The TOS-1A heavy flamethrower system is designed for providing fire support to infantry and tanks, defeating enemy manpower from open and closed firing positions in a variety of offensive and defensive combat, as well as disabling light armored vehicles and transport. Combined target destruction is achieved through effects of high temperature and overpressure.

The TOS-1A system includes:

- BM-1 combat vehicle with a launcher mounted on tank chassis (1 unit);
- TZM-T transporter/loader on tank chassis (2 units)

The system can be supplied with the TZM (563K) transporter/loader on an 8×8 off-road chassis. Unguided artillery rockets with thermobaric warheads are used for firing.

The BM-1 combat vehicle is a multiple rocket launcher mounted on a tank chassis. It is equipped with a fire control system, which includes: a laser periscope sight/rangefinder, digital dedicated computer system with a sensor package, power electro-hydraulic actuators and firing equipment. The BM-1 is also fitted with auxiliary systems and equipment (means of communication, observation instruments, NBC protection system, fire-fighting equipment, self-entrenching equipment, etc.).

The TZM-T/TZM (563K) transporter/loader is fitted with rocket cradles, a hydraulic loader crane, a removable ammunition armor kit, and loading facilities.

Main characteristics:

- Weight, t:
  - BM-1 combat vehicle: 44,3±1,5%
  - TZM-T transporter/loader with reload: 39,0
  - TZM (563K) transporter/loader: 23,4
- Basic chassis:
  - BM-1 and TZM-T: T-72A tank
  - TZM (563K): KAMAZ-63501 truck
- Number of launch tubes in BM-1: 24
- Number of rockets carried on TZM-T/TZM (563K): 24
- Range of fire, m:
  - min: 400-600
  - max: 6000
- Coverage area against unsheltered and sheltered manpower (at max range of fire), m²: up to 40,000
- Time to fire on a visual target after the BM-1 stops, s: 90
- Full salvo time, s:
- paired launch: 6
- single launch: 12