M&F

CATALOG

MICROBES & FUNGI

Biomass

Microbiome

Enzymes

BACILLUS SUBTILIS
BIOMASS

Biomass live cells and spores of **Bacillus subtilis** bacteria and their metabolic products (phytohormones, organic acids, antibiotics, enzymes, etc.)

Active substance:
Live cells and spores of the bacterium *Bacillus subtilis* and metabolic products

Titer:
Not less than 5x10^{9} CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +30°C

Shelf life:
24 months

TRICHODERMA SPP.
BIOMASS

Biomass of spores and mycelium of fungi of the genus **Trichoderma spp.** and metabolic products

Active substance:
Spores and mycelium of fungi of the genus *Trichoderma spp* and metabolic products

Titer:
Not less than $1x10^9$ CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +25°C

Shelf life:
24 months

BACILLUS AZOTOFIXANS
BIOMASS

Biomass live cells and spores of **Bacillus azotofixans** bacteria and their metabolic products (phytohormones, organic acids, antibiotics, enzymes, etc.)

Active substance:
Live cells and spores of the bacterium *Bacillus azotofixans* and metabolic product

Titer:
Not less than 1x10^9 CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +25°C

Shelf life:
24 months

BACILLUS MEGATERIUM
BIOMASS

Biomass live cells and spores of **Bacillus megaterium** bacteria and their metabolic products (phytohormones, organic acids, antibiotics, enzymes, etc.)

Active substance:
Live cells and spores of the bacterium *Bacillus megaterium* and metabolic products

Titer:
Not less than $1x10^9$ CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +25°C

Shelf life:
24 months

BACILLUS THURINGIENSIS
BIOMASS

Biomass live cells and spores of **Bacillus thuringiensis** bacteria and their metabolic products (proteins that are toxic to some insects when eaten, but not others)

Active substance:
Live cells and spores of the bacterium *Bacillus thuringiensis* and metabolic products

Titer:
Not less than $5x10^9$ CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +30°C

Shelf life:
24 months

BEAUVERIA BASSIANA
BIOMASS

Biomass of spores and mycelium of fungi **Beauveria bassiana** and metabolic products.

Active substance:
Spores and mycelium of fungi *Beauveria bassiana* and metabolic products

Titer:
Not less than $2x10^8$ CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +25°C

Shelf life:
24 months

INSECTA SOIL
MICROBIOME

Microbiome Insecta Soil mycelium and spores of several races of entomopathogenic fungi *Metharizium, Beauveria* and products of their metabolism.

Active substance:
Mycelium and spores of several races of entomopathogenic fungi *Metharizium, Beauveria* and products of their metabolism

Titer:
Not less than $5x10^8$ CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -20°C to +30°C

Shelf life:
12 months

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SOIL
MICROBIOME

Microbiome Soil live cells and spores of the bacterium *Bacillus subtilis spp*, as well as fungi of the genus *Trichoderma spp* and metabolic products

Active substance:
Live cells and spores of the bacterium *Bacillus subtilis spp*, as well as fungi of the genus *Trichoderma spp* and metabolic products

Titer:
Not less than $1x10^9$ CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +30°C

Shelf life:
36 months

HUMI
MICROBIOME

Microbiome Humi live cells and spores of the bacteria *Bacillus subtilis*, *Bacillus Azotofixans*, *Bacillus Megaterium* and metabolic products.

Active substance:
Live cells and spores of the bacteria *Bacillus subtilis*, *Bacillus Azotofixans*, *Bacillus Megaterium* and metabolic products

Titer:
Not less than $1x10^9$ CFU/g

Formulation:
Water soluble powde

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +25°C

Shelf life:
24 months

COMPOST
MICROBIOME

Microbiome Compost live cells and spores of the bacteria *Bacillus subtilis* and *Bacillus licheniformis* and metabolic products

Active substance:
Live cells and spores of the bacteria *Bacillus subtilis* and *Bacillus licheniformis* and metabolic products

Titer:
Not less than $1x10^9$ CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +30°C

Shelf life:
36 months

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WATER
MICROBIOME

Microbiome Water live cells and spores of the bacteria *Bacillus subtilis* and *Bacillus licheniformis* and metabolic products.

Active substance:
Live cells and spores of the bacteria *Bacillus subtilis* and *Bacillus licheniformis* and metabolic products

Titer:
Not less than 1x10^9 CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +30°C

Shelf life:
36 months

SEPTIC
MICROBIOME

Microbiome Septic live cells and spores of the bacteria *Bacillus subtilis* and *Bacillus licheniformis* and metabolic products.

