SURFACE-TO-AIR MISSILES

Blowpipe

Notes: The Blowpipe is an older, British, shoulder-fired antiaircraft missile, replaced in British service by the Javelin, but used by home defense and territorial units. It is also several other countries around the world. The Mujahedin guerillas in Afghanistan put them to perhaps their most unusual use; they used them more often against light armor instead of aircraft (they preferred the Stinger for that), with a large amount of success. The missile must be guided its entire flight. If a Blowpipe aiming unit is not available, a Javelin SAM aiming unit may be used instead. The sight uses a x5 telescopic sight and includes a lightweight passive IR night vision unit.

Twilight 2000 Notes: Canada and Oman were using the Blowpipe only for live-fire training by the time of the Twilight War, but the remaining units were put back into service by both countries less than two years into the war.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Blowpipe	(Aiming Unit) 6.2 kg, (Missile Unit) 14.5 kg	Difficult	Command	All Aspect	(Aiming Unit) $3290, (Missile) $667

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Blowpipe	2	1700	500	3500	C7 B38	4C	FRAG-HE

Javelin

Notes: The Javelin is a shoulder-fired MANPADS missile incorporating advanced guidance capability. Developed as a replacement for the Blowpipe, the Javelin is now the standard man-portable antiaircraft missile for the British and several NATO and Commonwealth nations. The missile is similar in appearance to the Blowpipe, but is more compact and uses a more advanced warhead and seeker. The sight has been upgraded to x6 and also has long-range TV camera. It is close to impossible to decoy the Javelin with flares, though smoke, clouds, or fog can sometimes obscure its view of the target and decoy it in that way.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Javelin	(Aiming Unit) 8.9 kg, (Missile Unit) 15.4 kg	Average	TV/Optical	All Aspect	(Aiming Unit) $3204, (Missile) $5430

Weapon	Reload	Speed	Min Rang	Max Rng	Damage	Pen	Type

Javelin	1	1700	500	5500	C8 B38	4C	FRAG-HE

Javelin LML (Lightweight Multiple Launcher)

Notes: This is a three-round multiple launcher for the Javelin missile, employed by most countries using the Javelin. It is more often used as a vehicular launcher than a ground mount, but may also be used in the ground role. The Javelin LML is a simple tripod and frame for the three missiles, and the sight unit from one of the missiles' launchers is clipped to the LML to provide guidance. The LML includes a battery to power the sight unit and missiles, and has hydraulically-assisted traverse and elevation mechanisms.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Javelin LML	(Basic Unit) 32 kg, (With 3 Missiles) 77 kg	Average	TV/Optical	All Aspect	$7500

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Javelin LML	4	1700	500	5500	C8 B38	4C	FRAG-HE

Jernas

Notes: Jernas (an Arabic word for a falcon that has just reached maturity and is at the peak of it’s predatory ability) is an advanced trailer-mounted launcher for Rapier missiles. It has the ability to conduct day and night intercepts with equal skill, and can intercept ground attack aircraft, helicopters, cruise missiles, UAVs, and ARMs. Jernas uses an 8-round launcher along with a radar unit and a control vehicle mounted in a modified Land Rover, APC, or truck. The Jernas can control Rapier 2A or 2B missiles. Two targets may be engaged at the same time, and 75 may be tracked. Targets may be engaged optically if there is a high-ECM environment.

Twilight 2000 Notes: The Jernas system is not available, though the missiles (Rapier 2s) are.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Jernas	(Launcher) 2400 kg, (1 Missile) 43 kg	Average	Radar	All-Aspect	(Launcher) $160300, (1 Missile) $15196

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Rapier 2	8	4670	500	8000	C26 B94	13C	FRAG-HE

Rapier

Notes: This is a towed version of the Rapier system of the Tracked Rapier found in the *NATO Combat Vehicles Handbook.* It is normally deployed with a radar target acquisition and tracking unit, separate from the launcher. It is a quadruple launcher with its own short-range radar unit. This weapon is often found in NATO service.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Rapier	(Launcher) 1227 kg; (1 Missile) 42.6 kg	Average	Radar	All Aspect	(Launcher) $83055, (1 Missile) $15184

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Rapier 1	8	3250	500	7000	C23 B68	13C	FRAG-HE

Rapier 2000

Notes: The Rapier 2000 launching system (also known as Rapier Field Standard C or FS C) is a product-improved Rapier 1 launcher with upgraded fire control and detection systems. One of the main improvements is the ability to fire the upgraded Rapier 2 missiles as well as Rapier 1 missiles. The Rapier 2000 launcher is also more resistant to ECM (one level harder), and has improved detection abilities to allow it to find small targets like UAVs and cruise missiles more easily. The Rapier 2000 is also EMP-hardened and also resistant to corrosive chemical agents (and ordinary corrosion). The system can be integrated with the Blindfire radar, which allows some limited automatic target engagement as well as better functioning in bad weather. The system has an optical engagement capability for backup (if optical engagement is used, intercepts are two levels more difficult). Original British military requirements were for 205 launchers, but by 2000, only a little over one-quarter of that total had been funded.

Twilight 2000 Notes: British Rapier 1 launchers had been almost completely replaced by Rapier 2000 by the time of the Twilight War, but the Rapier 1 launchers were eventually fielded as well.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Rapier 2000	(Launcher) 2400 kg; (One Rapier 1 Missile) 42.6 kg; (One Rapier 2 Missile) 43 kg	Average	Radar	All Aspect	(Launcher) $160300, (Rapier 1 Missile) $15184, (Rapier 2 Missile) $15196

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type

Rapier 1	8	3250	500	7000	C23 B68	13C	FRAG-HE
Rapier 2	8	4670	500	8000	C26 B94	13C	FRAG-HE

Starburst

Notes: Starburst is an advanced British MANPADS SAM used by British and other countries' armies. It is a high accuracy system incorporating a laser sight to give a good first shot kill probability. They were used since they were a better system than Javelin and of lower cost than Starstreak, and since they were introduced before Starstreak, they are more available. Starburst was first used in combat in the 1991 Gulf War. The sight is similar to that of the Javelin.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Starburst	(Sight Unit) 8.5 kg, (Missile Unit) 15.2 kg	Easy	TV/Optical	All Aspect	(Sight Unit) $5804, (Missile) $3406

