

ORCHARDS

Program for mineral orchard
plant nutrition

Activ

We enhance nature



We enhance nature



Over the last 20 years since our inception in 1992 we have gained extensive knowledge and experience in the fertilizer industry. Our goal is to manufacture fertilizers making it possible to derive the very best nature has to offer. For this reason, our extensive product range entails the latest developments in biotechnology, in particular top grade chelates. As a result of our close long-term cooperation with scientific institutes and universities, we have manufactured proven and effective products. We constantly monitor our production process and incorporate the requisite modifications in striving to continue improving our offer and aligning it to meet customer needs and expectations. The Activ brand name is synonymous with high quality because of both our close cooperation with scientific institutes and universities and the innovative technology we have launched based on proprietary research and experience.

It is part of our commitment to our customers for all our products to adhere to the highest standards of quality and environmental safety binding in the European Union. Thanks to that our Activ fertilizers are bought by growers from across the world.

A photograph of a pear orchard with rows of trees laden with ripe, yellow-green pears. The trees are in the foreground and middle ground, with a dirt path leading into the distance under a bright blue sky with scattered white clouds.

Active fertilizers guarantee a bountiful harvest in virtually all conditions thanks to our unique composition of nutrients for plant protection and enhancement



Arkop Foliar Fertilizers – Active Plant Nutrition

Active fertilizers guarantee a bountiful harvest in virtually all conditions thanks to our unique composition of nutrients for plant protection and enhancement.

Providing plants with adequate amounts of particular nutrients is a prerequisite to generate a high quality, high volume yield, fit for immediate sale, processing or storage. Factors such as soil sterilization, improper pH, inequalities (antagonism) between elements in the soil and stress conditions (such as frost, drought and excessive moisture) may all exert an adverse impact on the root system’s ability to extract the ions it needs to flourish.

Studies have demonstrated that root fertilization alone to deliver nutrients to plants is not very efficient if the soil in question is affected by a nutrient deficit. The best solution in this case is to use extra-root nutrition with Activ fertilizers which enable plants to replenish the required nutrients quickly and improve the energy balance in the plant thanks to a big dose of fully absorbable biogenic amino acids.

Extra-root feeding of orchard plants with Activ fertilizers ensures:

- rapid replenishment of nutrients, both when soil exhibits nutrient deficiency and when they encounter absorption difficulties
- comprehensive provision of micro and macro nutrients and biogenic amino acids
- improved bioavailability of micronutrients to plants in comparison with soil fertilization (absorption is 10 to 30 times higher)

Researchers agree that the correct growth and development of orchard plants depends on the optimum supply of the following:

- macronutrients such as nitrogen, potassium, phosphorus, calcium, magnesium and sulfur
- trace elements such as zinc, copper, manganese, iron, boron and molybdenum
- beneficial elements such as cobalt, silicon and nickel

Shortage of these elements disrupts the correct functioning of plant organisms, which can be seen in:

- yellowing of leaves and weak growth of plants (**lack of nitrogen**)
- necrosis of the lower edges of plant leaves (**lack of potassium**)
- irregular discoloration of leaf edges (**lack of boron and potassium**)
- aggravated growth inhibition, vertex momentum decay, slimy roots, atypical chlorosis, leaf deformation and vertex burning (**lack of calcium**)
- deep-seated bitter stains on apples (bitter blotch), increased susceptibility to soft fruit cracking (**shortage of calcium**)
- discoloration of leaf nerves (vertical nerves: **lack of iron and manganese**; middle and lower nerves: **lack of magnesium**)
- discoloration of the main nerve (**lack of manganese**)
- necrotic spots, blue-green shade of leaves, distorted leaves exhibiting slight chlorosis of interveinal tissue (**lack of copper**)
- inhibition of internodal elongation, leaf surface reduction. Light green discoloration **of older leaves (lack of zinc)**
- leaf underdevelopment, yellowing and dying leaves, deformed leaves and shoots, flower underdevelopment and fall (**lack of molybdenum**)
- inhibition of nitrogen fixation in plants (**lack of nickel**)

Activ fertilizers contain nutrients in the right proportions selected and delivered to fit individual plant development phases. Activ fertilizers are manufactured employing state-of-the-art technology guaranteeing top quality and availability.

Activ fertilizers assure active plant feeding to produce excellent results.

Why Chelates

Chelate-based fertilizers – the best solution for top availability of nutrients in any conditions

We recommend a new generation of fertilizers manufactured using biotechnology that guarantees the highest level of chelation of nutrients.

Effectiveness and environmental protection - chelates are crucially important compounds in agriculture. Nutrients required for correct growth and development of plants are combined with specially selected organic agent (the so-called chelator). This structure ensures quick uptake and inclusion of the nutrient into metabolic processes. This means that these nutrients do not seep into the soil and therefore do not cause environmental pollution.

Performance and convenience – employing chelated fertilizers makes it possible to achieve considerably higher utilization of components, while curtailing specimen quantities compared to traditional products. A unique balanced composition operates in several directions while delivering the right dosage of minerals to crops with only a single product (Activ Antichlorosis).