Active substance:
Live cells and spores of the bacteria *Bacillus subtilis* and *Bacillus licheniformis* and metabolic products

Titer:
Not less than 1x10^{9} CFU/g

Formulation:
Water soluble powder

Net weight:
1 kg

Storage conditions:
Store at temperatures from -5°C to +30°C

Shelf life:
36 months

ALPHA-AMYLASE
FUNGAL

Fungal alpha-amylase is an enzyme preparation that acts on the pre-gelatinization of starch, breaking down alpha-1,4-linkages with the addition of maltodextrins, oligosaccharides and maltose. The enzyme is similar to native starch. The enzymatic preparation is obtained as a result of directed deep fermentation of the *Aspergillus oryzae* strain.

Application
The enzyme preparation can be used in the production of alcohol, beer, bakery products, in the starch industry, used in paper grading and the production of detergents and dishwashing detergents.

For dry form:
10 000 U/g

pH
4.8-5.5- optimal range
4.0-7.0 - operational range

Shelf life:
12 months

Temperature:
45-55°C - optimal range
35-60°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

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ALPHA-AMYLASE
HIGH-TEMPERATURE

It hydrolyzes randomlyα-1,4-glucosidic bonds of preliminary gelatinized starch with the formation of maltodextrins, reduces the viscosity of batches with starch containing raw material and prepares them to the subsequent saccharification by glucoamylase.
The enzymatic preparation is obtained as a result of directed deep fermentation of the *B.licheniformis.*strain

Application
The enzyme preparation can be used in the production of alcohol, beer, bakery products, in the starch industry, feed production, used in paper grading and the production of detergents and dishwashing detergents.

For liquid form:
800 U/ml

pH
6.0-7.5- optimal range
5.0-9.0 - operational range

Shelf life:
6 months

Temperature:
90-95°C - optimal range
30-110°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from 2°C to 15°C

ALPHA-AMYLASE
LOW TEMPERATURE

It hydrolyzes randomly α-1,4-glucosidic bonds of preliminary gelatinized starch with the formation of maltodextrins, reduces the viscosity of batches with starch containing raw material and prepares them to the subsequent saccharification by glucoamylase. The enzymatic preparation is obtained as a result of directed deep fermentation of the *B.subtilis* strain.

Application
The enzyme preparation can be used in the production of alcohol, beer, bakery products, in the starch industry, feed production, used in paper grading and the production of detergents and dishwashing detergents.

For liquid form:
2 000 U/ml

pH
6.0-7.5- optimal range
5.0-9.0- operational range

Shelf life:
6 months

Temperature:
60-70°C - optimal range
30-80°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from 2°C to 15°C

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BACTERIAL PROTEASE

Protease is a non-specific endopeptidase active against proteins to produce polypeptides, peptides and amino acids dependent upon the degree of hydrolysis. Protease it is categorised as a serine proteinase. Protease has a significant keratinase activity. The enzymatic preparation is obtained as a result of directed deep fermentation of the *Bacillus lichenoformis* strain.

Application

The enzyme preparation can be used in the production of alcohol to accelerate the breakdown of vegetable proteins, in baking, the confectionery industry, in the production of detergents, leather and fur dressing.

For dry form:
50 000 U/g

pH
6.0-10.0 - optimal range
5.5-11.0- operational range

Shelf life:
12 months

Temperature:
55-65°C - optimal range
25-70°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

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BETA-GLUCANASE

Beta-glukanase is the enzymatic preparation which contains the complex of enzymes for mashing, the main of which is β-glucanase (endo-β1,4-glucanase) for destruction of β-glucans and cellulose of grain by the hydrolysis of β1,4-glucosidic bonds.
The enzymatic preparation is obtained as a result of directed deep fermentation of the *Myceliophtora fergusii* strain.

Application
The enzyme preparation can be used in the pulp and paper industry, in brewing, in the production of fodder.

For liquid form:
10 000 U/ml

pH
4.0-5.0- optimal range
3.5-7.5 - operational range

Shelf life:
6 months

Temperature:
45-60°C - optimal range
30-70°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from 2°C to 15°C

CELLULASE

Cellulase is the enzymatic for the destruction of the non-starched polysaccharides of raw material. Pure cellulase is categorized as 4-D-glucan 4-glucanohydrolase. Pure cellulase catalyzes the random hydrolysis of internal 1-4 linked β-D-glucosidic bonds in cellulose, cereal D-glucans and lichenin. The enzymatic preparation is obtained as a result of directed deep fermentation of the *Trichoderma reesei* strain.