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Starburst	1	1870	400	6000	C9 B44	4C	FRAG-HE

Starburst LML (Lightweight Multiple Launcher)

Notes: This is a three-round launching platform for the Starburst missile. The sight adds night vision (Passive IR), and IFF capabilities to the Starburst, while allowing quick follow-up shots or multiple launches against a single target. The Starburst comes with a battery to power the missiles, sight unit, and the power-assisted elevation and traverse.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Starburst LML	(Basic Unit) 30.3 kg, (With 3 Missiles) 75.9 kg	Easy	TV/Optical	All Aspect	$8169

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Starburst LML	4	1870	400	6000	C9 B44	4C	FRAG-HE

Starstreak

Notes: This is an advanced British ADATS missile, primarily employed from vehicle mounts, but also available in a shoulder launcher. It is laser guided, with a triple warhead, making hitting easier. It is a hypervelocity missile, using three subcaliber high-speed kinetic energy penetrators (KEP) with a fragmentation warhead to enhance results. The individual penetrators are very small, but extremely fast and highly maneuverable. When firing a Starstreak, the player (or GM) should make three individual hit rolls, one for each penetrator. The damage and penetration figures below are per penetrator, not for the entire missile.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Starburst	(Sight Unit) 6 kg, (Missile Unit) 16.82 kg	Easy	TV/Optical	All Aspect	(Sight Unit) $6348, (Missile) $10820

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Starstreak	2	6820	50	7000	C2 B25	41C	KEP/FRAG-HE

Starstreak LML (Lightweight Multiple Launcher)

Notes: This triple launcher for the Starstreak may be ground or vehicle mounted. The LML is a basic mount carrying three Starstreak missile tubes, a tripod, and a power source for the missiles and launcher.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Starstreak LML	(Basic Unit) 15 kg, (With 3 Missiles) 51 kg	Easy	TV/Optical	All Aspect	$6675

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Starstreak LML	7	6820	50	7000	C2 B25	41C	KEP/FRAG-HE

ADATS

Notes: Developed by the Swiss as a private venture for export, the ADATS was adopted by the US Army and Canada as a heavy tactical missile for both air defense and antitank use (hence the name ADATS). Development continued by the Canadians, resulting in both the present-day ADATS missile and the M-113-based ADATS vehicle. The shelter-mounted version may be placed on the ground or on the back of a truck with at least a 5-ton capacity; the radar is carried on a separate vehicle. So far, the only country using the shelter-mounted ADATS is Thailand, and they use a Skyguard radar system for fire direction. Antiaircraft statistics are given below.

Twilight 2000 Notes: At least 300 of these units were deployed in Alaska and Western Canada by US and Canadian forces.

Merc 2000 Notes: This system, especially when mounted on a truck, has proven to be a popular lower-cost alternative to the M-113-based ADATS vehicle.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
ADATS	(Shelter System) 3040 kg; (Missile in Canister) 67 kg	Easy	Laser	All Aspect	(Shelter Launcher) $146170; (Missile) $4210

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
ADATS	13	5600	500	10000	C23 B70	175C	HEAT

DK-9

Notes: Similar in concept to the US Chaparral, the DK-9 is a ground or vehicle-mounted variant of the PL-9 air-to-air missile. The trailer-mounted version is mounted on a variant of the carriage for the Type 74 37mm AAA gun. The mount has launchers for four missiles and an IR sensor. It can be coupled with search radar or IR devices.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
DK-9	(Towed Launcher) 1740 kg, (Missile) 115 kg	Average	IR	All-Aspect	(Launcher) $101750, (Missile) $7500

Weapon	Speed	Min Rng	Max Rng	Damage	Pen	Type
DK-9	2905	500	15000	C51 B70	17C	HE

HN-5

Notes: This Chinese MANPADS missile has been widely distributed throughout the world, showing up in places such as North Korea, Iran, Iraq, Pakistan, Vietnam, Nicaragua, and many other countries. It is shoulder fired and has limited capability, but is cheap and readily available.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
HN-5	(Sight Unit) 4.5 kg, (Missile Unit) 11.5 kg	Difficult	IR	Rear Aspect	(Sight Unit) $3477, (Missile) $10469

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
HN-5	1	1300	400	4400	C6 B38	4C	FRAG-HE

HQ-2

Notes: The HQ-2 is an upgrade of the HQ-1 SAM system (a Chinese copy of the SA-2). As US ECM and ECCM capability grew, the Chinese realized the need for an almost complete redesign of the HQ-1. The first version, the HQ-2A, entered service in 1966, and shot down its first enemy aircraft, an American U-2, in September of 1967. Other users include Iran, North Korea, Albania, and Pakistan. There have been a number of variants to cope with improving US technology. The HQ-2 has a

secondary surface-to-surface attack capability, including land targets and ships, but it is very inaccurate when used in such a manner. (There is a tactical ballistic missile variant, the CSS-8, that is not so inaccurate in the surface-to-surface role, but the CSS-8 has no antiaircraft capability.)

Weapon	Weight	Accuracy	Guidance	Sensing	Price
HQ-2 Launcher	(Trailer Launcher) 9116 kg	NA	NA	NA	$164117
HQ-2A Missile	2332 kg	Formidable	Radar	All Aspect	$33376
HQ-2B Missile	2332 kg	Difficult	Radar	All Aspect	$33376
HQ-2F Missile	2332 kg	Difficult	Radar	All Aspect	$34192
HQ-2J Missile	2326 kg	Average	Radar	All Aspect	$34168
HQ-2P Missile	2326 kg	Average	Radar	All Aspect	$34128

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
HQ-2A	200	6250	7000	35000	C235 B218	68C	FRAG-HE
HQ-2B	200	6250	7000	35000	C235 B218	68C	FRAG-HE
HQ-2F	200	6250	7000	35000	C281 B244	68C	FRAG-HE
HQ-2J	213	6000	7000	34000	C281 B244	68C	FRAG-HE
HQ-2P	213	6000	7000	34000	C329 B262	68C	FRAG-HE

