



Reliapon's

New OC Sprays

With AIE™ Technology

by Eugene Nielsen



American Defense with AIE Technology is an innovative new OC spray that utilizes a unique combination of ingredients, technology and highly specialized mixing techniques to produce a more effective ASR. Three (3) pungency levels are available in MK-3 (2.47 oz.), MK-4 (3.95 oz.), and MK-9 (11.64 oz.) canisters. American Defense contains no carcinogens or Isopropyl Alcohol.

important because the Scoville Value and percentage of major capsaicinoids are the true determinant of the pungency/effectiveness of an ASR and not just the OC percentage or SHUs. In addition, the actual chemical makeup formulation of the ASR Formulation spray (including the solvents carriers and propellants) and the delivery method are other important factors, and they need to be considered.

Oleoresin Capsicum (OC) aerosol subject restraints (ASRs), have 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. OC was first introduced to law enforcement in 1976. Although initially there were few studies of the effectiveness and safety of OC, numerous detailed studies have been conducted in the ensuing years. Today, there are a myriad of OC sprays from which to choose. Unfortunately, when it comes to OC, all ASRs aren't created equal.

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 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. As of December, 1998, the only official evaluation of capsaicin heat is the American Spice Trade Association (ASTA) Method 21.3, "Pungency Of Capsicums And Their Oleoresins (HPLC Method)." Developed in collaboration with the American Organization of Analytical Chemists (AOAC), this methodology utilizes high-pressure liquid chromatography (HPLC) to measure capsaicin content in parts per million (mg/L). The capsaicin level is then converted to SHUs. Using this official method, pure capsaicin is 16 million SHUs.

It's generally accepted by most law enforcement trainers that the use of ASRs with a Scoville Value (not to be confused with SHU) exceeding 200,000 would be unsuitable for normal law enforcement duty use due to the prospect of causing permanent harm to skin and/or nerve endings. The Scoville Value of an ASR is obtained by dividing the SHU of the OC by the percentage concentration of OC in the ASR. The Major Capsaicinoid content can be determined by dividing the SHU of the OC by 16,000,000 (100% pure capsaicin). Thus an ASR with a 10% concentration of 2,000,000 SHU OC would have a Scoville Value of 200,000 and 1.25% (+/- .02) major capsaicinoids.

This may sound a bit confusing, but it's

The formulation of the spray is also important to consider for another reason besides determining the effectiveness/pungency of an ASR—safety. Many ASRs formations contain chemicals known or suspected of causing cancer or other harm. Agencies that use an ASR which contains known or suspected occupational carcinogens are required to comply with the Hazard Communication Act, as set forth in OSHA regulation 29 CFR 1910.1200, by notifying and educating employees of the potential effects of exposure to known or suspected carcinogens.

Methylene chloride (synonyms dichloromethane and methylene dichloride) is one such chemical. Methylene chloride is used in many ASRs, despite the fact that the World Health Organization (WHO), U.S. Department of Health and Human Services (DHHS), National Institute of Health and Human Services (NIOSH), and the Environmental Protection Agency (EPA) have all determined that methylene chloride is a carcinogen and a probable cancer causing agent in humans. Methylene chloride is also known to have adverse effects on the heart, liver, central nervous system and can cause skin or eye irritation. Exposure may occur through inhalation, contact or absorption through the skin.

RELIAPON AMERICAN DEFENSE™ BRAND ASR

Reliapon Police Products has recently introduced a unique ASR called American Defense™ that's specially formulated for U.S. law enforcement, corrections, and

homeland defense agencies to address these concerns. American Defense features Reliapon's new AIE™ (Accelerated Inflammatory Effect) Technology.

According to Reliapon, AIE Technology features a unique combination of ingredients, mixed in a highly specialized manner, and delivered with maximum impact which facilitates accelerated irritation, soreness, and the involuntary inflammation of the eye capillaries and mucous membranes, enabling American Defense to take it's desired effect over 50% faster than competitive products.

AIE Technology is the melding of three different technologies: 1) proprietary formulations; 2) a dual propellant system; and 3) a unique delivery system. These technologies are combined to produce a single desired effect. While many of the elements have already been incorporated into other Reliapon ASR brands, American Defense is the only brand containing all three of the enhancements.

