

# ARCHIVED REPORT

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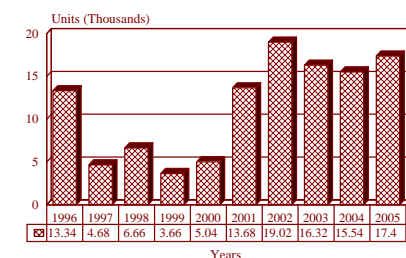
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## Mine Flach Flach - Archived 12/97

### Outlook

- Production of this munition for Mehrzweckwaffe-1 application winding down
- Production forecast for the Mehrzweckwaffe-2 and Autonomous Free Flight Dispenser applications
- Integration with other dispensers ongoing

10 Year Unit Production Forecast  
1996-2005



### Orientation

**Description.** An anti-tank submunition.

**Sponsor.** The development and German procurement of the Mine Flach Flach has been sponsored by the Federal Republic of Germany's Ministry of Defense through the Rüstungsabteilung (Armament Department) and Bundesamt für Wehrtechnik und Beschaffung (the Federal Defense Technology and Procurement Agency) through the Materialamt der Luftwaffe.

**Contractors.** The Mine Flach Flach was developed and is manufactured by Raketen Technik Gesellschaft mbH, Unterhaching, Bavaria, Federal Republic of Germany.

**Licensees.** None

**Status.** The development of the Mine Flach Flach is complete and the munition is operational with the

Mehrzweckwaffe-1 dispenser with serial production continuing. Integration with other dispensers derived from the Mehrzweckwaffe-1 dispenser as well as other dispensers is ongoing.

**Total Produced.** As of January 1, 1996, a total of 1,252,112 Mine Flach Flach submunitions had been manufactured.

**Application.** An aerial delivered anti-tank submunition (mine) which is activated by the noise of the passing vehicle.

**Price Range.** In equivalent 1996 United States dollars and based on a 500,000-unit procurement, a Mine Flach Flach submunition has a unit price of \$23.

### Technical Data

**Launch/Carrier Vehicle.** While the Mine Flach Flach was designed for the Mehrzweckwaffe-1, it has also been integrated with the dispensers derived from the Mehrzweckwaffe-1, specifically the Dispenser Weapon System-24 which is now being evaluated by Germany as

the Mehrzweckwaffe-2, the Dispenser Weapon System-39 dispenser and the Autonomous Free Flight Dispenser. Other potential dispensers include the Low Altitude Dispenser and Tactical Munitions Dispenser SUU-64/65 and various cruise and ballistic missiles; this list is not all inclusive.

Dimensions. The following data are for the present production standard.

	<u>SI units</u>	<u>US units</u>
Munition diameter	13.2 centimeters	5.20 inches
Munition length	9.8 centimeters	3.86 inches
Munition weight	3.4 kilograms	7.48 pounds

## Variants/Upgrades

Not applicable to this submunition.

## Program Review

**Background.** The Mine Flach Flach (sometimes called MIFF) program arose from a need for the Mehrzweckwaffe-1 dispenser to have a passive mine to deploy some distance in front of advancing armored units. While this submunition/mine can be used to stop an armored formation, its most likely use would be to force the vehicles into a narrow channel where they can be destroyed by other weapons. With its present user, the Mine Flach Flach is dispensed in conjunction with other submunitions as a part of the Main Target Group I and II submunitions packages of the Mehrzweckwaffe-1 dispenser. This captive type dispensing system as well as its derivatives is described in the pertinent report in this book.

**Munition Description.** As deployed in the Main Target Group I and II loadings, each Mehrzweckwaffe-1 tube contains 12 Mine Flach Flach submunitions. Each submunition contains two foam-cushioned flat cone-shaped charges 180° opposite each other, with the fuze and capacitor which provides the needed electric charge for the fuze to function located between the shaped charges. This capacitor is charged by the Mehrzweckwaffe-1 computer. The fuze mechanism is activated when the submunition is ejected. The Mine Flach Flach tumbles in the air; no stabilization system is provided. Upon impact, 13 springs are released; these springs position the submunition so one of the shaped charges is oriented upward. This completes the arming process. The main sensor is acoustic, thus the Mine Flach Flach is detonated when a vehicle passes over it; nearby Mine Flach Flach munitions are not detonated by the first detonation. The Mine Flach Flach is also integrated with features to prevent tampering and clearance. Among these features is the basic design which detonates the charge when the

munition is lifted by a bulldozer blade. This latter feature is what includes the Mine Flach Flach in both the Main Target Group I and Main Target Group II target loadings for the Mehrzweckwaffe-1 dispenser. After a factory-set time delay, the Mine Flach Flach self-destructs.