HQ-7

Notes: This missile system is the result of a technology transfer between France and China. The HQ-7

system is thus very similar in appearance and technical characteristics to the Crotale. The complete HQ-7 consists of one or more quadruple missile launchers, several maintenance vehicles, a control vehicle, a mobile generator, and a radar vehicle. (The launcher statistics below are for the launcher trailer itself.) The HQ-7 may detect and track its target by one of three methods: radar detection/IR launch/radar intercept; TV detection/IR launch/radar intercept; or manual/optical detection/launch/intercept. The system can track up to 30 targets and attack two of them at once. As far as is known, the HQ-7 is used only by the PLA, though there are persistent rumors of imminent sales to Pakistan.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
HQ-7 Launcher	(Trailer Launcher) 1152 kg	NA	NA	NA	$162235
FM-80 Missile	84.5 kg	Average	Radar	All Aspect	$24324
FM-90 Missile	84.5 kg	Easy	Radar	All Aspect	$24372

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
FM-80	20	3750	500	12000	C34 B80	16C	FRAG-HE
FM-90	20	3750	700	15000	C34 B80	16C	FRAG-HE

QW-1

Notes: This is the successor to the HN-5 in Chinese service, and has also been sold to countries such as Pakistan, Iran, Iraq, and Yugoslavia, among others. It has a higher speed, better seeker, and better target aspect capabilities.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
QW-1	(Sight Unit) 5 kg, (Missile Unit) 11.5 kg	Average	IR	Side Aspect	(Sight Unit) $3478, (Missile) $12488

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
QW-1	1	3000	300	5000	C7 B38	4C	FRAG-HE

QW-2

Notes: QW-2 is an advanced Chinese MANPADS missile, comparable to the Scorpion or Grappler. It uses advanced target acquisition and tracking features, and a combination guidance system to resist countermeasures.

Twilight 2000 Notes: The QW-2 was usually issued only to special operations troops due to its short supply, and the only export customers known were Pakistan and Iran, where it was in even shorter supply.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
QW-2	(Sight Unit) 6.68 kg, (Missile Unit) 11.5 kg	Easy	IR/Radar	All Aspect	(Sight Unit) $34048, (Missile) $16648

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
QW-2	3	3000	200	5000	C8 B38	4C	FRAG-HE

Sakr Eye

Notes: This is the standard Egyptian MANPADS SAM, a development of the SA-7. It is built of lighter components such as fiberglass and has a more advanced sight and better range and accuracy than its predecessor. The weapon can be equipped with night sights, something the SA-7 cannot be.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Sakr Eye	(Sight Unit) 5.1 kg, (Missile Unit) 9.9 kg	Average	IR	Side Aspect	(Sight Unit) $6992, (Missile) $12499

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type	Guidance
Sakr Eye	1	3040	150	4400	C4 B6	40C	FRAG-HE	IR

ATLAS

Notes: This is a two-round launcher for Mistral surface-to-air missiles. It is normally used from a light vehicle, but can also be used as a ground mount. The launcher has all the same sensors as the single Mistral launcher, and in addition has thermal imaging and a more stable mount. ATLAS also comes with a small battery to power the missiles and mount. In addition to France, this launcher is used by Belgium, Cyprus, and Abu Dhabi, and some very limited sales were made to Hungary and Italy.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
ATLAS	(Launcher) 124 kg, (1 Missile) 19 kg	Average	IR	Side Aspect	(Launcher) $7860, (1 Missile) $6708

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Mistral	3	4250	300	6000	C11 B50	7C	FRAG-HE

Crotale

Notes: This is a shelter-mounted version of the Crotale SHORAD system (Short-Range Air Defense). The system consists of a shelter mounted on a trailer, with the missile launcher and radar on the roof of the shelter. The complete system is air-transportable and droppable. France has about a dozen of these launchers, and it has been sold to undisclosed countries.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Crotale	(Shelter Launcher) 1346 kg; (Missile) 84 kg	Average	Radar	All Aspect	(Shelter) $31217, (Missile) $15884

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Crotale	15	3750	500	9500	C29 B80	16C	FRAG-HE

Crotale NG

Notes: This is an updated version of the Crotale SAM, along with an updated shelter launcher. The Crotale NG (New Generation) is completely all-weather, and the target acquisition and fire control is computer controlled. The NG is normally a vehicle-mounted system, but the French have about 12 shelter-mounted models for airfield defense. The unit can be operated by only two people.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Crotale NG	(Shelter Launcher) 2154 kg; (Missile) 75 kg	Easy	Radar	All Aspect	(Shelter) $36700, (Missile) $15820

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Crotale NG	14	4895	500	11000	C41 B94	16C	FRAG-HE

Matra Mistral

Notes: This French-built antiaircraft missile is fired from a pedestal mount or a vehicle mount. It is the standard medium man-portable SAM of France and several European countries. The pedestal mount is used to provide a more stable firing platform, but it is a bit heavy and as a result even the MANPADS Mistral is normally carried by a light vehicle even if it is not actually mounted on that vehicle. The launcher includes an IFF device. The Mistral can also be used as an AAM. The Mistral is being used by almost 20 countries.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Mistral	(Ground Launcher) 24 kg; (Missile) 19 kg	Average	IR	Side Aspect	(Launcher) $6280, (Missile) $6708

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Mistral	3	4250	300	6000	C11 B50	7C	FRAG-HE

MBB-7 Venusfliegenfalle

Notes: This weapon does not exist in real life.

Twilight 2000 Notes: This is an advanced German MANPADS SAM used by special operations units of several NATO nations. It is a very rare missile, coming into limited production just before the Twilight War, and air strikes stopping production soon thereafter. It is shoulder-fired, with advanced homing and tracking characteristics.

Merc 2000 Notes: The MBB-7 was placed into production in late 2002 and became a big seller in NATO countries.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
MBB-7	(Sight Unit) 5 kg, (Missile Unit) 11 kg	Easy	Radar/IR	All Aspect	(Sight Unit) $5410, (Missile) $16645

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
MBB-7	2	3750	100	7000	C10 B44	4C	FRAG-HE

TAS

Notes: TAS (Tripod-Adapted Stinger) is a simple mounting of two Stinger launchers on a lightweight tripod launcher, along with a thermal imager and an IFF device. The gunner operates the TAS by overhead handgrips; the traverse and elevations mechanism have hydraulic assists to make tracking and aiming easier. The sight is virtually identical to the standard Stinger sight and use of the TAS requires very little additional training.