American Defense formulations are comprised of elements that enhance and accelerate the effects of OC. All of the elements are non-carcinogenic. They don't contain any methylene chloride (a known carcinogen) or Isopropyl Alcohol, that could cause corneal burns.

The formulations are available in three (3) pungency levels: RED Formula; WHITE Formula; and BLUE Formula. The RED Formula contains 10% 2,000,000 SHU OC and has a Scoville Value of 200,000 and 1.25% major capsaicinoids. The WHITE Formula contains 5% 2,000,000 SHU OC and has a Scoville Value of 100,000 and 0.62% major capsaicinoids. The BLUE Formula contains 10% 500,000 SHU OC and has a Scoville Value of 50,000 and 0.31% major capsaicinoids.

American Defense utilizes a dual propellant system. The two non-flammable propellants are safe, environmentally friendly and contain no VOCs (Volatile Organic Compounds). The U.S. Food and Drug Administration (FDA) has already approved the primary propellant for use in pharmaceutical applications.

The liquefied propellant in American Defense has two primary attributes that contribute to a superior performing ASR than those that employ gaseous propellants such as nitrogen gas. They are:

1) ASRs that utilize this type of propellant not only perform better when fired, but more importantly, will maintain

internal canister pressure throughout the entire life of the product. Thus Reliapon's products offer a longer shelf life than most major brands.

2) Liquefied propellants mix well with the balance of the OC formulation to provide one "homogeneous" solution.

Homogeneous ASR solutions don't require periodic shaking of the can, as some manufacturers suggest on their labels. "Non-homogeneous" solutions over time will separate much like a layered drink. Then, if the unit is fired without shaking the canister, the intended target may just get a face full of solvent. This is one reason why some ASRs are sometimes not effective.

The American Defense delivery system is unique in that it's the very first of its kind to be designed from beginning to end as a "matched set" in order to deliver specific results. The American Defense™ delivery system delivers up to 300% more active ingredient per one second burst than competitive brands.

All three (3) American Defense formulations are available in MK-3 (2.47 oz.), MK-4 (3.95 oz.), and MK-9 (11.64 oz.) canisters. The MK-3 and MK-4 are compatible with U.S. DOD standard issue Law Enforcement Ensemble (LEE) or duty gear. The MK-3 and MK-4 have a spring-loaded, flip-top safety firing mechanism. The flip-top allows for low-light orientation in the hand, helps prevent accidental discharges and allows open top holsters to be used. The MK-9 has a "pistol-grip" with pull-ring safety firing mechanism.

The MK-3 and MK-4 employ a stream delivery system with an optimal range of ten to twelve feet, and a maximum range of twelve to fifteen feet. The stream delivery system provides the operator with a target specific ASR with minimal cross-contamination. The primary effect is on vision.

The MK-9 utilizes a high-capacity fogger delivery system. It has a maximum range of twenty to twenty-five feet, with an optimal range of fifteen to eighteen feet. The primary effects are on vision and the respiratory system. The high capacity fogger is designed to deliver a large quantity of formulation over a widespread area. It's ideal for crowd management.

American Defense ASRs are warranted for five years from date of manufacture. Most other manufacturers offer one, two, or three-year warranties.

Reliapon ASRs

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The MK-3 (shown) and MK-4 employ a stream delivery system that provides the operator with a target specific ASR with minimal cross-contamination. Both units have a spring-loaded, flip-top safety firing mechanism. The flip top allows for low-light orientation in the hand, helps prevent accidental discharges and allows open top holsters to be used.

are fully and strongly supported by on-staff legal council licensed by the California Bar Association and experts in the manufacture of ASRs.

The Reliapon Non-Lethal Training Staff's educational, technical, and expert witness support services are available to those officers certified in American Defense, STROAM®, BODYGUARD PLUS™, BG-X®, or BG-V® ASRs. Under this policy, Reliapon's focus is on providing officers with standardized tactics and training that are effective, defensible, and respectful of human rights while maintaining the training philosophy and certification

approach to management of a subject's non-compliant behavior in an arrest situation.

Although American Defense is new, it combines proven technologies. With the introduction of AIE Technology, Reliapon has come out with an innovative, safer, more effective ASR that's certain to see widespread law enforcement, corrections and military use.

SOURCE:

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