

# Improvised Grenades And Their Use By Mexican Cartels



TEXAS DEPARTMENT OF PUBLIC SAFETY – TEXAS RANGERS  
**BORDER SECURITY OPERATIONS CENTER**



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## Improvised Grenades and Their Use by Mexican Cartels

Over the last few years, it has become more commonplace to see military-type weaponry such as grenades and assault rifles utilized by Mexican drug trafficking organizations (DTOs). Increasingly, many of the reported hand grenade seizures in United States are illegal, improvised grenades destined for Mexico and the DTOs. These devices have become a weapon of choice for Mexican DTOs because they are cheap, the components are relatively easy to obtain and manufacture, are easily concealable, and can kill or injure large numbers of people indiscriminately. Reports have indicated that grenade attacks originated mostly in southern Mexico around the beginning of President Felipe Calderon's presidency in 2006, and have steadily spread northward as the conflicts between rival DTO cartels, and Mexican government's enforcement efforts have intensified in the northern Mexican Border States.





# Improvised Grenades and Their Use by Mexican Cartels



**M67 grenade**- Steel body

Killing radius: 16 feet  
Casualty-producing radius: 50 feet  
Still in use by the U.S. military



**M69 grenade**- Steel body

Unfuzed and inert  
Used by US Military to resemble  
and simulate the functioning of  
service grenade



**MK II grenade** (commonly referred  
as pineapple grenade)- Cast Iron body

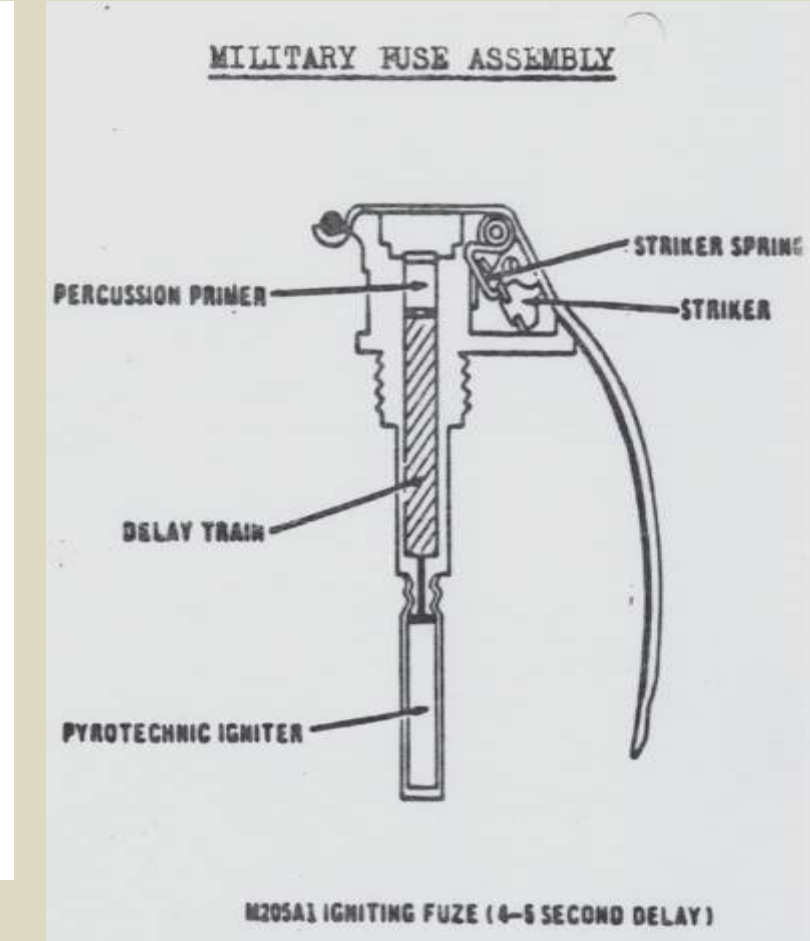
Killing radius: 16 feet  
Casualty-producing radius: 50 feet  
No longer used by US Military



