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FOAM-COMPATIBLE FIRE-EXTINGUISHING COMPOSITION

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This invention relates to a fire-extinguishing composition composed of finely divided solid materials which can be applied to a fire in a solid stream from specially designed fire extinguishers.

The purpose of this invention is to furnish a powdered dry chemical-type fire-extinguishing agent which is compatible with foam-producing extinguishing agents and which is free flowing under pressure. This composition makes it possible to use dry chemical and foam-producing fire-extinguishing agents on the same fire without losing any of the advantages of either.

There are many fires on which either dry chemical or form-extinguishing agents can be used. Each type of agent has certain advantages in extinguishing these fires. If the two types of agents are used together, the advantages of one supplement the advantages of the other and the fire can be combatted more effectively.

Dry chemical agents give fast knockdown of the flames of a fire and furnish a means for rapidly controlling a fire. The dry chemical cloud produced during extinguishment also forms a heat shielding blanket which protects personnel against the radiant heat from the fire during the extinguishing operation. Dry chemical does not form a lasting blanket over unburned fuel to prevent an area which has been extinguished from reigniting.

Foam-producing agents form a thick semi-permanent blanket over an area which has been extinguished and are very effective in preventing reignition of unburned fuel. Extinguishment with foam is accomplished by applying foam until a layer is built up which will flow over the burning area. Control of the flames in this manner is slower than is obtained using a dry chemical and little protection from radiant heat is afforded for personnel carrying out the extinguishing operation.

Consideration of the advantages of dry chemical and foam-type agents show that by using them together, quick control and heat protection along with protection from reignition can be obtained. In cases of airplane crash fires dry chemical would furnish quick knockdown and heat protection for rescue operations while foam would prevent reignition of unburned fuel by burning embers or the like. In fires in flowing fuel, use of dry chemical would permit approach to close off valves to stop fuel flow while foam would prevent reignition of fuel which was unburned.

At the present time, full advantage cannot be obtained from joint use of these two types of agents. The dry chemical agents available for use are incompatible with the foam-producing agents. Materials such as metallic soaps which are used in the dry chemical to produce flowability caused the foam to break down in areas to

which both are applied. Removal of the ingredients in the dry chemical causing the incompatibility destroys the ability of the dry chemical to flow when under pressure.

The composition which I propose has overcome these difficulties by use of additives which are foam-compatible and which produce a dry chemical free flowing under pressurization. The flowability of my composition has been demonstrated by tests performed in standard equipment for applying dry chemical under pressure. In these tests over 90 percent of my composition was discharged from extinguishers of 20 and 150 pounds capacity. Similar tests with a regular dry chemical type extinguishing agent show that 90 to 95 percent of the material is discharged.

Actual fire tests show that my composition extinguishes fire as effectively as the common dry chemicals now available, and causes much less breakdown of foam used along with it. A 75 square foot gasoline fire was extinguished in approximately six seconds with my composition. After extinguishment unburned fuel in this area was reignited and extinguished in 30 seconds with a standard foam-extinguishing agent. A regular non-compatible dry chemical also extinguished the 75 square foot fire in six seconds. Foam applied to reignited fuel from this fire failed to extinguish the fire. Because of rapid breakdown of the foam, this latter fire was not even controlled after one minute of foam application.

The agent which I use as a free-flowing foam-compatible dry chemical is essentially sodium bicarbonate to which talc and tricalcium phosphate are added. My preferred composition by weight is:

87% sodium bicarbonate
10% talc
3% tricalcium phosphate

The above composition gives excellent performance, but it is to be understood that this invention is not restricted to these specific quantities only. Satisfactory performance is obtained with compositions containing from 5 to 25 percent by weight talc and from 3 to 10 percent tricalcium phosphate.

The sodium bicarbonate used for preparing my composition should be a finely divided powder. It should pass at least 95 percent through a 200 mesh screen and at least 75 percent should pass a 325 mesh screen. The talc and tricalcium phosphate used should be as fine or finer than the sodium bicarbonate. My composition may be prepared by grinding or mixing together in a dry form the desired amounts of the ingredients used.

The materials which I use in my foam-compatible dry chemical agent have all been suggested previously as ingredients in dry chemical-type fire-extinguishing agents. Talc and tricalcium phosphate have been suggested for use as anti-caking agents in dry chemicals which also contained materials such as metallic soaps for producing flowability. However, my present composition is unique in the use of talc and tricalcium phosphate in the quantities described for producing the ability to be free flowing under pressure and for producing a dry chemical fire-extinguishing agent which is compatible with foam-type fire-extinguishing agents.

I claim:

1. A free flowing fire-extinguishing composition compatible with foam-producing extinguishing agents consisting by weight of 65 to 92 percent finely divided so-

dium bicarbonate, 5 to 25 percent talc and 3 to 10 percent tricalcium phosphate.

2. A free flowing fire-extinguishing composition compatible with foam-producing extinguishing agents consisting by weight of 65 to 92 percent sodium bicarbonate of such particle size that at least 95 percent passes through a 200 mesh screen and at least 75 percent through a 325 mesh screen, 5 to 25 percent talc and 3 to 10 percent tricalcium phosphate.

3. A free flowing fire-extinguishing composition compatible with foam-producing extinguishing agents consisting by weight of 87 percent sodium bicarbonate to which 10 percent talc and 3 percent tricalcium phosphate have been added to make the composition free flowing under pressure.

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