

Design of Kimber LifeAct Guardian Angel makes hitting your target easy. Swing-away trigger guard requires deliberate action on part of operator and prevents negligent discharges.



# KIMBER LIFEACT

Kimber has recently come out with two new “non-lethal” self-defense tools—the LifeAct™ Guardian Angel® and JPX™ Jet Protector.

Featuring patented Jet Projection Technology™, LifeAct products are the most powerful and technologically advanced projection systems for liquid irritant agents. Revolutionary is an apt term.

Jet Projection Technology was developed by two graduate Swiss engineers, Juerg Thomann and Raphael Fleischauer, the co-founders of Piexon AG. Winner of the Swiss Technology Award, Jet Projection Technology launches liquid irritant agent by means of a pyrotechnic power drive. It provides superior performance and reliability compared to pressurized canister sprays. Kimber is the exclusive U.S. importer of these products.

Kimber recently supplied me with several Guardian Angel units for testing and evaluation. Designed for personal defense, the Guardian Angel is com-

compact, lightweight and easy to conceal. Oleoresin Capsicum (OC) has become law enforcement’s tool of choice as a “low level” control and restraint technique to provide compliance to verbal commands when dealing with unarmed, hostile subjects. It has also become the personal defense tool of choice for many private citizens in those situations where a higher level of force would be inappropriate or where the laws prohibit any other weapon options.

Oleoresin Capsicum is a naturally occurring substance found in the oily resin of chili peppers (*capsicum frutescens*). The word “capsicum” is actually a horticultural term that refers to the genus in which chili peppers are classified.

OC is an inflammatory agent that works on the eyes, respiratory system and mucous membranes. Although most readers have probably experienced

BY EUGENE NIELSEN

the effects during training and need no introduction, effects can include disorientation/impaired vision through tearing, involuntary closure of the eyes, pain/burning sensation on exposed surfaces, gagging, coughing and impaired breathing.

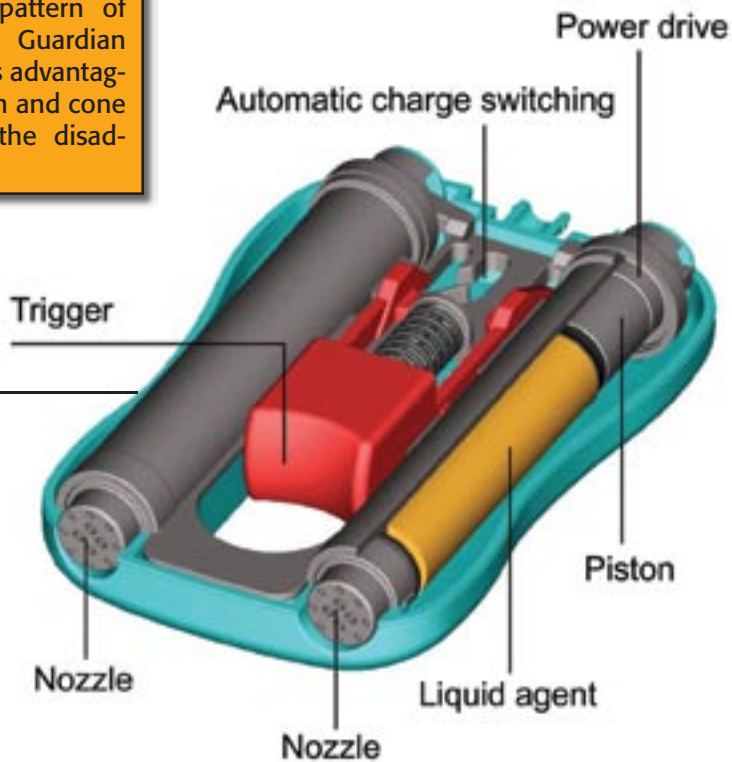
The effects of OC are the result of a family of alkaloid compounds known as capsaicinoids. Capsaicinoids are what give chili peppers their heat. Because OC is an organic compound, it’s subject to variations in its composition. The main capsaicinoids in OC are capsaicin, dihydrocapsaicin, nordihydrocapsaicin, homocapsaicin and dihydrohomocapsaicin.

The Scoville Heat Unit (SHU) Scale is the industry standard in which the heat of OC is measured and compared. SHUs used to be based on what was essentially a taste test, the Scoville Organoleptic



Unique nozzle pattern of Kimber LifeAct Guardian Angel. It provides advantages of both stream and cone sprays without the disadvantages.

