Word or pdf. Separate answer sheets allow these resources to be used by teachers or by students during self-assessment of progress. Those patterns link to what you know about intermolecular forces, and the structure of alkanes. Foundation level Download the student worksheet as MS Word or pdf. When we get crude oil out of the ground, it isn't very useful. Those patterns link to what you know about intermolecular forces, and the structures of alkanes. Now let's try some questions. The patterns will help you - small molecules leave the refinery at the top of the column, and large ones at the bottom. It's a sticky mess, a bit like treacle - but not as nice to eat. boiling points carbon condense evaporating fractional distillation fractionating column fractions hydrocarbon hydrocarbons hydrogen mixture molecular formula molecular structure molecules not number physical separate temperatures unchanged CHECK your answers (so far?) best gift deals latest video game release, best gift deals best bargains in shop sales latest pop music releases, best sales deals download free music, latest film releases, best gifts for teenagers latest high street fashion in clothes, fashionable trending in clothing, best gift deals best bargains in shop salesgirls buy clothes, spend a lot of money on clothes, best sales deals shoes, sweets and chocolates, magazines and make-up best gifts for teenagers Boys buy food and drink, computer games best gift deals best bargains in shop sales DVDs and CDs, girls and boys spend a lot of money on credit for mobile phones best sales deals best bargains in shop sales buses and trains to transport them going out best gifts for teenagers best bargains in shop sales Girls spend a lot of money on clothes best gift deals color colour preferences in clothes, cool sunglasses best sales deals boys buy expensive thins like best gifts for teenagers designer sports clothes and trainers, teenagers save for holidays, best sales deals clothes, mobile phones, birthday presents and electronic goods, teenage accessories, Favourite style of jeans. Foundation and higher level worksheets are available and fully editable versions give you the flexibility to select the questions most relevant to a particular lesson. Each part of the fractionating column collects a different fraction - part of the oil with a certain boiling temperature. Thank you very much for your cooperation. This means that they remain gases, even at the colder top of the refinery. When we get crude oil out of the ground, it isn't very useful. The longer the chains, the harder it is for them to flow over each other making them more viscous. Here is a diagram that shows how crude oil is separated: Crude oil is pumped into the bottom of the fractionating column and heated to about 350°C. best gifts for teenagers A typical girl's shopping list includes mobile phone credit deals best gift deals fashionable quality cool airpods, air pods, fashionable clothes best sales deals the most popular favourite sneakers best gifts for teenagers fancy shoes, sweets, chocolates, magazines, best gift deals best bargains in shop sales lip moisturizer best bargains in shop sale slots on make-up, well being, teenage decor decorating their room best sales deals teenagers like LED string lantern lights, best gifts for teenagers beauty products for teenagers, denim jackets, scrunchies coolness, fashionable back packs, typical boy's shopping list includes mobile credit deals, eating out takeaway food and drinks, what teenagers like to buy in clothes best gifts for teenagers computer games, DVDs, CDs, what teenagers talk about best gift deals what teenagers worry about, what teenagers like to do for fun sports best sales deals what cool things do teenagers buy, resale websites like eBay Teenager Differentiated, editable worksheets providing a wide range of assessment questions exploring the topic of crude oil, including fractional distillation, fuels and other products These write-on worksheets will ask learners to use their knowledge of crude oil in an applied context.

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