The present invention relates to an additive for water fire-extinguishers, containing a greatly-expanding, water-insoluble, high-polymer substance as a gelling agent. EP-A-199 897 describes such high-polymer substances which are added to the extinguishing water as swelling bodies. These substances are highly absorptive, and can absorb up to 500 times their weight in water within a short time, but without dissolving in water. These substances are then in the form of gel particles which are greatly swollen due to hydration and which are dispersed in the extinguishing water. If an excess of water is added to the gel particles thus swollen, the excess water remains as a pure water phase. The viscosity of the extinguishing water once the gelling agent substance has been added is only slightly increased compared with the viscosity of pure water. The sufficiently low viscosity is significant in order that the extinguishing water continues to be easy to handle, and in particular completely pumpable. The advantages of the extinguishing water to which such an additive for water fire-extinguishers has been added reside in a reduction of the quantity of extinguishing water required to fight fires, a reduction in the extinguishing time and a reduction of the extinguishing water which flows away from the seat of the fire.

Despite the excellent extinguishing action, this known extinguishing water additive has disadvantages which stand in the way of widespread use. If the swelling high-polymer gelling agent substance is added to the extinguishing water, formation of lumps may occur.

Slurries of a gelling agent are known from US-A-3 684 707 and 3 666 707 which are sprayed into running

water, in which case swelling is brought about within a short time. In this case, a uniform gel is produced which expands over the objects to be protected in the manner of an extinguishing blanket. This is a preventive measure.

When fighting forest fires in the Mediterranean countries, seawater is also used as extinguishing water. The sodium chloride present therein, and also hardening constituents dissolved in the water, leads to disturbances in the swelling process. Swelling times of one to several minutes are required for the gelling agent substance to swell up. Although the swelling time only plays a secondary role when extinguishing water from fire-extinguishing tankers is used, in which the substances have sufficient time to swell up, it is extremely difficult to disperse lumps once they have formed.

The object of the present invention thus consists in improving an additive for water fire-extinguishers of the type described first hereinbefore such that the afore-mentioned drawbacks no longer occur.

The solution to the problem offers an additive for water fire-extinguishers according to the invention in which the gelling agent particles are coated with diammonium hydrogen phosphate. The separating agent prevents the gelling agent from becoming sticky upon the entry of water, and thus from lumping together. When the separating agent according to the invention is used, the dispersing of the gelling agent substance takes place without difficulty. According to the invention, the separating agent acts to a certain extent as a spacing

means between the gelling agent particles and thus prevents lumping.

Since the known gelling agent substances require a swelling time of one to several minutes, if extinguishing water provided with such additives were used for major fires storage of the extinguishing water in intermediate containers would be necessary in order to obtain the desired swelling time. The use of such intermediate containers would be unnecessary if the swelling time could be reduced to a few seconds. Such a reduction in the swelling time can in principle be achieved by reducing the particle size of the gelling agent particles. This means that firstly the working surface of the water during the swelling process is increased and secondly the diffusion path is shortened. In the case of very fine gelling agent particles, however, the risk of lumping-together increases. It has therefore not been possible hitherto to disperse very finely ground gelling agent substances in water without special auxiliaries. If the gelling agent particles are now coated according to the invention with diammonium hydrogen phosphate, even very finely comminuted gelling agent substances can be used without the particles lumping together. It is therefore possible to spray the gelling agent substance directly into the hose.

Diammonium hydrogen phosphate has proved a particularly suitable separating agent. When fighting fires in the Mediterranean area, where the most devastating forest fires occur, tanks are often filled with seawater. The sodium chloride contained in a high concentration in the seawater and also the hardening constituents likewise present therein lead in disadvantageous manner to a

great reduction in the swelling power of the gelling agent. This adverse influence is reduced to a considerable extent when diammonium hydrogen phosphate is used as separating agent. In this case the phosphate ion blocks the hardening constituents and the ammonium ion compensates for the adverse effect of the sodium ion on the swelling power. The use of the diammonium hydrogen phosphate in quantities of 20 to 100% by weight relative to the gelling substance is particularly advantageous.

The production of the additive for water fire-extinguishers takes place in preferred manner in that the gelling agent substance is mixed in the dry state with for instance 50% diammonium hydrogen phosphate in a high-speed mixer. In so doing, the diammonium hydrogen phosphate crystals are crushed. At the same time, 10 to 30% by weight water, relative to the gelling agent substance, is sprayed in as a mist. This causes the gelling agent particles to become sticky for a short time and the diammonium hydrogen phosphate to become fixed permanently to the surface of the gelling agent particles.

Claims

1. An additive for water fire-extinguishers, containing a greatly-expanding, water-insoluble, high-polymer substance as a gelling agent, characterised in that the gelling agent particles are coated with diammonium hydrogen phosphate.

2. An additive for water fire-extinguishers according to Claim 1, characterised in that the diammonium hydrogen phosphate is present in a quantity of 20 to 100% by weight, relative to the quantity of the gelling agent.

3. An additive for water fire-extinguishers according to one of Claims 1 or 2, characterised in that the gelling agent is a moderately cross-linked, water-insoluble acrylic or methacrylic acid copolymer.