

Save girl child

People



Nuclear

Main articles: Nuclear explosion and Effects of nuclear explosions In addition to stellar nuclear explosions, a man-made nuclear weapon is a type of explosive weapon that derives its destructive force from nuclear fission or from a combination of fission and fusion. As a result, even a nuclear weapon with a small yield is significantly more powerful than the largest conventional explosives available, with a single weapon capable of completely destroying an entire city. Properties of explosions

Force

Explosive force is released in a direction perpendicular to the surface of the explosive. If the surface is cut or shaped, the explosive forces can be focused to produce a greater local effect; this is known as a shaped charge.

Velocity

This article is written like a personal reflection or opinion essay rather than an encyclopedic description of the subject. Please help improve it by rewriting it in an encyclopedic style. (May 2013) The speed of the reaction is what distinguishes the explosive reaction from an ordinary combustion reaction . Unless the reaction occurs rapidly, the thermally expanded gases will be dissipated in the medium, and there will be no explosion. Again, consider a wood or coal fire. As the fire burns, there is the evolution of heat and the formation of gases, but neither is liberated rapidly enough to cause an explosion. This can be likened to the difference between the energy discharge of a battery, which is slow, and that of a flash capacitor like that in a camera flash, which releases its energy all at once.

Evolution of heat

The generation of heat in large quantities accompanies most explosive chemical reactions. The exceptions are called entropic explosives and include organic peroxides such as acetone peroxide[2] It is the rapid liberation of heat that causes the gaseous products of most explosive reactions to expand and generate high pressures. This rapid generation of high pressures of the released gas constitutes the explosion. The liberation of heat with insufficient rapidity will not cause an explosion. For example, although a unit mass of coal yields five times as much heat as a unit mass of nitroglycerin, the coal cannot be used as an explosive because the rate at which it yields this heat is quite slow. In fact, a substance which burns less rapidly (i. e. slowcombustion) may actually evolve more total heat than an explosive which detonates rapidly (i. e. fast combustion).

In the former, slow combustion converts more of the internal energy (i. e. chemical potential) of the burning substance into heat released to the surroundings, while in the latter, fast combustion (i. e. detonation) instead converts more internal energy into work on the surroundings (i. e. less internal energy converted into heat); c. f. heat and work (thermodynamics) are equivalent forms of energy. See Heat of Combustion for a more thorough treatment of this topic. When a chemical compound is formed from its constituents, heat may either be absorbed or released. The quantity of heat absorbed or given off during transformation is called the heat of formation.

Heats of formations for solids and gases found in explosive reactions have been determined for a temperature of 25 °C and atmospheric pressure, and are normally given in units of kilojoules per gram-molecule. A negative value

indicates that heat is absorbed during the formation of the compound from its elements; such a reaction is called an endothermic reaction. In explosives technology only materials that are exothermic—that have a net liberation of heat—are of interest. Reaction heat is measured under conditions either of constant pressure or constant volume. It is this heat of reaction that may be properly expressed as the "heat of explosion."

Initiation of reaction

A chemical explosive is a compound or mixture which, upon the application of heat or shock, decomposes or rearranges with extreme rapidity, yielding much gas and heat. Many substances not ordinarily classed as explosives may do one, or even two, of these things. A reaction must be capable of being initiated by the application of shock, heat, or a catalyst (in the case of some explosive chemical reactions) to a small portion of the mass of the explosive material. A material in which the first three factors exist cannot be accepted as an explosive unless the reaction can be made to occur when needed.

Fragmentation

Fragmentation is the accumulation and projection of particles as the result of a high explosives detonation. Fragments could be part of a structure such as a magazine. High velocity, low angle fragments can travel hundreds or thousands of feet with enough energy to initiate other surrounding high explosive items, injure or kill personnel and damage vehicles or structures.

Notable explosions