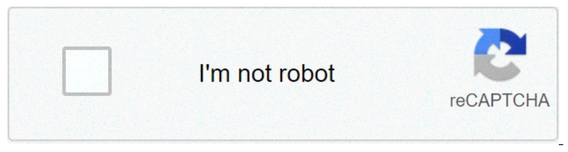

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Balanced chemical equation for octane

What is the combustion of octane? How do you calculate heat of combustion? What is the word equation for octane and oxygen? What is incomplete combustion? How do you balance equations? What does octane and oxygen make? How do you balance Na h2o Naoh h2? What is the mole ratio of octane to co2? What products are formed when octane is completely burnt in air? What is combustion in chemistry? Find the balanced reaction for the complete combuston of octane to carbon dioxide and water.Octane H H H H H H H H | | | | | | | | H - C - C - C - C - C - C - C - C - H | | | | | | | | H H H H H H H H HContentsChemical FormulasStoichiometric CoefficientsDisplay Balanced ReactionsFour species participate in the combustion reaction: octane, oxygen, carbon dioxide, and water. The first step is to construct a cell array with the formula for these species. Displaying the molecular weights is a convenient way to verify that the formulas are correctly entered.species = {'CH3(CH2)6CH3','O2','CO2','H2O'}; molweight(species); Species Mol. Wt. ---------- CH3(CH2)6CH3 114.23 O2 32.00 CO2 44.01 H2O 18.02 Stoichiometric CoefficientsStoichiometric coefficients for the balanced reaction (or balanced reactions, if more than one independent reaction is possible) is computed with stoich. Reactants have a negative stoichiometric coefficient, products have positive coefficients.V = stoich(species); disp(' '); disp('Stoichiometric Matrix V = '); disp(V); Stoichiometric Matrix V = -1.0000 -12.5000 8.0000 9.0000 Display Balanced ReactionsThe balanced reaction displayed as follows. Notice that stoichiometric coefficients are converted to integers for the displayed reaction. The balanced reaction is displayed in several different notations.disp_reaction(V,species); disp_reaction(V,hillformula(species)); disp_reaction(V,{'Octane','Oxygen','Carbon Dioxide','Water'}); 2 CH3(CH2)6CH3 + 25 O2 16 CO2 + 18 H2O 2 C8H18 + 25 O2 16 CO2 + 18 H2O 2 Octane + 25 Oxygen 16 Carbon Dioxide + 18 Water See the answerSee the answerSee the answer done loadingThe products of the complete combustion of octane, C8H18, are carbon dioxide and water. Write a balanced chemical equation for this reaction. 2C8H18(l) + 17 O2(g) → 16 CO(g) + 18 H2O(g) C8H18(l) + 25 O2(g) → 8 CO2(g) + 9 H2O(g) 2 C8H18(l) + 25 O2(g) → 16 CO2(g) + 18 H2O(g) C8H18(l) → 8 C(s) + 9 H2(g) C8H18(l) + 16 O2(g) → 8 CO2(g) + 9 H2O(g) What is Combustion?The Fuse School - Global Education (YouTube) Fire is a chemical chain reaction which takes place with the evolution of heat and light. In order for a fire to take place there are 3 main ingredients that must be present: Oxygen, Heat and Fuel. In chemistry we call the type of reaction that produces fire a combustion reaction. Combustion is a high-temperature exothermic (heat releasing) redox (oxygen adding) chemical reaction between a fuel and an oxidant, usually atmospheric oxygen, that produces oxidized, often gaseous products, in a mixture termed as smoke. Whenever we complete a combustion reaction a hydrocarbon (compound of C and H) there are generally the same products formed: CO2 and H2O. Example The fuel you burn in your car's engine contains octane, C8H18. When octane is burned, the products are CO2 and H2O. 2C8H18(l) + 25O2(g) → 16CO2(g) + 18H2O(g) The key ingredient to the process is the availability of oxygen. Combustion cannot take place in an atmosphere devoid of oxygen. So if you have a bottle of gasoline (octane) sitting around and open to the atmosphere which contains oxygen, why doesn't it just burst into flames? The answer to this question is the need to overcome the activation energy of the reaction, which means that it requires energy at first to "jump start" the