Twilight 2000 Notes: The TAS does not exist.

Merc 2000 Notes: This is one of those weapons that sees a few sales here and there, but not many.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
TAS	(Launcher) 47 kg	NA	NA	NA	$7480
FIM-92A	10.7 kg	Average	IR	Side Aspect	$4550

FIM-92B	10.7 kg	Average	IR	All Aspect	$6553

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type	Guidance
FIM-92A Stinger	2	3735	200	4400	C7 B38	4C	FRAG-HE	IR
FIM-92B Stinger	2	3735	200	4800	C8 B38	4C	FRAG-HE	IR

Roland

Notes: This combined product of French and German technology was conceived as early as 1964, but firing units were not delivered to military units of France until 1977, and Germany in 1978. There ware three flavors of Roland: the Roland 1, a clear-weather system, the Roland 2, designed for use in all weather conditions, and the Roland 3, which adds IR capability, upgraded sights and radar, and upgraded fire control computers. Roland 1 is now largely out of service; the firing units have mostly been upgraded to the Roland 2 standard, and the missiles destroyed or used for training purposes only. Roland 3 began replacing Roland 2 in NATO units as early as 1988, but budgetary difficulties have slowed the process considerably, and few Roland 3 launchers and missiles are actually in service. (France and Germany hope to have all their launchers and missiles replaced by Roland 3 by 2010.)

Twilight 2000 Notes: Roland 3 exists in somewhat greater numbers in the Twilight 2000 world, but Roland 1 launchers and missiles have also been placed back into service.

Merc 2000 Notes: Budget cuts have slowed Roland 3 acquisition to nearly zero.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Roland 1	(Ground Launcher) 552 kg, (Missile) 60 kg	Average	Radar	All Aspect	(Ground Launcher) $73475, (Missile) $22778
Roland 2	(Ground Launcher) 528 kg, (Missile) 66.5 kg	Average	Radar	All Aspect	(Ground Launcher) $88750, (Missile) $22819
Roland 3	(Ground Launcher) 566 kg, (Missile) 75 kg	Easy	Radar and IR	All Aspect	(Ground Launcher) $64200, (Missile) $25838

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Roland 1	12	2170	500	4800	C29 B75	13C	FRAG-HE
Roland 2	13	2500	500	6300	C34 B80	17C	FRAG-HE
Roland 3	13	2850	500	8000	C38 B88	17C	FRAG-HE

Skyguard/Sparrow

Notes: This SAM system combines launchers for AIM-7E, AIM-7F, AIM-7M, or Aspide missiles and a Skyguard radar system for use in an air defense role. These are mid-budget systems used by some countries to improve or supplement their current air defense systems. The system can be used in conjunction with 35mm Oerlikon GDF-003 autocannon systems to provide a more comprehensive air defense solution. Known users include Egypt (who calls it the Amoun system), Greece (who calls it the Velos system), Taiwan, Kuwait, Spain (who use it with the Aspide missile, and calls it the Toledo system), and Italy and Thailand (also using it with the Aspide missile).

Twilight 2000 Notes: Thailand is not using this system, and Spain is using it with Sparrow missiles.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Skyguard/Sparrow	(Launcher) 2930 kg	NA	NA	NA	$165445
AIM-7E	205 kg	Difficult	Radar	All Aspect	$17760
AIM-7E2	205 kg	Average	Radar	All Aspect	$17760
AIM-7F	228 kg	Average	Radar	All Aspect	$17728
AIM-7M	228 kg	Average	Radar	All Aspect	$17768
Aspide	220 kg	Average	Radar	All Aspect	$23724

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
AIM-7E	49	3110	1600	44000	C42 B94	23C	FRAG-HE
AIM-7E2	49	3110	1070	44000	C47 B100	23C	FRAG-HE
AIM-7F	49	3550	1600	80000	C54 B106	23C	FRAG-HE
AIM-7M	49	4500	1600	88000	C60 B112	23C	FRAG-HE
Aspide	49	6795	3500	75000	C54 B106	23C	FRAG-HE

Barak-1

Notes: Originally developed by Israel in the late 1980s for use by ships, the Barak-1 is a lightweight missile for defense against both aircraft and weapons such as tactical missiles, smart bombs, air-to-surface missiles, ATGM, and unguided rounds. The missile may be guided by IR, radar, laser, or manually steered, depending on the ECM/IRCM environment. Though it is used by the mobile ADAMS system, there are no independent launchers.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Barak-1	(Missile) 88 kg	Easy	Radar/IR/Laser/Optical	All Aspect	(Missile) $55780

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Barak-1	13	3735	500	13000	C44 B94	19C	FRAG-HE

Dzhigit

Notes: This is a dual-missile ground or vehicle mount for SA-16 or SA-18 missiles, similar in concept to the RBS-90 dual missile launcher. It was new issue to Warsaw Pact and Russian troops in 1995, and thus was somewhat rare during the Twilight War. Some shipments also made it to the Middle East, mostly to Iraq and Iran, and some were also encountered in Cuba. The mount takes standard SA-16 or SA-18 missile tubes, which are simply snapped into place. The Dzhigit system includes passive IR for the gunner.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Dzhigit	(Launcher) 80 kg	NA	NA	NA	$7468
SA-16	13.5 kg	Average	IR	Side Aspect	$12499
SA-18A	(Sight Unit) 4.4 kg, (Missile) 13.6 kg	Easy	IR	All Aspect	$14499
SA-18B	(Sight Unit) 4.4 kg, (Missile) 12.9 kg	Easy	IR	All Aspect	$14482
SA-18C	(Sight Unit) 4.4 kg, (Missile) 15.1 kg	Easy	IR	All Aspect	$14544
SA-18D	(Sight Unit) 4.4 kg, (Missile) 18.1 kg	Easy	IR	All Aspect	$14561

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-16	1	2850	200	5200	C7 B38	4C	FRAG-HE
SA-18A	1	2850	200	5200	C7 B38	4C	FRAG-HE
SA-18B	1	2850	200	5700	C7 B38	4C	FRAG-HE
SA-18C	1	2850	200	5200	C8 B38	4C	FRAG-HE
SA-18D	1	2850	200	6900	C8 B38	4C	FRAG-HE

SA-2 Guideline

Notes: This was the first successful Russian SAM (the SA-1 Guild being less than impressive).