**Dispenser Weapon System-24/Dispenser Weapon System-39/Mehrzweckwaffe-2.** Beginning in the latter eighties, the Mehrzweckwaffe-1 contractor began the development of a stand-off version of the dispenser. Partially funded by Sweden against a requirement for a delivery system of this type for the new JAS-39 aircraft, the new dispenser was designated the Dispenser Weapon System-24 by the contractor and Dispenser Weapon System-39 by the Swedes. Basically, this dispenser, which is described in the Mehrzweckwaffe-1 report elsewhere in this book, is a gliding or stand-off version of the Mehrzweckwaffe-1 dispenser; in point of fact, the German Ministry of Defense is presently evaluating a slightly modified version of the new dispenser system as the Mehrzweckwaffe-2. While it has only 24 tubes, the Mehrzweckwaffe-2 dispenses the same types of submunitions (including the Mine Flach Flach) as the original Mehrzweckwaffe-1 dispenser. While the Swedish Dispenser Weapon System-39 is also compatible with the original Mehrzweckwaffe-1 submunitions, it is not known which (if any) of these submunitions are being procured by Sweden; indeed, Sweden has developed two indigenous submunitions for its Dispenser Weapon System-39.

**Autonomous Free Flight Dispenser.** This is another version of the Dispenser Weapon System-24 designed specifically for the F-16 Fighting Falcon aircraft. Again, the same submunitions as used in the original Mehrzweckwaffe-1 and its variants are used in this dispenser.

## Funding

The development and German procurement of the Mine Flach Flach is funded by the Federal Republic of Germany's Ministry of Defense through the Bundesamt für Wehrtechnik und Beschaffung.

## Recent Contracts

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Not available as the contractor and customers do not release contractual information.

## Timetable

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The following timetable relates to the Mine Flach Flach submunition only and to no other submunitions used on the Mehrzweckwaffe-1 dispenser.

	1966	Concept development initiated
	1978	First airborne tests
	1983	Serial production began
Nov	1984	First production deliveries
Early	1985	Initial operating capability
Late	1996	Production winding down for Mehrzweckwaffe-1 requirement; integration with other dispensers ongoing

## Worldwide Distribution

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**Export Potential.** As of late 1996, the only export sale of the Mehrzweckwaffe-1 dispenser has been to Italy, and the loading for those 100 units is completely the Startbahnbombe submunition. While the Mine Flach Flach was originally designed to be compatible with the Mehrzweckwaffe-1 and its derivatives, it could be integrated with other dispensers in the future. As of late 1996, it is still not known whether Sweden is procuring the Mine Flach Flach with its Dispenser Weapon System-39 dispenser which is in production for the Swedish air force. The Mine Flach Flach will be offered with the Autonomous Free Flight Dispenser.

**Countries. Federal Republic of Germany**

## Forecast Rationale

Up to early 1995, the production of the Mine Flach Flach has been directly related to the demand for the Main Target Group I and Main Target Group II loadings of the Mehrzweckwaffe-1 dispenser. The production for this application is terminating as the production of the Mehrzweckwaffe-1, a captive type dispenser which requires the strike aircraft to overfly the target, is winding down.

Although not presently reflected in our forecast, there is still a possibility that the Mine Flach Flach is or will be procured as part of the loading for the Swedish Dispenser Weapon System-39. However, until more information on the Swedish loadings of the Dispenser Weapon System-39 is made definite, we shall refrain from a forecast; this is due to the wide variety of submunitions (including at least two indigenous types) available to meet this requirement.

Our research now indicates that the Mine Flach Flach is a certain filling for both the Mehrzweckwaffe-2 and the Autonomous Free Flight Dispenser. We refer the reader to

the Mehrzweckwaffe-1 report elsewhere in this book for further information on these dispensers.

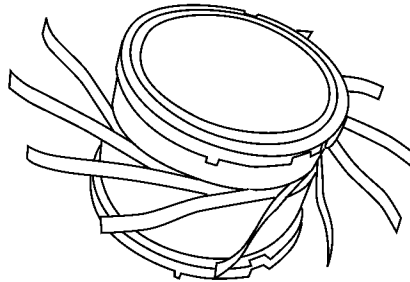
Our forecast for the production of the Mine Flach Flach has been and is predicated on each Mehrzweckwaffe-1 dispenser having forty percent of its tubes filled with the Mine Flach Flach in the Main Target Group I loading and twenty percent of its tubes filled with the Mine Flach Flach in the Main Target Group II loading. Of course, this filling will vary as per specific order because the Mehrzweckwaffe-1 is supplied as an all-up module already loaded; the modules are then integrated into a Mehrzweckwaffe-1 optimized for the particular mission. The total fillings will be likely to average out to numbers in this and the related Mehrzweckwaffe-1 submunition reports.

The same loading parameters are used for the forecast production of the Mine Flach Flach for the Mehrzweckwaffe-2 and Autonomous Free Flight Dispenser applications.

# Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION												
Munition	through 95	High Confidence Level			Good Confidence Level			Speculative				Total 96-05
		96	97	98	99	00	01	02	03	04	05	
RAKETEN TECHNIK GESELLSCHAFT												
MINE FLACH FLACH (a)	1252112	13340	4680	6660	3660	5040	13680	19020	16320	15540	17400	115340
Total Production	1252112	13340	4680	6660	3660	5040	13680	19020	16320	15540	17400	115340

(a)The through 1995 production figure contains several thousand research and developmental Mine Flach Flach submunitions for function, integration and dispensing tests. THE PRODUCTION SHOWN IN THIS CHART IS FOR THE MEHRZWECKWAFFE-1, MEHRZWECKWAFFE-2 AND AUTONOMOUS FREE FLIGHT DISPENSER APPLICATIONS ONLY!



**MINE FLACH FLACH**

Source: Raketen Technik Gesellschaft