# Improvised Grenades and Their Use by Mexican Cartels

## Hand grenades are composed of three main components:

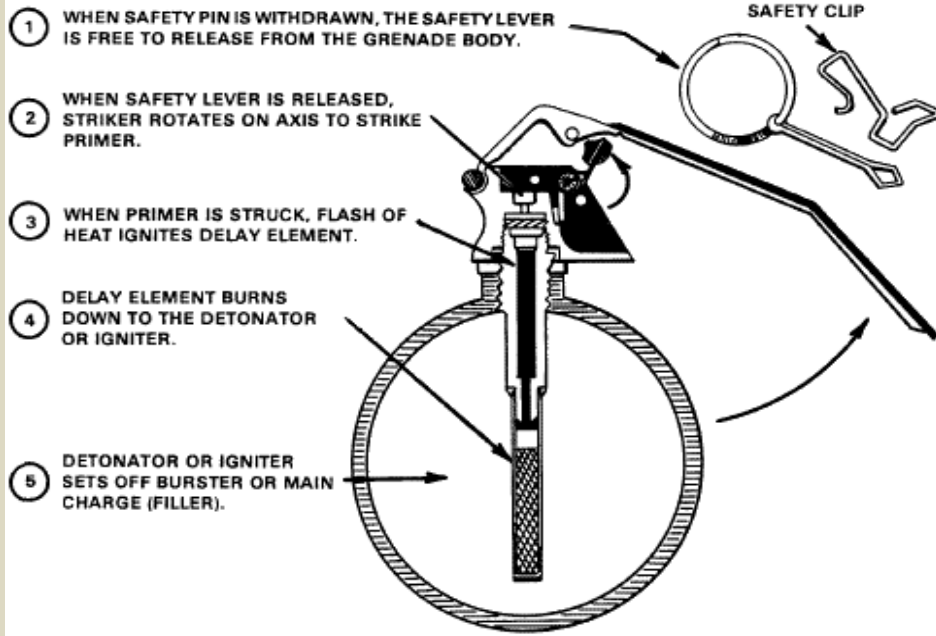
1. **BODY.** This contains the filler and in some grenades, provides fragmentation. Improvised grenade hulls can have either a soldered or patched bottom, as all inert empty hulls are supposed to be drilled out at the bottom.
2. **FILLER.** The filler is the chemical or explosive substance in the grenade body which gives the grenade its characteristics and determines its use. The explosive powders inside an improvised grenade are usually a low explosive, primarily black powder. The improvised grenades can use commercial flash bang fuses, pyrotechnic fireworks fuse, shotgun primers, matchheads, etc. to initiate a detonation.
3. **FUSE ASSEMBLY.** This is the **heart** of the hand grenade and causes the grenade to function by means of a chain reaction of pyrotechnic, mechanical, or electrical actions. The most important part of the hand grenade is the fuse. The fuse must be 100% dependable.





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## How a hand grenade is designed to function:



The average time delay of a fragmentation grenade fuse (training or live) is 4-5 seconds. Time delays on remanufactured grenades will vary or may have no delay at all. This is true of remanufactured grenades utilizing flash bang fuzes. Grenades with less than one second time delay (taken from smoke grenades, etc) are primarily used to booby trap contraband.

The fragmentation grenade is designed to spew shrapnel in all directions. To add a more damaging impact, DTOs have added BB pellets or buckshot to the explosive in the grenade.



Recovered McAllen, TX



Mexican grenade attack utilizing a short-delayed flash bang fuze.



Flash bang fuze stock photo



Black powder found inside a improvised MKII pineapple grenade



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The most common modified grenades seized are the M69 practice grenades, M67/M33 grenades, the MKII pineapple-type grenade and novelty grenades. Novelty grenades (spent training grenades) can be cheaply bought at army-navy surplus stores, gun shows, and online. M69 military training grenades are identifiable by blue coloring, generally on the safety lever ("spoon"), but can be found anywhere on the device. Inert military practice grenades can be remanufactured to be used as a weapon. Caution in handling must be taken after they are remanufactured because the blue markings no longer have any significance, particularly if the officer notes that the bottom has been welded or sealed shut.

Blue pin painted over to disguise



(El Paso JOIC)

Disposed by El Paso PD Bomb Squad



For sale at military surplus store



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There are numerous books and websites that describe in detail how a hand grenade functions, how to rebuild the fuze assembly and igniter, as well as chemical formulas needed to make the time delay fuse, blasting cap, and explosive filler. A person with a moderate amount of mechanical/chemical expertise can remanufacture an improvised grenade.