Exploded view of Kimber LifeAct Guardian Angel. Swing-away trigger guard not shown. Illustration courtesy Piexon AG.



# GUARDIAN ANGEL

## Revolutionary New OC Self-Defense Tool

Test, developed by pharmacologist William Scoville in 1912.

The Scoville Organoleptic Test was a measurement that involved taking an exact weight of chili peppers, dissolving the capsaicin in alcohol, and then diluting the solution with sugar water until a panel of five tasters could no longer detect the chili peppers. Although used by the industry for many years, the Scoville Organoleptic Test wasn't scientific and had a wide variability.

The analytical methodology for heat determination has evolved over the years. The present method, American Spice Trade Association (ASTA) Method 21.3, was adopted in December 1998 as the only official method recognized for the analysis of capsaicin heat. Developed in collaboration with the American Organization of Analytical Chemists (AOAC), it utilizes high-pressure liquid

chromatography (HPLC) to measure capsaicin content. It measures capsaicin levels in parts per million (mg/L). The capsaicin level is then converted to SHUs. Pure capsaicin is 16 million SHUs, in accordance with ASTA Test Method 21.3, Oleoresins and Their Capsaicums (HPLC Method).

The Scoville Value is obtained by dividing the SHU of the OC by the percentage (%) concentration of OC in the formulation. The major capsaicinoid content can be determined by dividing the SHU of the OC by 16,000,000 (100% pure capsaicin).

This may sound a bit confusing, but it's important. Here's why. The Scoville Value and percentage of major capsaicinoids are the true determinant of the effectiveness of an OC product.

While the major capsaicinoid content is a major determinant of effectiveness,

other factors also play an important role. The actual chemical makeup formulation of the spray (including the solvents, carriers and propellants) and the delivery method are also important factors that need to be considered.

As previously mentioned, the formulation used in the Guardian Angel has a benzyl alcohol carrier. Many experts believe that alcohol-based OC formulations are more effective than non-alcohol-based formulations and reduce the time that's required for the OC to take effect. They also feel that alcohol-based OC products work better under all temperature conditions.

The Guardian Angel is a two-shot, closed system containing two charges of ultra-hot 10% OC formulation in a benzyl alcohol carrier. It has a whopping 2.4% major capsaicinoids! It is not reloadable. Firing is by means of a trigger,

with right or left hand operation. The device features semiautomatic switch-over operation. Pulling the trigger once fires the first blast. Pulling the trigger again automatically fires the remaining blast.

The OC formulation is contained in two Jet Projection cartridges. Each cartridge contains a volume of 0.21 ounces (6 ml) of the liquid agent. In the inactive state, the liquid agent is held in the cartridge case by means of a nozzle seal. The nozzle seal can only be broken once a pre-defined nominal pressure is reached.

When the Guardian Angel is fired, a mechanical firing pin ignites a pyrotechnic power drive, which powers a moveable piston in the cartridge. The piston subjects the liquid agent to high pressure. The pressure then forces the liquid agent through the nozzle as a high-speed jet.

The chain of events in the Jet Projection liquid agent cartridge is as follows: Pyrotechnic → Power Drive → Piston → Liquid Agent → Nozzle Seal → Nozzle.

After expelling the liquid agent through the nozzle, the piston is retained within the cartridge case. The gasses from the pyrotechnic power drive are then vented around the piston, blowing out any irritant residues on the nozzle.

The Jet Projection Technology provides a number of significant advantages over pressurized canister sprays. Canister sprays store the required pressure for the projection of the agent over its lifetime. The pressure is inconsistent over time and with use. They lose their pressure (propellant) through the valve over time and under high temperatures. Hot temperatures, such as those that may be reached in a parked car on a summer day, can lead to over-pressure causing the canister to burst. Cold temperatures reduce the range of the spray. As the temperatures drop, so too does the pressure in spray canisters.

Since the Guardian Angel doesn't work with a permanent pressure aerosol canister, it is completely reliable and unaffected by temperature extremes. The performance is consistent over the entire operating temperature range (-5°F to +176°F).

