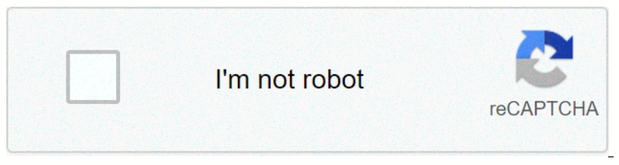

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Rate of diffusion for 1 crystal (mm/hr)

With instant access to answers in our app and millions of other answers without ads 4U wisely download now! or unblock some ads and unblock answers on the site updated april 11, 2018 Mariecor Agravanted diffusion is done for particle movement. Particles of random motion, such as gas molecules, follow the Brown motion and bump into each other until they are evenly distributed over a predetermined area. Diffusion is the flow of molecules from a high concentration area to a low concentration region until equilibrium is reached. In short, diffusion describes gases, liquids or solids dispersed throughout a particular space or a second substance. Examples of diffusion include the aroma of a scent spreading throughout the room, or a decrease in green food coloring dispersed throughout a cup of water. There are several ways to calculate the diffusion rate. Remember that the term rate refers to a change in quantity over time. In the early 19th century, the Scottish chemist Thomas Graham (1805-1869) discovered the quantitative relationship that now bearing his name. Graham's law states that the diffusion rate of two gasees is inversely proportional to its mass square root. This relationship arrived, given that all gases found at the same temperature show the same average exercise energy, as understood in the gas motion theory. In other words, Graham's law is a direct result of a body molecule having the same average motor energy when at the same temperature. Under Graham's law, diffusion describes gas mixing, and diffusion rate is the rate of its mixing. Graham's law of diffusion is also called Graham's law of diffusion because it is a special case of diffusion. Flying out is the phenomenon in which gas molecules escape from a small hole into a vacuum, evacuated space or chamber. The outflow rate measures the rate at which the gas is transferred to its vacuum, exhaust space or chamber. Therefore, one way to calculate the diffusion rate or outflow rate in a word problem is to make calculations based on Graham's law, which represents the relationship between the molar mass of the gas and its diffusion or diffusion rate. In the mid-19th century, Adolf Fick (1829-1901), a German-born physician and physiologist, formulated a series of laws governing the behavior of gases spreading into fluid membranes. Fick's Diffusion First Law states that the flux or net movement of particles in a particular region within a specific time period is directly proportional to the steepness of the gradient. Fick's first law states that (D) refers to the diffusion coefficient, and (dC /dx) can be written as gradient (which is a derivative of the d'ethanation method). So Fick's First Law basically states that the movement of random particles from the Brown motion leads to the drift or dispersion of particlesThe area from high to low concentration, that is, the drift rate (diffusion rate), is proportional to the slope of the density, but in the opposite direction (occupying the negative sign before the diffusion constant). The first law of diffusion describes how much flux there is, but in reality it is Fick's second law of diffusion that further describes the diffusion rate, which take the form of a differential equation. Fick's second law is described by an expression that means that the time of diffusion increases with the power of distance, but in essence, Fick's first and second diffusion laws provide information about how the concentration gradient affects the diffusion rate. Interestingly, the University of Washington has devised a dirty way to help remember how Fick's equations help calculate diffusion rates: Fick says how fast molecules diffuse. Delta P times k times above D is the law to use. The pressure difference, surface area and constant k are multiplied together. It is cracked by a diffusion barrier to determine the exact speed of diffusion. Diffusion can occur in solids, liquids or gases. Of course, diffusion occurs fastest in gas and slowest in solids. Diffusion rates can be affected by several factors as well. For example, an increase in temperature speeds up the rate of diffusion. Similarly, diffused particles and diffused materials can affect diffusion rate. Note, for example, that polar molecules diffuse faster in polar media such as water, while non-polar molecules do not mix and are difficult to diffuse into water. The density of the material is another factor that affects the diffusion rate. Unsurprisingly, heavier gases diffuse much more slowly compared to lighter gases. In addition, the size of the area of interaction can affect the diffusion rate evidenced by the aroma of home cooking, which disperses smaller areas faster than larger areas. Also, when diffusion is performed on a concentration gradient, some form of energy is required to facilitate diffusion. Consider how water, carbon dioxide, and oxygen can easily traverse cell membranes through passive diffusion (in the case of water, penetration). However, when large non-fat-soluble molecules must pass through the cell membrane, active transport is required, where high-energy molecules of adenosine triposphate (ATP) promote diffusion throughout the cell membrane. About the author Mariekol Agarabante earned a bachelor's degree in biology from the University of Gonzaga and a graduate degree in organizational leadership. She has appeared on USA Today, Medium, Red Tricycle and other online media venues. Volume 14, Problem 3, March 2006, Page 393-400View Abstract Cynthia G. Asked04/03/15 For each measured time, calculate the average diffusion rate from time zero. The diameter of time 0 is equal to zero. The formula is Rate [mm/h] = (diameter [mm] / time [minute]) x 60 [minutes] measurement 1 minute 2 crystals 7 mm 4 crystals 9 mm 6 crystals 10 mm 6 min 2 crystals 13 mm 4 crystals 17 mm 6 crystals 21 mm 12 min 2 crystals 18 mm 4 crystals 22 mm 12 mm 22 mm 6 crystals 25 mm 1 mm 1m2m2m2 Crystal 20mm 4 Crystal 25mm 6 Crystal 29mm 24min 2 Crystal 22mm 4 Crystal 27mm 6 Crystal 31mm 30min 2 Crystal 23mm 4 Crystal 29mm 6 Crystal 33mm I'm horrible in math formula and I don't know how to work this I can someone graph my graph

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