

**EUROPE, MIDDLE EAST  
AND AFRICA**

**Kisuma Chemicals BV**

Billitonweg 7  
9641 KZ Veendam  
The Netherlands  
Tel. +31 598 666 766  
[www.kisuma.com](http://www.kisuma.com)

**ASEAN, INDIA, PAKISTAN,  
BANGLADESH AND OCEANIA**

**Kisuma Asia Singapore Pte. Ltd.**

143 Cecil Street  
#03-01 GB Building (Suite 307)  
Singapore 069542  
Tel. +65 6532 0246  
[www.kisuma-sg.com](http://www.kisuma-sg.com)

**CHINA**

**Kisuma Chemical Trading (Shanghai) Co., Ltd**

Room 1006, No. 2201 Yan'an Road (W),  
Shanghai 200336  
China  
Tel. +86 021 3209 8077  
[www.kyowa-chem.co.jp](http://www.kyowa-chem.co.jp)

**NORTH- AND LATIN AMERICA**

**Kisuma Americas, Inc**

1235 North Loop West, Suite 909  
Houston, Texas, 77008  
USA  
Tel. +1 832 460 5130  
[www.kisuma.us](http://www.kisuma.us)

**JAPAN AND KOREA**

**Kyowa Chemical Industry Co., Ltd**

4-7, 3-Chome, Nihonbashi-Muromachi  
Chuo-Ku, Tokyo, 103-0022  
Japan  
Tel. +81 362 023 011  
[www.kyowa-chem.co.jp](http://www.kyowa-chem.co.jp)



The data presented in this brochure are not guaranteed values and do not constitute the agreed contractual quality of our products. It is the responsibility of the recipient of our products to ensure that proprietary rights, laws and regulations are observed and to perform their own investigations and tests to verify the suitability of our products for a specific purpose.

# KISUMA<sup>®</sup> 5

## MAGNESIUM HYDROXIDE







# KISUMA® 5 DRASTICALLY INCREASES BRAND QUALITY AND INTEGRITY

## HALOGEN-FREE FLAME RETARDANTS

KISUMA® 5 is the brand name for our range of highly pure magnesium hydroxide compounds that have been developed as halogen-free flame retardants for thermoplastics and rubbers. The products in this range are non-toxic and generally considered to be the best of their kind.

UNIQUE PRODUCTS  
THROUGH UNIQUE  
TECHNOLOGIES

## LEADING PRODUCTS SINCE 1947

Our parent company, Kyowa Chemical Industry, has been involved in the development and production of highly pure, specialty magnesium compounds since 1947. We supply magnesium hydroxide and hydrotalcites to customers in pharmaceutical and industrial markets across the world from our factories in Japan, China and Veendam, the Netherlands.

## PRODUCT DESCRIPTION

Magnesium hydroxides are environmentally friendly inorganic compounds with the formula  $Mg(OH)_2$ . These compounds are widely used as antacids in the pharmaceutical industry. The magnesium dihydroxides (MDH) produced by our proprietary and unique technology are highly pure white powders. This product can be used as a non-toxic flame retardant in high temperature processes due to its high endothermic decomposition temperature.

## MODERN FACTORY IN THE NETHERLANDS

Our factory was built in 1999, but expansion work never stopped. Today, we produce close to 30,000 tonnes of magnesium compounds per year. The plant is strategically located near raw material suppliers and logistic infrastructure, allowing us to transport our products efficiently all over the world.

## THE WORLD'S LOCAL SUPPLIER

We are a financially secure business partner that can supply products anywhere in the world, at any time and in any quantity. Our products are always available, because we plan our production on forecast rather than by order. This ensures optimal support and flexibility to our customers.



For halogen-free applications that require high heat stability, we recommend KISUMA® 5 as a high purity magnesium hydroxide flame retardant. When you are looking for the best non-toxic flame retardant to provide high temperature flame retardancy, KISUMA® 5 is what you need. KISUMA Chemicals is the European branch of Kyowa Chemical Industry, Japan. Products coming from our state-of-the-art factory in the Netherlands are of the highest available quality.

# INORGANIC FLAME RETARDANT 2.0



## DESIGNED FOR PERFORMANCE

KISUMA® 5 starts decomposing endothermically at temperatures  $> 340^{\circ}\text{C}$ , resulting in the formation of magnesium oxide (MgO) and water (H<sub>2</sub>O). When this occurs, KISUMA® 5 provides flame retardancy in three steps.

1. The release of water results in cooling and decreased pyrolysis of the polymer
2. The released water dilutes the fuel/oxygen ratio. The MgO that is generated works as a protective layer that provides a smoke suppressant effect
3. KISUMA® 5 does not generate poisonous or corrosive gas during this process.

