**How does an air bag inflate project**

Driver and passenger air bags saves lives. Although steering wheel, right front instrument panel, or side-panel air bags will not inflate if a change automobile motion is minor (such as hitting a bump), they will inflate in major incidents (such as collisions), minimizing injury and saving lives.

**Parts of the Air Bag System**

Air bag system consists of the following:

* Air bag holding compartments: Compartments are in the steering wheel, dashboard, seat, or door.
* Sensor: This device triggers the bag inflation.
* Inflator canister: The canister contains sodium azide (NaNꝫ), potassium nitrate (KNOꝫ), and silicon dioxide (SiO₂)
* Air bag: The thin nylon air bag contains a nontoxic powder to keep the bag flexible and dry. T also features minute vents to allow the bag to deflate after a crash.

**How an Air Bag Inflates**

Within the sensor, a steel ball inside a smooth cylinder is secured by a magnet or stiff spring that inhibits the ball’s motion during minor motion changes. However, in a dramatic stop or severe impact, the air bag sensing system will deploy immediately. The following occurs:

1. The steel ball within the sensor moves quickly forward, triggering an electrical circuit, sending electricity into a heating element, and igniting the sodium azide within the inflator canister to produce nitrogen gas (N₂).
2. The gas inflates the air bag as a speed of 150-250 mph. In about 40 milliseconds (1/20 of a second), the inflation is complete.
3. Although sodium azide normally produces sodium metal, which is potentially explosive and harmful to the eyes, nose, or mouth, in an air bag it reacts with the potassium nitrate and silicon dioxide to produce silicate glass, a harmless and stable compound.
4. The air bag vents allow the deployed air bags to deflate immediately after impact, ensuring that the bags do not smother the car’s inhabitants.

**The Proven Benefits of Air Bags**

Air bags were first introduced in 1973 and were only provided by some car manufacturers. However, they have been mandatory in all cars since 1998 and have made a major difference. The National Highway Traffic Safety Administration estimated that air bags saved 1,043 lives in the year they became mandatory, and that the have saved over 28,000 lives in the United States alone since their introduction.