Russian designation is the S-75. The biggest claim to fame for the Guideline may be the fact that it was used to bring down the U-2 piloted by Francis Gary Powers in 1960 (it took 14 missiles to finally achieve a hit, including a miss that downed one of their own MiG-19s). They were used en masse by the North Vietnamese against American aircraft, where US pilots called them "flying telephone poles." The Chinese used a large number of them in the 1960s against Taiwanese aircraft. They were used to down more US aircraft by Cuba in the 1960s and 1970s. Pakistan, Egypt, Syria, Iraq, Libya, Serbia, Albania, and many other countries have all used the SA-2 in combat. As the years wore on, the SA-2 became less and less effective, even with improvements, due to US, NATO, and Israeli ECM and ECCM developments, leading to the two "Volga" upgrade packages in early and mid 1990s.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-2	(Launcher) 6694 kg	NA	NA	NA	$807800
SA-2A	2287 kg	Formidable	Radar	All Aspect	$32520
SA-2B	2287 kg	Difficult	Radar	All Aspect	$32520
SA-2C	2287 kg	Difficult	Radar	All Aspect	$32736
SA-2D	2450 kg	Average	Radar	All Aspect	$40480
SA-2E	2450 kg	Average	Radar	All Aspect	$40680
SA-2F	2287 kg	Average	Radar	All Aspect	$40016
SA-2 Volga	2450 kg	Easy	Radar	All Aspect	$40424
SA-2 Volga-M	2450 kg	Easy	Radar	All Aspect	$40584

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-2A	195	5945	8000	30000	C235 B218	68C	FRAG-HE
SA-2B	195	5945	10000	30000	C235 B218	68C	FRAG-HE
SA-2C	195	5945	9300	39000	C235 B218	68C	FRAG-HE
SA-2D	295	5945	7000	43000	C281 B146	68C	FRAG-HE
SA-2E	295	5945	7000	55000	C281 B146	68C	FRAG-HE
SA-2F	295	5945	6000	30000	C329 B262	68C	FRAG-HE

SA-2 Volga	295	5945	5000	55000	C375 B280	68C	FRAG-HE
SA-2 Volga-M	295	5945	5000	67000	C375 B280	68C	FRAG-HE

SA-3 Goa

Notes: The Russian designation of this missile system is the S-125 Neva (or Pechora in its export version). It is intended to be a lighter SAM for tactical use from a trailer-mounted quadruple launcher. The Goa is used for airfield defense, low-level defense in conjunction with longer-range SAMs, and rear-area defense in conjunction with the SA-2 system. In addition, a variant known as the Volna is used on some Russian ships. First combat use was by Egyptian units against Israeli aircraft in 1970, where it was regarded as semi-successful, downing five F-4E Phantoms. In 1972, the North Vietnamese began using them against the US Linebacker series of air raids, but the only successful kill against US aircraft by an SA-3 was against an F-4J. The SA-3 has since been used in the 1973 Yom Kippur War, the Iran-Iraq War (by Iraq), the 1991 Gulf War, the 1982 Bekaa Valley battles, Libya against US aircraft, by Angola against South African aircraft, and in the 2003 Operation Iraqi Freedom and the various air strikes of the 1990s and 2000s leading up to it. It is believed that of over 2300 SA-3 missile fired over the years, there have been less than 50 successful downings of aircraft by them, and the Goa is generally regarded as a rather poor SAM. There are perhaps less than 100 SA-3 launchers, fixed and mobile, left in the world.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-3	(Launcher) 9149 kg	NA	NA	NA	$102859
SA-3A	639 kg	Formidable	Radar	All Aspect	$20328
SA-3B	641 kg	Formidable	Radar	All Aspect	$20192

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-3A	60	5945	6000	22000	C128 B162	49C	FRAG-HE
SA-3B	60	5945	2500	25000	C154 B180	49C	FRAG-HE

SA-4 Ganef

Notes: Though this massive tactical missile is launched by a rocket booster charge, the sustainer motor is actually a ramjet engine. It carries a massive warhead and usually blows an enemy aircraft to bits when it hits; thankfully for Allied pilots, it is not very accurate. It is only launched from mobile vehicle or fixed launchers. The weapon may be optically guided in heavy ECM environments; all accuracy levels are lowered by two levels.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-4A	(Missile) 2500 kg	Difficult	Radar	All Aspect	(Missile) $93944
SA-4B	(Missile) 2500 kg	Difficult	Radar	All Aspect	(Missile) $95496
SA-4C	(Missile) 2500 kg	Difficult	Radar	All Aspect	(Missile) $94120

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-4A	1086	4245	8000	55000	C694 B380	122C	FRAG-HE
SA-4B	1111	4245	3000	50000	C832 B418	122C	FRAG-HE
SA-4C	1090	4245	9300	72000	C832 B418	122C	FRAG-HE

SA-5 Gammon

Notes: This is the NATO reporting name of the S-200 Angara. It is an old missile developed back in the 1950s to bring down high altitude aircraft such as the B-70, B-52, and U-2. It was first deployed in 1963, and fired against SR-71 aircraft (without success) in 1966. There have been periodic hardware and software updates over the years to cope with the increasing level of US, NATO, and Israeli ECM and ECCM sophistication. The biggest handicap of the Gammon is its wide minimum range, dictated by the burnout time of the 4 drop-away rocket boosters. Another handicap is the general lack of maneuverability of the missile.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-5	(Launcher) 7720 kg	NA	NA	NA	$757025
SA-5A	2800 kg	Formidable	Radar	All Aspect	$43072
SA-5B	2800 kg	Formidable	Radar	All Aspect	$25 Million
SA-5C	2800 kg	Difficult	Radar	All Aspect	$43880

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type

SA-5A	300	12500	7000	150 km	C694 B380	122C	FRAG-HE
SA-5B	300	12500	7000	250 km	Special	Special	25 kT Nuclear
SA-5C	300	12500	7000	300 km	C832 B418	122C	FRAG-HE