## ADVANTAGES OF KISUMA® 5

- + KISUMA® 5 is an excellent flame retardant and smoke suppressant that does not generate toxic fumes or corrosive gas
- + KISUMA® 5 has excellent processability resulting from a special surface treatment and its extremely fine and consistent particle size
- + KISUMA® 5 can be compounded to high concentrations in polymers
- + KISUMA® 5 improves the arc and tracking resistance of polymers
- + KISUMA® 5 improves the MFI and flexural modulus of polypropylene
- + KISUMA® 5 has synergistic effects with red phosphorus and carbon black
- + KISUMA® 5 is also effective as a heat stabilizer for resins containing halogen

## AVAILABLE PRODUCT GRADES

Our highly pure magnesium hydroxide brand KISUMA® 5 comprises a comprehensive range of grades. We are sure that we have a KISUMA® 5 product that will fit your specific needs.

- + KISUMA® 5A, the industry standard grade
- + KISUMA® 5B for outstanding low temperature flexibility and mechanical properties
- + KISUMA® 5B-1G for improved processability and mechanical properties
- + KISUMA® 5JL for extraordinary water- and acid resistivity and wet electrical properties

## APPLICATIONS OF KISUMA® 5

Having trouble to determine the appropriate KISUMA® 5 grade for your product based on the information in this brochure? Some applications for which KISUMA® 5 has already been implemented successfully might give you inspiration for your own products.

- + Flame retardant in polyolefin cables
- + Flame retardant in EPDM rubber
- + Flame retardant in PVC
- + Heat stabilizer in Ca-Zn systems for PVC

If you would like more information about these applications of KISUMA® 5, or if you have ideas for your own application, contact us today! Our experienced product managers are ready to support you with all your enquiries.



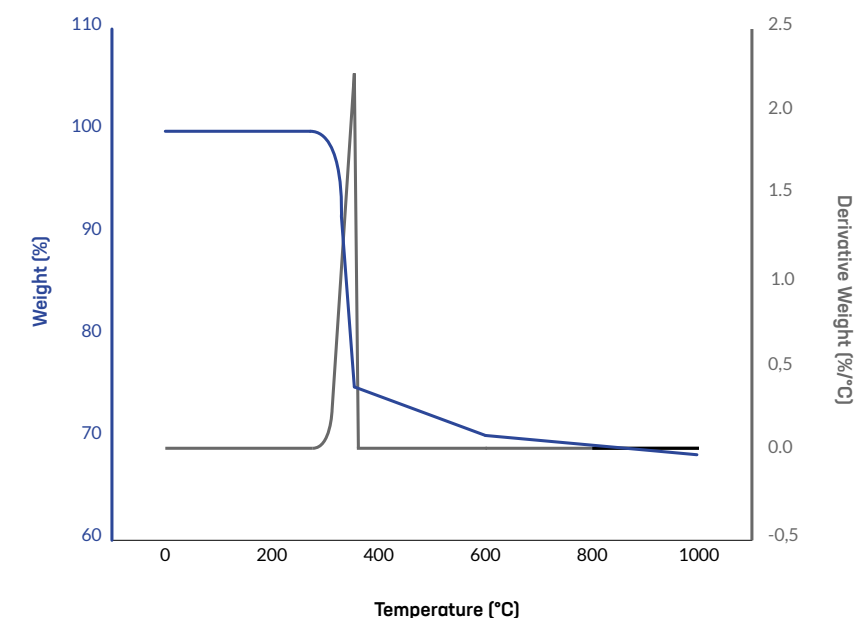
#### TYPICAL PROPERTIES AND SEM OF KISUMA-5A®

Specified and Typical Properties	Typical value	General specification	
Appearance	Free flowing White powder	-	
Mg(OH)2	99	min 97	w/w%
Loss on Drying (120C 1 hr)	0.0	max 0.2	w/w%
Specific Surface Area	5	min 4	m2/g
		max 7	
Secondary particle size	0.8	min 0.7	µm
Average		max 1.1	µm
> 5 µm		0	vol %
Crystallite size	0.6 ~ 1	-	µm
Cl	0.03	-	w/w %
Specific Gravity	2.39	-	
Mohs hardness	2.5	-	
Refractive index	1.57	-	
Temp. of commencing dehydration	340	-	°C
Amount of heat adsorbed	312	-	cal/g

#### PRODUCT AND SAFETY INFORMATION

- + Chemical Formula Mg(OH)2
- + Chemical Name of Main Active Ingredient Magnesium Hydroxide
- + EC number of Main Active Ingredient 215-170-3
- + CAS number of Main Active Ingredient 1309-42-8
- + REACH Reference Number 01-2119488756-18-0007
- + Available Standard Packaging materials 20 kg PE bags, 40 bags (800 kg) per pallet
- + 500 kg Big Bags, 2 bags (1,000 kg) per pallet

TGA



PARTICLE SIZE DISTRIBUTION