Arkop chelates are highly-sophisticated, latest generation fertilizers featuring a very high degree of chelation certified by authorized laboratories such as PCBC (in contrast to simple and complex compounds).

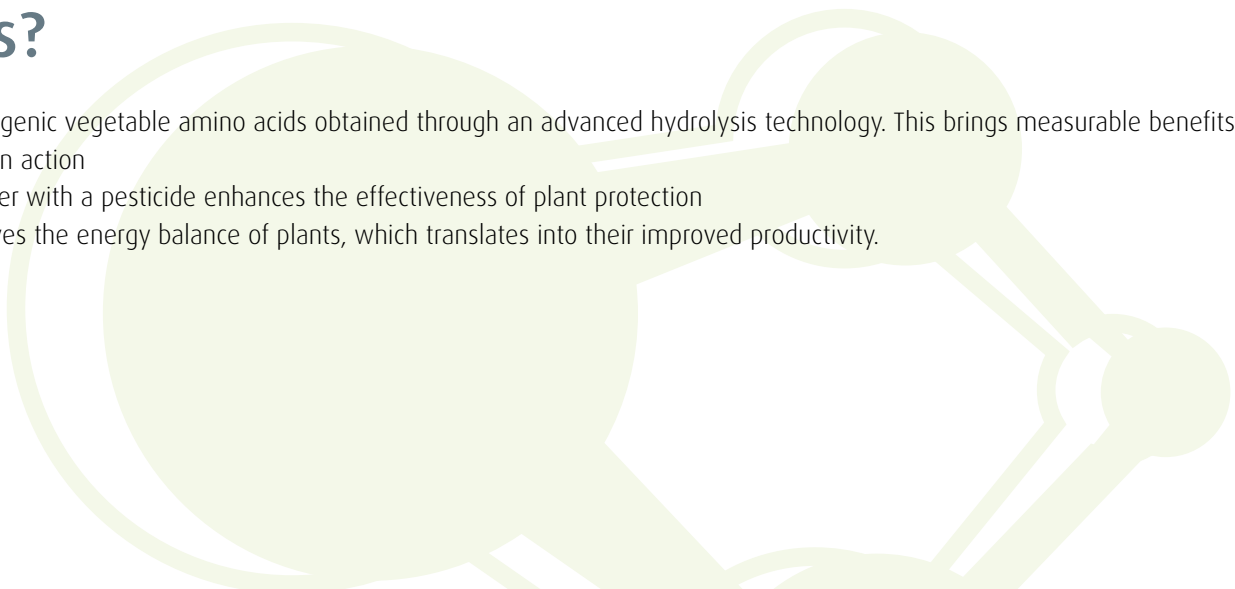
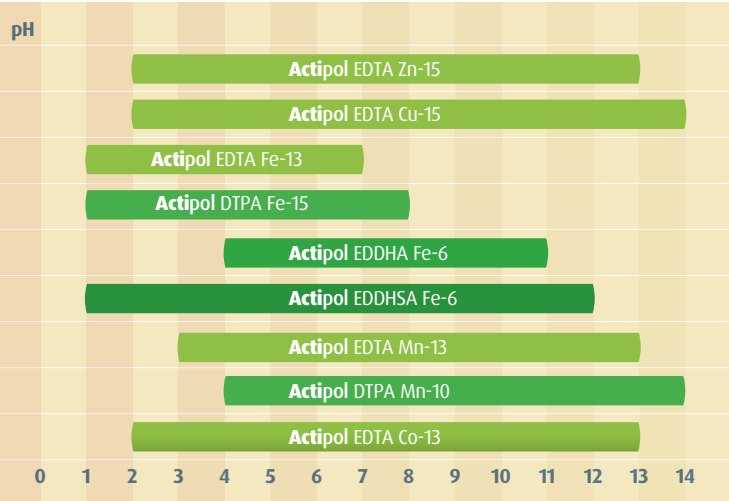
Arkop chelates: quality you can trust.

Why amino acids?

Activ fertilizers have been enriched by biogenic vegetable amino acids obtained through an advanced hydrolysis technology. This brings measurable benefits:

- Activ fertilizers provide biostimulation action
- Application of Activ fertilizers together with a pesticide enhances the effectiveness of plant protection
- Application of Activ fertilizers improves the energy balance of plants, which translates into their improved productivity.

The stability of the chelates in the rank of pH





Overall Fertilization Program



Activ Start Orchards NPK

NPK 31 (4-16-11) | MgO 4,5% | Zn EDTA – 2,4% | B 4,7% | SO₃ 9,0%

Unique composition of chelated minerals to provide the optimal supply of plant nutrients in early growth periods. Its precisely matched primary macronutrient content (**N, P, K, Mg, S**) combined with its high content of boron and chelated zinc enables it to activate basic physiological processes in plants quickly and efficiently.

