**Airbags**

**How is the Gas Produced?**

The inflation system reacts sodium azide with potassium nitrate to produce nitrogen gas.

**Nitrogen is Released**

**What Are the Parts?**

- Crash Sensor
- Inflator
- Air Bag Container
- Air Bag (Fabric)

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**Did You Know Airbags...**

- Slow the passenger's forward motion as evenly as possible
- Have flexible-venting which allow pressure to escape when contact with made with the bag to minimize impact
- Has dual-stage and multi-stage (levels of inflation)

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<table>
<thead>
<tr>
<th>Airbag Reaction</th>
<th>Reactants</th>
<th>Products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial Reaction Triggered by Sensor</td>
<td>NaN₃</td>
<td>Na + N₂ (g)</td>
</tr>
<tr>
<td>Second Reaction</td>
<td>Na + KNO₃</td>
<td>K₂O + Na₂O + N₂ (g)</td>
</tr>
<tr>
<td>Final Reaction</td>
<td>K₂O + Na₂O + SiO₂</td>
<td>alkaline silicate (glass)</td>
</tr>
</tbody>
</table>

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# What is AIRBAG?

## What creates an airbag?

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Bag - made of thin, nylon fabric and folded into the steering wheel or the dash board.</td>
</tr>
<tr>
<td>2.</td>
<td>Inflator system - reacts sodium azide (NaN₃) with potassium nitrate (KNO₃) to produce nitrogen gas.</td>
</tr>
<tr>
<td>3.</td>
<td>Sensor - tells the bag to inflate when there is a collision force equal to running into a brick wall at 10 to 15 miles per hour (16 to 24 km per hour).</td>
</tr>
</tbody>
</table>

## How does airbag work?

1. Crash sensor activates
2. Sensor ignites inflator
3. NaN₃ is broken down to Nitrogen gas
4. POOF!!

## How does airbag protect occupants?

1. The deployment usually happens within 8 to 40 milliseconds.
2. A 2.5-cubic-foot driver’s front airbag inflates in as little as 20 to 30 milliseconds.
3. Bag is then inflated fully enough to absorb the motion energy.

*In this activity, seatbelt limiter is activated to reduce the motion energy.

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[Dr. Mihelcic 7th & 8th - Conestoga High School](http://auto.howstuffworks.com/car-driving-safety/safety-regulatory-devices/airbag1.htm)