Unlike most aerosol spray canisters, the Guardian Angel works effectively in

### SPECIFICATIONS, KIMBER LIFEACT GUARDIAN ANGEL

Distributor	Kimber Mfg. Inc, Yonkers, NY
Manufacturer	Piexon AG, Switzerland
Size	4.3" L x 2.7" W x 0.9" H
Weight	4.2 oz.
Maximum Range	13 ft.
Minimum Safe Distance	2 ft.
Operation Mode	Semiautomatic switchover
Content	2 charges filled with liquid irritant agent
Volume Per Charge	0.21 fluid oz.
Irritant	10% (Oleoresin Capsicum)
Carrier	90% Benzyl Alcohol
Suggested Retail	\$39.95

any position and orientation. Most defense sprays only work with the canister in the vertical position.

The Jet Projection Technology also allows for a far greater range than pressurized canister sprays. The peak pressure build-up of the pyrotechnic drive is much higher than the stored pressure in a canister. The Guardian Angel has an effective range of 13 feet. In comparison, most personal defense sprays only have an effective range of around 7 feet.

The liquid agent is discharged from the Guardian Angel at a velocity of 90 MPH. Since the jet elapse time is 0.1 seconds within the 13-foot range, and the average reaction time is 0.8 seconds, hit probability is increased as the assailant doesn't have time to react.

The high-velocity liquid projectile carries sufficient ballistic energy to make it relatively unaffected by wind. Due to its energy, it also more easily penetrates around glasses, into eyes, pores and mucous membranes. Pressurized canister personal defense sprays contain almost no ballistic energy and are easily deflected by even the lightest wind.

The Guardian Angel has a minimum safety distance of two feet. At distances closer than this, discharging the Guardian Angel into an assailant's face or eyes may cause serious and permanent injuries. This is due to what's known as the "hydraulic needle effect" and can occur with all stream sprays at extremely close range. Additionally, the agent capsaicin and alcohol carrier can, in rare instances, cause corneal injuries, which usually heal up without any permanent damage. First aid for the Guardian



Angel is the same as with any OC spray.

The Guardian Angel has been designed to provide a high degree of operational safety. Negligent discharges are far less likely than with conventional sprays. The only moveable exterior part on the Guardian Angel is the trigger. The trigger is centrally enclosed and equipped with a safety device to prevent inadvertent firing of the device. Due to the design, it is impossible to grab the device the wrong way and accidentally fire it. The Guardian Angel has a 6.6 pound trigger pull.

The firing mechanism and switch-over mechanism of the Guardian Angel are completely internal. The device is equipped with two internal safety mechanisms that prevent unintentional discharge of the agent, in the event that the device is dropped. It has been rated as drop-proof from heights up to 5 feet. The Guardian Angel is weather-resistant.


The Guardian Angel is equipped with a white mark on both sides of the trigger. If the white mark is visible on the outside of the case (housing), the device has never been fired and contains two live protection cartridges. If the white mark is covered by the case, the Guardian Angel has been used at least once.

The design of the Guardian Angel makes it easy to aim. The recommended technique is to hold the Guardian Angel

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upright, gripping it on the sides with the back of the device resting in the palm. The top of the case provides a sighting plane to accurately aim the device at an assailant.

When firing the Guardian Angel, only the tip of the forefinger should be used to pull the trigger. The trigger should be pulled in a slow, steady manner in the same way that one would pull the trigger of a firearm.

Upon firing, the manufacturer recommends that the operator should leave the Guardian Angel in the firing position, check where the first charge hit and assess its effects on the assailant. The operator should immediately aim again, take a step forward, and then aim again, firing a second blast if necessary. If the operator is a private citizen, he should then move away from the danger as quickly as possible. If a law enforcement officer, he should follow proper procedures.

An inert training version of the Guardian Angel is available for practice. It has an orange case to differentiate it from the live OC version, which is black. The inert training version is filled with blue marker dye instead of irritant agent. In all other respects, the inert training version is identical to the live OC version.

The Guardian Angel has an ergonomic, polymer case. It is quite compact and lightweight, making it easy to conceal and carry. Measuring only 4.3 x 2.7 x 0.9 inches and weighing just 4.2 ounces, the Guardian Angel is roughly the same size and weight as a standard pager. The Guardian Angel is equipped with an integral belt clip and can be clipped to one's belt or waistband. It also fits conveniently into a pocket or purse.

The Kimber LifeAct Guardian Angel has a MSRP of \$39.95. It has a three-year warranty on the operating mechanism (expiration date on device) and comes with an instruction manual. The Guardian Angel is NTOA Member Tested and Recommended. ©

**SOURCE:**

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