Examples courtesy of ATF

### FORMULA for Delay Fuse.

1. See Delay Fuse Formula on page one.
2. Strontium Nitrate 42.3 parts  
Ammonium Perchlorate 14.1 parts  
Magnesium Powder 20.2 parts  
Charcoal 7.0 parts  
Boiled Linseed Oil 8.4 parts
3. Potassium Nitrate 75 parts  
Charcoal 15 parts  
Sulfur 10 parts  
Boiled Linseed Oil 5 parts
4. Magnesium Powder 26 parts  
Strontium Nitrate 25 parts  
Polyvinyl Chloride 17 parts
5. Black Powder 98 parts  
Boiled Linseed Oil 2 parts
6. Potassium Nitrate 20 parts  
Red Lead Powder 30 parts  
Silicon Powder 10 parts

Place a small amount of the Delay Fuse mixture into the Fuse Body. Use a 3/16 inch diameter metal rod to compact the mixture into the Fuse Body. Use a hammer and pound on the metal rod to compact the mixture very tight. Place some more of the mixture in the Fuse Body and compact it also. Do this over and over until the Fuse Body is about 90% filled up.

Place some of the Delay Fuse mixture in the Fuse Body and compact it by hand with the metal rod, but do not use the hammer to compact it. Fill up to about 90% full.

Place some of the Delay Fuse mixture in the Fuse Body and very lightly compact it with the metal rod or your finger.

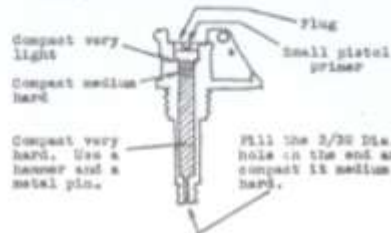
Press a small pistol primer in the hole of the plug. Use epoxy glue to glue the plug back into the Fuse Body.

Fill the 3/32 inch diameter hole at the bottom end of the Fuse Body with the Delay Fuse mixture. Compact it by hand using a wooden kitchen match or a metal rod.

Replace all the parts to make a completed Fuse assembly.

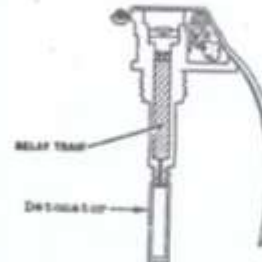
Clamp the completed Fuse assembly in your work shop vice. Pull out the safety pin and release the handle. When the striker hits the percussion primer and sets it off start timing the Fuse on your watch. When a small flash of fire shoots out of the 3/32 inch dia. hole at the bottom end of the Fuse assembly stop timing. This test will tell you if the Fuse works properly and how long the Fuse burns.

The Fuse burn time can be changed by not filling the Fuse Body all the way to the top with the Delay Fuse mixture or by using a different Formula.



The completed Fuse assembly can be used like it is or it can be equipped with a Detonator or an igniter.

If the Grenade Body is filled with Plastic explosives or Dynamite a Detonator will be required to set off the main explosive charge. Use epoxy glue to glue a (Fuse type blasting cap) to the bottom end of Fuse assembly.



If the Grenade Body is filled with Tear Gas, Smoke Formula, Black Powder or Flash Powder the Fuse Assembly can be used with or without an igniter. The igniter is used to speed up the reaction to insure a complete and fast ignition of the Filler.

### IGNITER How to make your own.

Cut a piece of copper tubing about 1 1/2 inches long. The inside diameter of the tubing should be big enough to slide over the bottom end of the completed Fuse assembly. Crimp, glue or solder one end of the copper tubing shut. Fill the copper tubing about 3/4 full with the igniter mixture and use epoxy glue to glue the copper tubing to the bottom end of the completed Fuse assembly.

Most smoke formulas and tear gas formulas require a lot of heat to ignite them. In this case a Sugar Chlorate igniter should be used because it produces large amounts of heat.

If the Grenade body is filled with Black Powder, Flash Powder or Nitrocellulose the igniter used can be Flash Powder or Black Powder. Flash Powder works the best.