SA-6 Gainful

Notes: Although classed as a tactical weapon, the SA-6 is rather large for that role, and was normally used at Division level and above, or to intercept aircraft at medium to high altitude. It is only employed from mobile or fixed launchers. In heavy ECM environments, the weapon may be guided by optics; all accuracy ratings are lowered by two levels.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-6A	(Missile) 599 kg	Difficult	Radar	All Aspect	(Missile) $23016
SA-6B	(Missile) 599 kg	Average	Radar	All Aspect	(Missile) $22632

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-6A	217	3000	3000	24000	C126 B162	43C	FRAG-HE
SA-6B	211	3000	2500	30000	C126 B162	43C	FRAG-HE

SA-7 Grail

Notes: This was the Russian's first attempt at a MANPADS missile, and is still used throughout the Third World. It is cheap, and that is why it is still encountered in quantity. It is no longer used by Pact or Chinese forces. The Grail is generally regarded as a poor missile that rarely brings down its target, even when it achieves a direct hit.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-7A	(Sight Unit) 4.17 kg, (Missile Unit) 9.15 kg	Formidable	IR	Rear Aspect	(Sight Unit) $3437, (Missile) $2491

SA-7B	(Sight Unit) 4.95 kg, (Missile Unit) 9.85 kg	Difficult	IR	Rear Aspect	(Sight Unit) $4340, (Missile) $2483

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-7A	1	2150	800	3600	C5 B30	4C	FRAG-HE
SA-7B	1	2900	800	4200	C6 B38	4C	FRAG-HE

SA-8 Gecko

Notes: This medium SAM is only launched from a mobile launcher on a vehicle. The missile is command guided; radio signals from the ground are sent to the missile for course corrections, based on radar information. The SA-8 may also be directly guided by a TV camera; this makes the intercept two levels harder, but can be useful in high-ECM environments. The SA-8 has a long range, but is hampered by a wide minimum range.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-8A	(Missile) 126.3 kg	Average	Command	All Aspect	(Missile) $3040
SA-8B	(Missile) 126.3 kg	Average	Command	All Aspect	(Missile) $3103

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-8A	20	4075	1500	12000	C58 B112	24C	FRAG-HE
SA-8B	20	4075	1500	15000	C58 B112	24C	FRAG-HE

SA-9

Notes: This is a medium heat-seeking SAM normally launched from a mobile launch vehicle, though there are towed and fixed installations, usually with 4 launchers on each mount. It is used to fill the gap between the rather heavy SA-8 system and the hand-held SA-7 and SA-14 launchers.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-9A	(Ground Launcher) 368 kg, (Missile) 32 kg	Average	IR	Rear Aspect	(Launcher) $11760, (Missile) $10690

SA-9B	(Ground Launcher) 368 kg, (Missile) 32 kg	Average	IR	Side Aspect	(Launcher) $11720, (Missile) $12714

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-9A	3	3060	800	4200	C17 B60	11C	FRAG-HE
SA-9B	3	3060	560	8000	C19 B62	11C	FRAG-HE

SA-13 Gopher

Notes: This medium SAM is launched only from mobile vehicular launchers and towed launchers. (Towed launchers normally have two launcher boxes). It is used for short-range close support of ground troops, and replaced the SA-9 in Russian and Warsaw Pact service, as well as about 10 other countries. Though it does use a radar unit, this is for ranging and detection only; the actual guidance is done by IR.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-13A	(Ground Launcher) 212 kg, (Missile) 39.2	Average	IR	Side Aspect	(Launcher) $6536, (Missile) $12722
SA-13B	(Ground Launcher) 212 kg, (Missile) 42 kg	Average	IR	All Aspect	(Launcher) $6536, (Missile) $14725

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-13A	3	4000	800	5000	C19 B62	11C	FRAG-HE
SA-13B	3	4000	200	5000	C19 B62	11C	FRAG-HE

SA-14 Gremlin

Notes: This is an improved version of the SA-7, with better guidance features. It is also less vulnerable to flares (one level harder to decoy with flares), and is less likely to take off after heat sources like the Sun.

Weapon	Weight	Accuracy	Guidance	Sensing	Price

SA-14A	(Sight Unit) 2.75 kg, (Missile Unit) 13.25 kg	Average	IR	Side Aspect	(Sight Unit) $3460, (Missile) $12486
SA-14B	(Sight Unit) 2.75 kg, (Missile Unit) 13.25 kg	Average	IR	Side Aspect	(Sight Unit) $3460, (Missile) $12486

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-14A	2	2350	500	4500	C6 B38	4C	FRAG-HE
SA-14B	2	2350	500	4500	C7 B38	4C	FRAG-HE

SA-15

Notes: This missile is launched only from the SA-15 self-propelled antiaircraft missile launcher or from ships (where it is known as the SA-N-9). It is a very maneuverable and large missile with a great degree of launch flexibility. The SA-15 is capable of intercepting not only aircraft and helicopters, but also cruise missiles, UAVs (one level harder) and precision-guided munitions (two levels harder). In difficult ECM environments, the SA-15 can be optically guided (two levels more difficult). As far as is known, the only two countries using the SA-15 are Russia and the Ukraine, though China and India are reportedly both interested.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-15	(Missile) 167 kg	Easy	Radar	All Aspect	(Missile) $46488

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-15	21	4250	1000	12000	C83 B130	28C	HE-FRAG

SA-16 Gimlet

Notes: This is the standard Russian MANPADS SAM, used by Russian, Pact, Chinese, Iraqi, Iranian, and several countries' forces. It uses advanced homing capabilities. Two versions exist: one version (Igla-1E) primarily equips Russian and former Warsaw Pact troops, and has all the bells and whistles normally designed into the SA-16. The second version (Igla-1M) has no IFF interrogator (a device that tells the operator when he is aiming at a friendly aircraft).

Weapon	Weight	Accuracy	Guidance	Sensing	Price

SA-16	(Sight Unit) 3.15 kg, (Missile Unit) 13.5 kg	Average	IR	Side Aspect	(Sight Unit) $3460, (Missile) $12499

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-16	1	2850	200	5200	C7 B38	4C	FRAG-HE

SA-18 Grouse

Notes: Just as the SA-14 is an improved SA-7, the SA-18 is an improved SA-16. As such, it is used alongside the SA-16 in Russian service and some Pact countries, mostly by airborne troops and special operations units. It is highly resistant to countermeasures such as flares (one level harder to decoy).

