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**Autor:** Korenkov, Vladimir K.  
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## ASP-500 Fire-extinguishing Air System



Air delivery of fire-suppressant materials dates back to the 1950s, and are routinely around the world to fight large forest fires. At present, the simple discharge of fire-extinguishing means – based on fire-extinguishing filler or water atomization- feature a very low efficiency of the fire-extinguishing composition.

The effectiveness of such systems is reduced by hot ascending air convection current and the formation of vortexes over very hot areas. Therefore, the overwhelming bulk of water carries out beyond the fire zone and evaporates. As a result, only minor amounts -5 to 10% of the dropped fire-extinguishing mixture- actually reaches the fire zone. Also, the required margin of accuracy of the water centre of gravity cannot be guaranteed.

The above disadvantages can be overcome by the application of stabilized unguided fire-extinguishing systems whose function principle is similar to that of aircraft bombs.

To extend air system capabilities and improve fire-fighting methods efficiency, FSUE SRPE "Bazalt" has developed the ASP-500 Fire-extinguishing Air System intended for extinguishing and localizing forest fires,

as well as for suppressing fire storms caused by technological disasters.

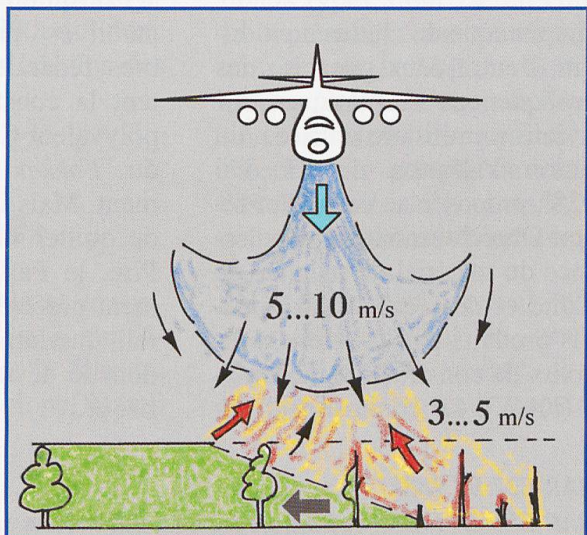
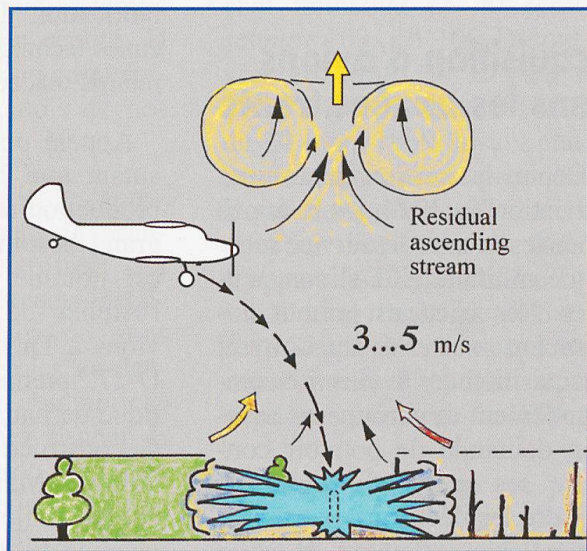
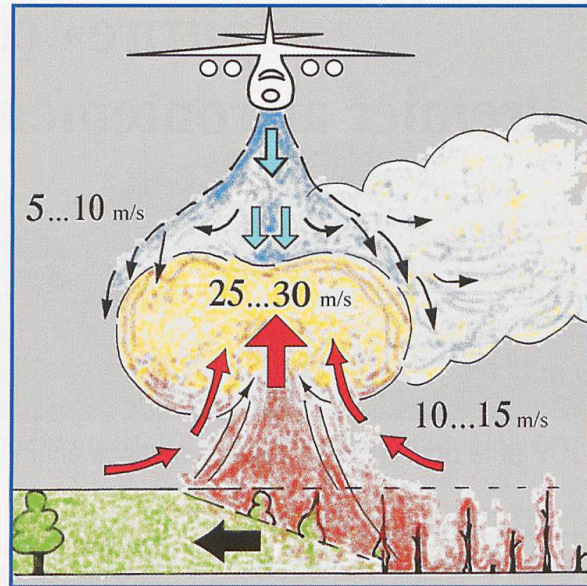
The ASP-500 system is 3295 mm long, 500 mm in diameter. Its empty body weight is 100 kg and 525kg once filled with the fire-extinguishing mixture. The ASP-500 special-purpose plastic body houses an explosive dispersing charge. Fire-extinguishing filler volume is 400 l.

On impacting the ground surface ASP-500's dispersing charge is actuated. It instantly forms an aerodispersal mixture radial stream with an initial velocity of approximately 400 m/s. The stream "sweeps" around the fire zone of approximately 1000 m<sup>2</sup> at an average velocity of 120 m/s. Stream intensity varies from 1500-2000 kg-s/m<sup>2</sup> at a distance of 5 m from the dispersion center to 40-50 kg-s/m<sup>2</sup> at the boundary of the aerodispersal cloud scattering dynamic radius (~18 m). The thickness of the aerodispersal mixture cloud is approx 4.5 to 6 m.

ASP-500 ensures a 100 percent delivery of fire-extinguishing compound directly to the fire zone. ASP-500 application makes it possible to involve military aircraft to accomplish missions aimed at fire extinguishing without extra expenditures for fixed or rotary wing aircraft fleet modifications, and without engaging extra fire brigades and special-purpose equipment.

With ASP-500, the problem of personnel safety is solved both through the design solution, the elimination of dangerous fragmentation and blast effects, as well as owing to organizational measures specifying the bomb systems application procedure.





A peculiarity of ASP-500 is that its body and stabilizer are manufactured of thermoplastic polymer material. This ensures its optimal dispersing without dangerous body fragments forming. The ASP-500 design eliminates any attempts of its unauthorized filling with combustible or toxic agents.

ASP-500 is particularly efficient when being used in zones which are not easily accessible, as well as in zones featuring intense combustion products release or in radioactive contamination areas.

Compared to traditional means of delivering fire-extinguishing mixtures to fire areas, the application of the ASP-500 system as a "first-strike" measure to suppress intense burning area provides more time for ground-firefighters to move in an organize. It increases the effectiveness of subsequent traditional discharging systems ten-fold.

**Vladimir K. Korenkov**