Application

The enzyme preparation can be used in the bakery industry to improve the quality of the dough, in the production of alcohol to reduce the viscosity of the dough, in the pulp and paper industry, in the production of animal feed and textiles.

For dry form:
10 000 U/g

pH
3.5-4.5 - optimal range
2.0-6.5 - operational range

Shelf life:
12 months

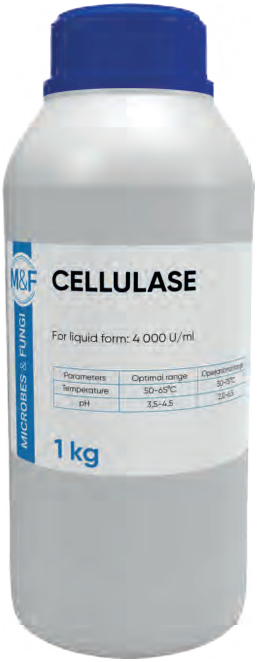
Temperature:
50-65°C - optimal range
30-75°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

CELLULASE

Cellulase is the enzymatic preparation for the destruction of the non-starched polysaccharides of raw material. Pure cellulase is categorized as 4-D-glucan 4-glucanohydrolase. Pure cellulase catalyzes the random hydrolysis of internal 1-4 linked β-D-glucosidic bonds in cellulose, cereal D-glucans and lichenin.
The enzymatic preparation is obtained as a result of directed deep fermentation of the *Trichoderma reesei.*



Application
The enzyme preparation can be used in the bakery industry to improve the quality of the dough, in the production of alcohol to reduce the viscosity of the dough, in the pulp and paper industry, in the production of animal feed, and in the production of liquid detergents and textiles.

For liquid form:
4 000 U/ml

pH
3.5-4.5- optimal range
2.0-6.5 - operational range

Shelf life:
6 months

Temperature:
50-65°C - optimal range
30-75°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from 2°C to 15°C

COLLAGENASE

Collagenase is the enzyme that splits collagen with the release of the free amino acid oxyproline. The important property of the collagenase is its ability to biodegradation of the main protein of the intercellular matrix – collagen. The enzyme can split almost all types of collagen and can break down not only peptide chain of the protein but also the numerous bonds inside triple helix of molecules.
The enzyme preparation is obtained from a selected strain of *Streptomyces lavendulae* with subsequent purification and concentration.

Application
The enzyme preparation can be used in the meat industry, in cosmetology.

For dry form:
2 000 U/g

pH
7.0-9.0- optimal range
3.0-10.5 - operational range

Shelf life:
12 months

Temperature:
35-55°C - optimal range
15-70°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

INVERTASE

Invertase(Beta-fructofuranosidase, saccharase) is an enzyme preparation that catalyzes the hydrolysis of sucrose disaccharide into monosaccharides: Glucose and Fructose. The invertase enzyme preparation is obtained as a result of deep fermentation of a selected strain of the fungus *Penicllium canescens*, followed by purification and concentration.

Application
The enzyme preparation can be used in the confectionery industry in the production of jams, fudge and marzipan, in the production of juices and inverted syrups.

For dry form:
50 000 U/g

pH
4.5-5.0- optimal range
3.0-6.5 - operational range

Shelf life:
12 months

Temperature:
45-65°C - optimal range
30-75°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

INVERTASE

Invertase(Beta-fructofuranosidase, saccharase) is an enzyme preparation that catalyzes the hydrolysis of sucrose disaccharide into monosaccharides: Glucose and Fructose. The invertase enzyme preparation is obtained as a result of deep fermentation of a selected strain of the fungus *Penicllium canescens*, followed by purification and concentration.

Application
The enzyme preparation can be used in the confectionery industry in the production of jams, fudge and marzipan, in the production of juices and inverted syrups.

For liquid form:
10 000 U/ml

pH
4.5-5.0- optimal range
3.0-6.5 - operational range

Shelf life:
6 months

Temperature:
45-65°C - optimal range
30-75°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from 2°C to 15°C

GLUCOAMYLASE

Glucoamylase is the liquid concentrated glucoamylase. Enzyme type is 1,4-α-glucan hydrolase, amyloglucosidase. Treated with thinning agent of α - amylase, grain or potato batches contain dextrins, which are hydrolyzed by glucoamylase into fermentable sugars. Glucoamylase contains additional activities that accelerate the process of hydrolysis of complex compounds contained in starchy raw materials.