### SUGAR CHLORATE FORMULA

- |                       |         |
|-----------------------|---------|
| Potassium Perchlorate | 2 parts |
| Powder Sugar          | 1 part  |

### FLASH POWDER FORMULA

- |                       |         |
|-----------------------|---------|
| Potassium Perchlorate | 2 parts |
| Aluminum Powder       | 1 part  |

NOTE: Potassium Chlorate or Sodium Chlorate can be used instead of Potassium Perchlorate.

Potassium Perchlorate works the best.



# Improvised Grenades and Their Use by Mexican Cartels

According to ATF, improvised hand grenades can sell from anywhere between \$100-\$500 per grenade along the Texas-Mexico border. In contrast, military grade grenades from Central American countries can be purchased for as little as \$10 per grenade. The major DTOs make grenade purchases through various sources. Reports indicate that Los Zetas historically try to seek grenades from sources in Guatemala, due to their control of many areas in that country. The Gulf Cartel has historically attempted to acquire their grenades from Mexican military sources, whereas the Sinaloa Cartel has sought to acquire improvised grenades. Regarding military grade-grenades, many countries, including the United States and the Soviet Union, have historically supplied weapons to Central America to support government forces and various guerilla groups. When the insurrections in Central America ended, weapons stockpiles slipped into the black market. According to investigations by the U.S. Bureau of Alcohol, Tobacco, Firearms and Explosives and their Mexican counterparts, the majority of military grenades have been traced to El Salvador, Guatemala, Honduras, Belize, and Nicaragua. ATF also found that almost 90% of the grenades traced in Mexico are more than 20 years old.



One of the most common hand grenades found in Mexico is the M67 fragmentation grenade.

VS.

M69 practice grenade  
*Indicated by blue safety lever,  
sealed and improvised with  
black powder*







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On 2 APR 2009, a Police Officer with the 81<sup>st</sup> District Attorney's Office Narcotics Unit stopped a vehicle southbound on I-35 in Pearsall, TX.

Following a consent to search the vehicle, the Officer discovered \$123,000 USD and 10 improvised hand grenades wrapped in shrink wrap, secreted in a hidden void in the vehicle's dashboard.



The grenades had been improvised with blue colored M228 practice grenade fuzes and had plugs welded at the bottom of the hulls.



1 JUL 2010: Unexploded homemade grenade constructed of steel pipe fittings and civilian grenade fuse (likely CTS brand) recovered from a gun battle between cartel members and Mexican military forces in Tubutama, Mexico.



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On 15 JUNE 2010, USBP seized 114 MKII grenades and M69 fragmentation grenades in addition to various types of ammunition at the San Luis Point of Entry headed southbound into Mexico.

Mexican cartels continually resupply these weapons to be used against their rivals as well as law enforcement and the Mexican military.

Training grenades designated by blue colored safety lever





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On 16 DEC 2010, Zapata Co. SO initiated a traffic stop on a Latin King member driving a vehicle traveling northbound on US-83/ FM-2687, near Chihuahua, TX. The subject was transporting a quantity of assault rifles and 30 modified MKII grenades from McAllen to Del Rio, TX. The hole at the base of the grenade was welded shut and contained gunpowder (black powder has higher yield) and BB pellets for additional shrapnel.





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ATF has been investigating and collecting information on explosives and military grenades recoveries in Mexico. ATF has an extensive database on the types of grenades and explosive materials being used by Mexican DTOs. ATF also documents instances of grenades that have been recovered in the United States that have been linked to Mexico. Improvised grenades continue to be sought by DTOs. ATF is exploiting this by the use of DNA trace evidence technologies. Through DNA tracing, it is hoped that a link to improvised grenades between Mexico DTOs and the US manufacturers/suppliers will be able to be made. The collection of this information will benefit in linking grenades recovered in both the US and Mexico to the same builder, and identify common components such as grenade fuzes. This information will allow the possible tracking of shipping routes and identification of the source of the materials.



*Photos courtesy of  
El Paso PD Bomb Squad*





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Anyone with comments or questions regarding this bulletin, or with additional information regarding hand grenades, should please contact the Border Security Operations Center at 512-424-7561 or by e-mail at [TBSOC@txdps.state.tx.us](mailto:TBSOC@txdps.state.tx.us).

