



Vermiculite Fire Retardant Additives

Dupré Minerals Micashield is a range of mineral based flame retardants, manufactured from specially selected Vermiculite ores.

The subsequent high aspect ratio of the Micashield powders provides a material additive which can offer significant improvements to the fire-resistance of a variety of materials. Micashield is a non-toxic and easy to use product that is environmentally friendly.



How does Micashield work?

Vermiculite is inert and does not react chemically or burn.

When subject to heat the Micashield forms a glassy layer equivalent to a char layer which inhibits access of oxygen to the combustible material.

This physical barrier acts as a suppressant to smoke and to re-ignition. It reduces the temperature evolution of the substrate.

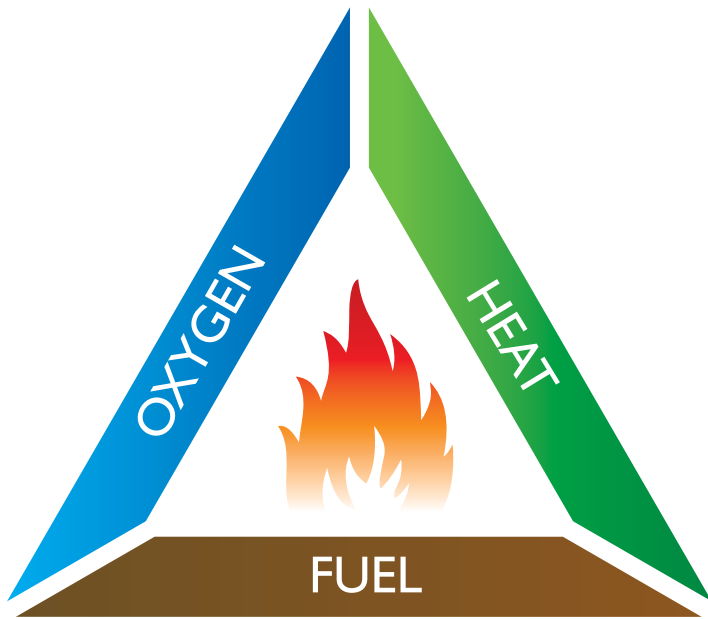
Micashield accumulates at the surface of the substrate and forms a barrier to mass and energy transfer. Micashield reduces the rate of flame spread and heat release.

Micashield can be added to many different materials as it is encapsulated rather than chemically bound.



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Fires start when solid materials are exposed to heat. This causes decomposition to smaller molecules which include flammable gases. These gases mix with oxygen from the air and, if the temperature is high enough, they react very rapidly giving out more heat which continues the process.

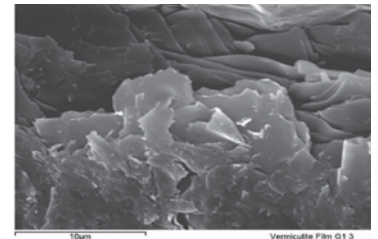
The chemical reactions between oxygen and flammable gases involve charged molecules called free-radicals – H⁺ and OH⁻ which are essential for the reaction with oxygen molecules.

When subjected to heat, Micashield accumulates at the surface of the substrate and forms a hard glassy layer. This inhibits access of oxygen to the combustible material and prevents flammable gases from being released. As a result, the substrate chars rather than burns.

Typical Properties

Appearance

Dupré's Micashield Vermiculite Flame Retardants DM393, DM397, DM440 and DM428 are light golden/brown powders.



Chemical Analysis (of Source Vermiculite)

SiO ₂	39.4%	K ₂ O	4.5%	CO ₂	1.4%
MgO	25.2%	Fe ₂ O ₃	4.0%	TiO ₂	0.8%
Al ₂ O ₃	8.8%	CaO	1.8%	F	0.5%

Product Code	DM428	DM440	DM397	DM393
D90 Typical - 90% less than (Average particle size)	47 μm	70 μm	140 μm	160 μm

* Particle size can be adjusted according to requirements.

SEM of vermiculite platelets showing aspect ratio up to 1000:1

Please refer to individual technical data sheets for full information

Information presented above is given in good faith as accurate and reliable but is not to be taken as a guarantee. The figures provided are intended to be a guide to expected average values and should not be interpreted as a specification. Any potential applications referred to are not to be construed as recommendations. It is the responsibility of the user to determine suitability for any specific purpose.

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