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-18A	(Sight Unit) 4.4 kg, (Missile) 13.6 kg	Easy	IR	All Aspect	(Sight Unit) $3460, (Missile) $14499
SA-18B	(Sight Unit) 4.4 kg, (Missile) 12.9 kg	Easy	IR	All Aspect	(Sight Unit) $3460, (Missile) $14482
SA-18C	(Sight Unit) 4.4 kg, (Missile) 15.1 kg	Easy	IR	All Aspect	(Sight Unit) $3460, (Missile) $14544
SA-18D	(Sight Unit) 4.4 kg, (Missile) 18.1 kg	Easy	IR	All Aspect	(Sight Unit) $3460, (Missile) $14561

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-18A	1	2850	200	5200	C7 B38	4C	FRAG-HE
SA-18B	1	2850	200	5700	C7 B38	4C	FRAG-HE
SA-18C	1	2850	200	5200	C8 B38	4C	FRAG-HE
SA-18D	1	2850	200	6900	C8 B38	4C	FRAG-HE

SA-19

Notes: This weapon is launched from mobile vehicle launchers, such as the 2S6M Tunguska gun/

missile air defense vehicle or the Pantzyr 1. It is a very maneuverable missile, but has a very high minimum range. Current users include Russia, India, and China.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-19A	(Missile in Container) 84 kg	Easy	Radar	All Aspect	(Missile) $44968
SA-19B	(Missile in Container) 90 kg	Easy	Radar	All Aspect	(Missile) $45306

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-19A	4	4500	1000	8000	C44 B94	19C	HE-FRAG
SA-19B	9	5500	1000	12000	C44 B94	19C	HE-FRAG

SA-27 Grappler

Notes: This weapon does not exist in real life.

Twilight 2000 Notes: This advanced Russian MANPADS missile was in limited use by Russian and Pact special operations forces during the Twilight War. Supplies were never high and they were generally hoarded by such units for special missions. It uses advanced target acquisition and homing capabilities. The Grappler incorporates a lightweight thermal imager.

Merc 2000 Notes: Use of this weapon was generally restricted in Russia to special operations, though it was also sold to India and Iraq.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SA-27	(Sight Unit) 4.5 kg, (Missile Unit) 10.5 kg	Easy	Radar/IR	All Aspect	(Sight Unit) $4360, (Missile) $14637

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SA-27	2	3395	100	6000	C12 B50	5C	FRAG-HE

SAHV-IR/SAHV-3

Notes: The SAHV-IR is a SAM made by combining the Crotale with the IR seeker of the Darter AAM and a better, high-performance engine. It has utility against aircraft, tactical missiles, and smart munitions, with a higher speed and better target acquisition and tracking capabilities. Several different methods are guided for different countermeasure environments, including active and passive radar and IR. The combination of Radar and IR also allows a LOAL (Lock-On After Launch) capability; the SAHV-3 missile can be pointed in the general direction of the target, get a minimal bearing using IR, then lock on with radar after the missile has been launched. It also allows a shorter minimum range than can be normally used with radar homing missiles.

SAHV-3 is also an improved model of the Crotale, though not as advanced as the SAHV-IR; it uses the improved engine, but not the combination IR/radar seeker head.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
SAHV-IR	(Ground Launcher) 3098 kg	NA	NA	NA	$205500
SAHV-IR	(Missile in Container) 178 kg	Easy	Radar/IR	All Aspect	$22320
SAHV-3	(Missile in Container) 165 kg	Easy	Radar	All Aspect	$16466

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
SAHV-IR	20	5180	500	8500	C49 B100	20C	FRAG-HE
SAHV-3	20	5945	800	12000	C49 B100	20C	FRAG-HE

RBS-70/RBS-90

Notes: The RBS-70 is a Swedish pedestal-launched SAM also used by Denmark and Norway. The RBS-90 is a twin mount for the same missile. The missile must be guided its entire flight. Though the normal minimum range is 500 meters, this is with normal proximity fuzing and safeties; if necessary, the safeties can be disabled by the gunner, reducing the minimum range to zero.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
RBS-70	(Launcher and Sight) 60 kg, (Missile Unit) 26.5 kg	Average	Command	All Aspect	(Launcher and Sight) $31050, (Missile) $5386
RBS-90	(Launcher and Sight) 170 kg, (Two Missile Units) 53 kg	Average	Command	All Aspect	(Launcher and Sight) $31650, (2 Missiles) $10772

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
RBS-70	3	2900	500	7000	C15 B50	9C	FRAG-HE
RBS-90	7	2900	500	7000	C15 B50	9C	FRAG-HE

Chaparral

Notes: This is a ground vehicle mounted version of the early version of the AIM-9 Sidewinder air-to-air missile. It is found only on towed mounts and on the M-54 quadruple launcher mounted on the M-48 Chaparral vehicle. The Chaparral has been sold to 8 countries.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
MIM-72G Chaparral	(Missile) 86.2 kg	Average	IR	Side Aspect	(Missile) $13117

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Chaparral	6	1870	500	9000	C21 B70	12C	FRAG-HE

FIM-43 Redeye

Notes: The Redeye was one of the MANPADS (Man-Portable Air-Defense System) missiles, appearing in the late 1950s. It is inferior to modern SAMs, but is still used in many Third World countries and found in the National Guard. It was exported to 13 countries, but is mostly in reserve use even in those countries.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
FIM-43 Redeye	(Sight Unit) 4.4 kg, (Missile Unit) 8.7 kg	Difficult	IR	Rear Aspect	(Sight Unit) $1040, (Missile Unit) $2104

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Redeye	3	2720	500	5500	C5 B30	4C	FRAG-HE

FIM-92 Stinger

Notes: This weapon is the standard MANPADS in the US, Canada, and many other countries worldwide, from Israel to Afghan Guerillas. It is easy to get a hold of on the black market, and a lively trade in Stingers has been kept up for years. It is a shoulder-fired missile with advanced infrared guidance.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
FIM-92A Stinger	(Sight Unit) 5 kg, (Missile Unit) 10.7 kg	Average	IR	Side Aspect	(Sight Unit) $4640, (Missile Unit) $4550
FIM-92B Stinger	(Sight Unit) 5 kg, (Missile Unit) 10.7 kg	Average	IR	All Aspect	(Sight Unit) $4640, (Missile Unit) $6553

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type	Guidance
FIM-92A Stinger	2	3735	200	4400	C7 B38	4C	FRAG-HE	IR
FIM-92B Stinger	2	3735	200	4800	C8 B38	4C	FRAG-HE	IR

FIM-99 Scorpion

Notes: This weapon does not exist in real life.

