PYRION™

Industrial Applications

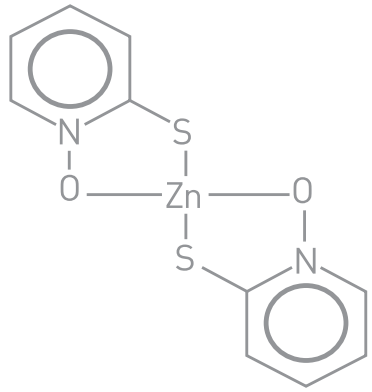
Zinc-PYRION™ 48% MPF

Product description

Zinc-PYRION™ 48% MPF is a Micronized, Preservative Free suspension concentrate of zinc pyrithione active ingredient in water. Zinc pyrithione is a highly active, broad-spectrum biocide which inhibits the growth of fungi (yeasts and moulds) and algae, as well as Gram positive and Gram negative bacteria. Zinc pyrithione is used to prevent microbial degradation in a wide range of industrial applications.

Active ingredient

Structural formula



Zinc pyrithione
CAS No. 13463-41-7
EINECS No. 236-671-3
$C_{10}H_8N_2O_2S_2Zn$
Molecular Weight 317.7

Specifications

Appearance	Off-white suspension
Zinc pyrithione assay (potentiometric titration)	48.0 – 50.0 % w/w
Microbial growth (plate count)	Max. 100 CFU/g
Colour (spectrophotometry, CIE colour space)	L*: min. 75 a*: -3 to +1 b*: max. 5
Particle size (laser diffraction)	D100 ≤ 5 µm; D90 ≤ 1 µm
pH, 5% w/w in pH 7 water	6.5 – 9.0
Zinc content (complexometric titration)	9.3 – 11.3 % w/w

Typical physico-chemical properties

Density at 21°C/70°F	1.28 g/cm^3 (10.68 lb/gal)
Viscosity at 21°C/70°F (cone and plate)	157.5 mPa.s at 100 s^{-1} 42.7 mPa.s at 1000 s^{-1}

Chemical reactivity

Zinc pyrithione is a chelated complex of pyrithione with zinc. Transchelation can occur in systems that contain metal ions whose complexes have a higher stability constant than the zinc complex. Even traces of the corresponding chelates can cause a noticeable discolouration, particularly the iron and copper pyrithione complexes.

Zinc pyrithione is sensitive to strong oxidizing or reducing agents. Oxidizing agents will convert zinc pyrithione to other species via a two-step reaction. First, pyrithione will oxidize to form the disulfide. Further oxidation produces the pyrithione sulfinic or sulfonic acid species.

Strong chelating agents, such as ethylenediaminetetraacetic acid (EDTA), will chelate the zinc from zinc pyrithione, forming the anion of pyrithione and the zinc complex of EDTA.

Thermal stability

Decomposition of zinc pyrithione starts at 240°C (464°F).

pH stability

Zinc pyrithione can be used over the pH range from 4 to 10. Below pH 4.5 the zinc complex dissociates, forming free pyrithione. Above pH 9.5 the zinc complex hydrolyses to yield ionized pyrithione and zincate species.

Light stability

Zinc pyrithione will gradually degrade when exposed to UV light. However, in most real-world uses photo-degradation of zinc pyrithione is not an issue. In applications where either there is no significant exposure to sunlight, or the use is in an opaque matrix that minimizes the penetration of the incident light, there will be no significant photodegradation of zinc pyrithione.

Storage and handling

Zinc-PYRION™ 48% MPF is an aqueous dispersion containing fine particles of zinc pyrithione. As with any solid-in-liquid dispersion, phase separation due to settling will occur over time.
Therefore the following storage and handling procedures must be followed:

Protect from freezing
Store above 10°C (50°F). At lower temperatures, the zinc pyrithione particles can start to agglomerate and aggravate the settling issue.

Mix thoroughly before use
Zinc-PYRION™ 48% MPF must be thoroughly mixed by shaking or stirring for at least ten minutes prior to use.

Use opened containers as soon as possible
When only part of a container is used, the solid phase may cake and dry on the walls. Subsequent movement of the container may cause the dry flakes to fall into the remaining dispersion, and these may be visible in the final product.

Zinc-PYRION™ 48% MPF does not contain any in-can preservative. Therefore, good industrial hygiene is crucial when handling the product

Shelf life

If stored at room temperature (between 20°C/68°F and 26°C/79°F), in the original unopened container, Zinc-PYRION™ 48% MPF has a shelf life of 24 months.

Once a container has been opened, the 24-month shelf life no longer applies.

Packaging

Zinc-PYRION™ 48% MPF is available in 20 kg (44 lb) plastic jerry cans and 1000 kg (2204.6 lb) intermediate bulk containers/totes.

PYRION is a trademark of Janssen Pharmaceutica NV.

Use biocides safely. Always read the label and product information before use.

Zinc-PYRION™ 48% MPF may not be registered for certain uses in certain countries. Within the European Economic Area (EEA), Zinc-PYRION™ 48% MPF may be used only as a technical concentrate for the manufacture of biocidal products. For more information on the regulatory status in your country of interest, we invite you to contact us.

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