process. In your car, the distributor and battery provide this starting energy by creating an electrical "spark". Other sources of initial energy can come from the Sun, matches, friction, etc. The combustion reaction itself is quite exothermic. Extreme Whoosh Bottle TrioFlinnScientific (YouTube) When heat is produced in the process of a chemical reaction this is known as an Exothermic Reaction. Example N2 + 3H2 → 2NH3 + Heat C + O2 → CO2 + Heat When heat is absorbed from the reacting substances this is known as an Endothermic Reaction. Example 2C + H2 - Heat → C2H2 3O2 - Heat → 2O3 But remember, whether endothermic or exothermic, both types of reactions still require an Activation Energy to begin. We found a book related to your question. SEE SOLUTIONS We found a book related to your question. SEE SOLUTIONS We found a book related to your question. SEE SOLUTIONS Mmeli M. asked • 05/20/15 then you have to calculate mass of CO2 produced when 100g octain undergoes combustion. 2 Answers By Expert Tutors There are 8 C's on the left, so try 8CO2 on the right... Now, there are 18 H's on the left, so try 9H2O on the right, to get 18 H's: C8H18 + O2 -> 8 CO2 + 9 H2O There are a total of 25 O's on the right. So you'd need 12 1/2 O2's to balance that. You can't have halves of anything, so you'll have to multiply everything by 2 to get rid of the fraction: 2 C8H18 + 25 O2 -> 16 CO2 + 18 H2O So now we have to figure out how many moles of octane there are in 100 g. The molecular mass of octane is: 8 C = 8 * 12.011 = 96.088 18 H = 18 * 1.008 = 18.144 ...for a total of 114.232. So there are 114.232 grams of octane in 1 mole. Therefore 100 g of octane is 100 / 114.232 = 0.875 moles. According to the equation, combustion of 2 moles of octane will result in 16 moles of CO2, so that's 8 moles of CO2 per mole of octane. Since there were 0.875 moles of octane, that results in 0.875 * 8 = 7 moles of CO2. Now figure out the molecular mass of CO2: 2 O = 2 * 15.999 = 31.998 ...for a total of 44.009. Since there were 7 moles of CO2, that's 7 * 44.099 = 308.063 grams. Gregg G. answered • 05/20/15 Math and sciences tutor (and sometimes counselor) This process is called stoichiometry and it usually follows the dame general process, which you should learn:1 - balance equation2 - use molar mass of given item (in this case the octane) to calculate moles of given item3 - use the proportion of moles of given to moles of item asked about from the equation to find moles asked about.4 - use molar mass of asked about item to calculate mass of the asked about item. The first trick to balancing an equation is to locate a type of atom that exists in only one molecule on each side of the equation. I look at this and I see that oxygen is in two places on the right, but carbon and hydrogen are in only one place. You then pick one of the one place items and balance that. So I need 8CO2 on the right to balance the eight carbons on the left. I can do the same thing for the hydrogen and then count how many oxygens I need on the left to balance the ones I count on the right after I get the number in front of CO2 and H20. Before going on, count everything. Remember that formulae like C8H18 means 8C + 18H, so when I say 8C8H18, I mean 8(8C+18H). To do the second part, you need to calculate the molar mass of C8H18 by adding up the molar masses of all the 8 carbons and 18 hydrogens. 100g will be some fraction of this total, and that is the number of moles. Remember that chemical equations count the number of moles, so if in the balanced equation there are 8 moles of CO2 for 8 moles of C8H18, then the number of moles of CO2 has to be the same as the number of moles of C8H18 that you started with. Then you go backwards from the number of moles of CO2, via the molar mass of CO2, to get the mass of the resulting CO2.