

Flame Fuel Expedients

Wartime demands led soldiers in-theater to create Flame Field Expedients (FFEs) for night illumination and perimeter defense. Napalm-filled containers, often 55-gallon drums, were rigged with detonators and blocks of TNT and half buried, facing enemy positions or avenues of attack. Detonated by trip wire or on command, the device, also known as “foogas,” sprayed out burning fuel to turn night into day, or halt an enemy attack.



*Burying a FFE in Korea, 1952 (above right).
“Foogas” in Vietnam, 1969 (right).
FFE detonation, 2003 (above).*



For More Information Contact:

U.S. Army Chemical Corps Museum
495 South Dakota Avenue
Bldg 1607
Fort Leonard Wood, Missouri 65473
phone: (573) 596-4221
fax: (573) 596-1508



Flame & Incendiary Weapons



Flame Throwers

Early in the 20th Century German Army engineers developed a portable flame thrower. Introduced in WWI against the French, it saw some service on the Western Front where it proved to be a startling, if unreliable, assault weapon. The British and French Armies quickly developed flame throwers of their own, but their heavy weight and experimental fuels limited their serviceability.



Flame throwers used compressed air mixed with a liquid fuel. Ignited by a flame wand or gun, the flame thrower launched a stream of burning fuel to varying distances.

During the interwar period the U.S. Army devoted little attention to flame thrower research and development, and the military considered it the least valuable of incendiary munitions.

French flame throwers as a trench defense, 1916

Reports of its successful use by Italy, Germany and Japan at the start of World War II prompted the U.S. Army to reopen development of a portable flame thrower. The Chemical Warfare Service was tasked to develop the weapon and a reliable, effective fuel. Their first product, the M1 Flame Thrower, was introduced in early 1943, and an improved version, the M2, was released the following year.

Weighing over seventy pounds, the M2 held four gallons of pressurized fuel with a maximum range of 50 yards. Its jellied fuel splattered and stuck to the target, burning long after the stream of flame stopped, an improvement over past fuels, which tended to flash and burnout quickly.



American M2-2 Flame Thrower, 1944

Flame throwers saw limited but successful use in the European theater. The most successful employment was in reducing hardened defenses, such as the concrete pillbox gun emplacements of Germany's Siegfried Line.



But it was in the Pacific Theater that the flame thrower proved itself, becoming one of the most effective weapons of the American forces. Fighting an enemy who chose to fight to the death, U.S. soldiers and marines used flame throwers to eliminate machinegun nests, bunkers, and fighting positions in caves that otherwise could be taken by direct assaults. The flame thrower achieved the same result but with fewer casualties.

A number of problems with the portable flame thrower soon emerged. Its fuel tank allowed only 60 seconds of operation, and its limited range made the operator vulnerable to enemy fire. To counter this problem, flame throwers were adapted and mounted in armored vehicles. Larger fuel tanks increased its operating time and doubled their range to over 100 yards, while the armor protected the operator from enemy fire. These mechanized flame throwers, or "Flame Tanks," were used in the Pacific at the end of the war, and would be used again in Korea five years later.



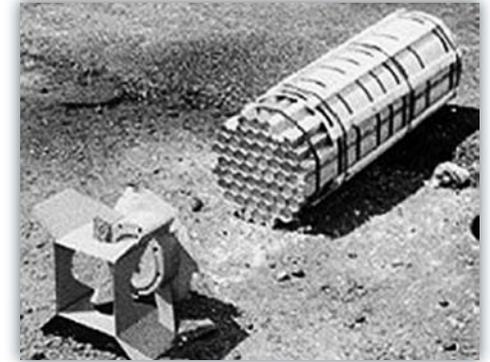
M132 "Zippo" Flame Tank, Vietnam 1969

Single-use flame throwers were tested at the close of World War II allowing the operator to use and discard it, freeing him of the weight, but this version was never fielded.

Both portable and vehicle-mounted flame throwers were used in Vietnam. However, unlike in previous conflicts, their use was not anti-personnel. Rather they were used to eliminate vegetative cover along defensive perimeters, roadways, and rivers, denying concealment for enemy ambushes.

Incendiary Bombs

During World War II the production of incendiary bombs became a prime mission of the Chemical Warfare Service. Filled with metallic compounds, like magnesium and thermite, incendiary bombs burned very hot and were difficult to extinguish. During the course of the war over 36 million incendiary bombs were dropped on Germany and Japan, and the resulting fires reduced many cities to ashes, left millions homeless, and helped cripple Axis war industry.



M-69 Incendiary Cluster Bomb, 1944



Napalm

Developed in 1942 as a flame thrower fuel, Napalm, the name given to a mixture of gasoline and thickening agents, was also used in flame throwers, aerially delivered bombs and flame field expedients throughout the Korean and Vietnam Wars.