The enzymatic preparation is obtained as a result of directed deep fermentation of the *Aspergillus awamori* strain.

Application

The enzyme preparation can be used in the production of glucose and glucose-fructose syrups, beer, alcohol, in baking, in the production of maltose syrup and syrup with a high fructose content.

For liquid form:
6 000 U/ml

Temperature:
55-65°C - optimal range
30-80°C - operational range

pH
4.0-5.0- optimal range
3.5-6.0 - operational range

Net weight:
1 kg

Shelf life:
6 months

Storage conditions:
store at temperatures from 2°C to 15°C

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KERATINASE

Keratinases is the group of proteolytic enzymes that can catalyze the splitting and hydrolysis of highly stable and fibrous proteins - keratins. The enzyme preparation obtained by fermentation of a breeding strain of *Streptomyces ornatus* followed by purification and concentration.

Application

The enzyme preparation can be used to tenderize meat and fish, in the leather industry, in the production of feed additives, in the textile industry, and also in the production of detergents and cosmetic products.

For dry form:
900 U/g

pH
9.0-11.0- optimal range
5.5-11.0 - operational range

Shelf life:
12 months

Temperature:
55-65°C - optimal range
20-70°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

LIPASE

Lipase is the enzyme that catalyzes the hydrolysis of the ester bonds of triglycerides of lipid substrates, helping to transform, dissolve and fractionate fats. It splits sparingly soluble fats and oils. The enzyme preparation is obtained from a selected strain of *Aspergillus niger* with subsequent purification and concentration.

Application

Enzyme preparation can be used in baking, production of dairy products, pulp and paper industry, leather processing, light industry, as well as production of detergents.

For dry form:
2 000 000 U/g

pH
7.0-9.5- optimal range
5.0-10.0 - operational range

Shelf life:
12 months

Temperature:
37-50°C - optimal range
25-75°C - operational range

Net weight:
1kg

Storage conditions:
store at temperatures from -25°C to +25°C

PECTINASE
(POLYGALACTURONASE)

Pectinase is categorised as (1-4)-α-D-galacturonan glycanohydrolase. Polygalacturonase catalyzes the random hydrolysis of internal 1-4 linked α-D-galacturonosidic bonds in the main chain of polygalacturonates and pectin substrates with a low degree of methyl esterification. The enzymatic preparation is obtained as a result of directed deep fermentation of the *Aspergillus foetidus* strain.

Application
The enzyme preparation can be used in the food, juicing industry in the production and concentration of juices and in winemaking. Effective when processing raw materials with a high pectin content.

For dry form:
35 U/g

pH
3.7-4.3 - optimal range
2.0-5.2- operational range

Shelf life:
12 months

Temperature:
35-40°C - optimal range
25-55°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

PROTEASE
FUNGAL

Protease is a non-specific endopeptidase active against proteins to produce polypeptides, peptides and amino acids dependent upon the degree of hydrolysis. The products belong to the category of serine proteinases. Protease has a collagenase activity. The enzymatic preparation is obtained as a result of directed deep fermentation of the *Acremonium chrysogenum* strain.

Application
The drug can be used for the production of hydrolysates, in the production of detergents, in the processing of leather and fur, and in cosmetology.

For dry form:
50 000 U/g

pH
8.0-10.5- optimal range
5.5-11.5 - operational range

Shelf life:
12 months

Temperature:
50-60°C - optimal range
30-70°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C

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XYLANASE

Xylanase is categorized as 4-D-xylan xylanohydrolase. Xylanase catalyzes the random hydrolysis of internal 1-4 linked β-D-xylosidic bonds in xylans. The enzymatic preparation is obtained as a result of directed deep fermentation of the *Penicillium sp* strain.

Application
The enzyme preparation is used in the bakery industry, in the production of ethyl alcohol, animal feed, textiles

For dry form:
10 000 U/g

pH
6.0-7.0- optimal range
5.0-8.0 - operational range

Shelf life:
12 months

Temperature:
50-60°C - optimal range
25-60°C - operational range

Net weight:
1 kg

Storage conditions:
store at temperatures from -25°C to +25°C