

FIBROUS MAGNESIUM OXYSULFATE (MOS-HIGE)

Overview

MOS-HIGE is magnesium oxysulfate [$\text{MgSO}_4 \cdot 5\text{Mg}(\text{OH})_2 \cdot 3\text{H}_2\text{O}$] whisker manufactured by water-heat synthesis from magnesium sulfate and magnesium hydroxide. As shown Photo, crystalline structure of MOS-HIGE is whisker of mean fiber length of 10 μm and mean fiber diameter of 0.5 μm .

In Table 1, general properties of MOS-HIGE are shown. By heating, MOS-HIGE has evident heat absorption peak and mass decrease at 300, 400 and 900 .(These are caused by the release of crystalline water at 300 and 400 and by the release of SO_3 at 900 .) By this, when MOS-HIGE is used as filler for plastics, it is desirable to use lower than 250 . And, release of crystalline water contributes to the prevention of combustion of composite. As MOS-HIGE decomposes into magnesium oxide at higher temperature than 900 and becomes into easily crushable fiber by external force, composite can easily be disposed by incineration.

Features

MOS-HIGE before compounding is consisted of fibers of mean length of 10 μm and mean diameter of 0.5 μm (aspect ratio 20), after compounding with polypropylene, MOS-HIGE does not break largely, and becomes fibers of mean length of 5 μm and mean diameter of 0.5 μm (aspect ratio 10), and by this, composite of polypropylene, which has highly elastic property, is obtained.

As known, MOS-HIGE is easily soluble in body fluid and even in case when breathed into lung, it is easily soluble and does not remain. Therefore, MOS-HIGE is considered as very safe whisker(Registered in TSCA, USA) .

Especially, in MOS-HIGE, to reply market. Needs, economical grade named MOS-HIGE A is marketed from 1999, and as it has priority in cost, function and safety, we believe that this will be whisker which replies demand even in future.

Table 1 Properties

Minerals	magnesium oxysulfate
Chemical formula	$\text{MgSO}_4 \cdot 5\text{Mg}(\text{OH})_2 \cdot 3\text{H}_2\text{O}$
Appearance	White particle
Mean fiber length	10 ~ 20 μm
Mean fiber diameter	0.5 μm
Bulk specific gravity	Powder 0.07, Grein 0.25
Decomposition temperature	300 ($3\text{H}_2\text{O}$) 400 ($5\text{H}_2\text{O}$) 900 (SO_3)
True specific gravity	2.3
Specific surface area	<12 m^2/g
Brightness	> 93
PH	9.5
Solubility in Water	0.03 g/l
Solubility in Gambel's solution	0.46 g/l
Solubility in Saline	0.047 g/l