Twilight 2000 Notes: This advanced MANPADS shoulder-fired missile was in limited production before, and for a short time, during the Twilight War. It was primarily issued to US and NATO special operations troops due to its short supply. It uses televisual and advanced IR guidance. The sight incorporates a thermal imager.

Merc 2000 Notes: This weapon started replacing the Stinger in US, NATO, Israeli, and South Korean service starting in 2005.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
FIM-99 Scorpion	(Sight Unit) 6 kg	Easy	IR/Optical	All Aspect	(Sight Unit) $5190, (Missile) $7517

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
Scorpion	2	3205	100	7000	C12 B50	5C	FRAG-HE

HAWK

Notes: The HAWK (Homing All the Way Killer) is a radar-homing SAM first fielded by the US in 1960. HAWK was later sold to almost 25 countries, and it can be found in most areas of the world. There have been numerous improvements in hardware and software over the years to keep up with enemy ECM and ECCM, starting in 1964; these include I-HAWK (Improved HAWK, or MIM-23A), and HAWK-PIP (Product Improvement Program, or MIM-23B). The HAWK-PIP or later versions can use the radar system of the Patriot as well as the one designed for it, and HAWK-PIP's and Patriots are able to interoperate. In addition, the HAWK-PIP and I-HAWK can interoperate with the European Skyguard/ Sparrow system.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
HAWK	(2-Round Launcher) 4600 kg; (3-Round Launcher) 8500 kg	NA	NA	NA	(2-Round Launcher) $295460; (3-Round Launcher) $358650
MIM-23	584 kg	Difficult	Radar	All Aspect	$20128
MIM-23A	584 kg	Average	Radar	All Aspect	$20128
MIM-23B	627.3 kg	Average	Radar	All Aspect	$21720
MIM-23C/D	627.3 kg	Average	Radar	All Aspect	$21568
MIM-23E/F	627.3 kg	Easy	Radar	All Aspect	$21568
MIM-23G	627.3 kg	Easy	Radar	All Aspect	$21568

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
MIM-23	54	4585	2000	32000	C171 B130	49C	HE
MIM-23A	54	4585	2000	32000	C128 B162	49C	HE-FRAG
MIM-23B	75	4585	1500	40000	C154 B180	49C	HE-FRAG

MIM-23C/D	75	4585	1500	40000	C180 B194	49C	HE-FRAG
MIM-23E/F	75	4585	1500	40000	C180 B194	49C	HE-FRAG
MIM-23G	75	4585	1500	40000	C206 B206	49C	HE-FRAG

Nike-Hercules

Notes: This is an old SAM that once formed the backbone of US air defenses, but is no longer in US service. Countries using the Nike-Hercules now include Greece, Italy, South Korea, and Turkey. (South Korea has converted about one-quarter of its Nike-Hercules missiles into surface-to-surface ballistic missiles known as the NKH-I/II.) The Nike-Hercules is a large two-stage missile with a single engine in its upper stage and a cluster of 4 rockets in its lower stage. The missile is initially launched by remote control under manual guidance, and when the lower stage is jettisoned, the missile comes under its own active radar control. The missile actually climbs above the target, and then dives down on it. There were once nuclear-tipped Nike-Hercules missiles, but they were deployed only in the US and were never exported. Current models are equipped with high explosive warheads.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Nike-Hercules	(Launcher) 34827 kg	NA	NA	NA	$764682
MIM-14A	4868.6 kg	Difficult	Command + Radar	All Aspect	$67368
MIM-14B	4868.6 kg	Average	Command + Radar	All Aspect	$48768

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
MIM-14A	505	5690	7000	155 km	C800 B285	113C	HE
MIM-14B	273	6200	6000	155 km	C600 B356	113C	FRAG-HE

Patriot

Notes: This is the primary US air defense missile for use against aircraft of all types and against ballistic missile warheads. Development on what would become the Patriot began as early as 1961,

but operational deployment did not begin until 1984. There have been a number of improvements over the years, but the basic missile body is unchanged. Normal launching is done from trailer-mounted quadruple launchers towed by HEMTT trucks, but the Germans also have some launchers mounted directly on 8x8 MAN trucks, and some experimentation has been done with two-round launchers mounted on FMTV trucks. Note that interception of ballistic missile warheads is a task that is two levels more difficult than normal.

Twilight 2000 Notes: MIM-104E is not available.

Merc 2000 Notes: MIM-104D and E are very rare.

Weapon	Weight	Accuracy	Guidance	Sensing	Price
Patriot	(Launcher) 8182 kg	NA	NA	NA	$796250
MIM-104A	700 kg	Difficult	Radar	All Aspect	$52304
MIM-104B	700 kg	Average	Radar	All Aspect	$52304
MIM-104C	700 kg	Easy	Radar	All Aspect	$52304
MIM-104D	700 kg	Easy	Radar	All Aspect	$52304
MIM-104E	700 kg	Very Easy	Radar	All Aspect	$52304

Weapon	Reload	Speed	Min Rng	Max Rng	Damage	Pen	Type
MIM-104A	73	8495	6000	117 km	C189 B200	55C	FRAG-HE
MIM-104B	73	8495	5000	160 km	C221 B212	55C	FRAG-HE
MIM-104C	73	8495	4000	160 km	C221 B212	55C	FRAG-HE
MIM-104D	73	8495	3000	160 km	C252 B230	55C	FRAG-HE
MIM-104E	73	8495	3000	196 km	C315 B256	55C	FRAG-HE