- Stimulating post-frost damage regeneration and cell recovery
- Intensifying cell division
- Strengthening plant resistance to stress factors (heat, water and light-related stress)

Activ ProAmin Orchards

MgO 5% | Fe 1,8% | Mn 0,72% | Cu 0,06% | amino acids

Fully dissolvable fertilizer with high content of absorbable α -amino acids for extra-root orchard plant nutrition. Application of **Activ ProAmin Orchards** intensifies plant productivity through significant intensification of protein biosynthesis and generation of an intracellular energy gain. The energy saved in the protein biosynthesis process activates other metabolic processes, which translates into overall improvement of the plant life. **Activ ProAmin Orchards** comprises a complete set of biogenic amino acids generated in the process of an advanced hydrolysis of vegetable protein. Thanks to precisely focused production processes the amino acids contained in **Activ ProAmin Orchards** are absorbed in at least 80%. Application of **Activ ProAmin Orchards** is very effective in the periods when trees and bushes have a critical need of energy (flowering, fruit setting, intensive fruit growth, ripening) and in stress periods (thermal stress, plant damage) when delivery of easily absorbable biogenic α -amino acids provides biostimulation to plants.

- Biostimulation of plant productivity, plant life functions and intensification of metabolism
- Improved utilization of nutrients and plant productivity
- Intensification of the photosynthesis process

Activ ProWigor Orchards

MgO 5,0 % | SO₃ total 85% (soluble in water 10%)
Fe EDTA 0,2% | N 1,15% | Mo 0,04% | contains Nickel

High-class innovative stimulator improving plant productivity, which, thanks to its well balanced ingredients such as **sulfur, magnesium, iron, molybdenum** and **nickel**, intensifies the use and transformation of nitrogen and photosynthesis, thereby strengthening the plant. The right mix of **chelated ingredients** in proper proportions as well as the innovative use of nickel, which as a constituent element of urease, intensifies photosynthesis when leaves and shoots are undergoing their quickest development.

- Stimulating the utilization of soil nitrogen and improving the metabolism of that macro component
- Intensifying photosynthesis
- Improving plant health

ActiBor 150 | Super ActiBor 21

B – 11% (150 g/l) boroethanolamine, B – 21% on the basis of sodium borate

ActiBor 150 and **Super ActiBor-21** are fertilizers with a high boron content designed for all kinds of orchard plants.

- Activating pollination
- Improving fruit setting
- Reducing the risk of fruit russetting
- Improving resistance to thermal stress

Activ Fruit NPK

NPK 65 (13-44-8) | Mn EDTA – 0,63 %

A special composition of top quality **chelated minerals** with high contents of **phosphorus** and **manganese**, stimulating fruit coloration and improving mechanical resilience.

- Improving fruit color and firmness
- Improving fruit's nutritional value (taste and smell)
- Improving storage capacities

ActiCal

CaO 112 g/l (CaO – 9,6%) | Zn EDTA – 0,01% | Mo – 0,001%

Latest generation extra-root fertilizer containing calcium in the form of a high quality amino acid chelate. This unique amino-acid formulation of calcium (CALAC112), substantially augments bioavailability, eliminating the drawbacks associated with the low mobility calcium ions exhibit in plants. It is convenient to use and is one of the few products on the market that does not contain chlorine or nitrates.

- Improving fruit firmness, durability and mechanical resistance
- Preventing physiological diseases caused by calcium deficiency
- Improving fruit resistance to cracking

Bor-Cynk Activ

B – 12% | Mo – 0,02% | Zn EDTA – 6 %

Latest generation crystalline fertilizer containing **chelated zinc** and completely soluble **boron** and **molybdenum**. Unique provision of boron in the form of a highly absorbable molecule ensures correct absorption of the micro element by cells and guarantees its full utilization. Optimum proportions of individual components guarantee high effectiveness of the fertilizer with regard to:

- Stimulating flower bud fruit setting
- Eliminating the unfavorable fruit russetting (apples, pears, plums)
- Improving bud formation for next year
- Improving spring frost resistance
- Improving severe winter frost resistance

Activ Antichlorosis

MgO – 14% | SO₃ – 28% | B – 0,85% | Mo – 0,08%
EDTA: Zn – 1% | Mn – 0,6% | Cu – 0,08% | Fe – 1,65%

Latest generation fertilizer containing a high dosage of **magnesium** along with the entire range of micro elements in the form of top quality chelates. In addition, this product includes **high-quality biogenic amino acids**. This composition additionally intensifies and speeds up the bioabsorption of nutrients, which has positive impact on the effectiveness of the fertilizer. Thanks to the biogenic amino acids, after application plant biostimulation effects can be observed.

- Facilitating chlorophyll biosynthesis and improving the efficiency of photosynthesis
- Improving basic plant life functions and enhancing metabolism
- Strengthening plant resistance to stress factors
- Improving pesticide effectiveness

Activ Zinc-Manganese

Mn EDTA – 4,8% | Zn EDTA – 9,5%

Thanks to its unique composition of **chelated zinc** and **manganese micro molecules**, this fertilizer is designed for interventions to improve the plant resistance to low temperatures and improve the sanitary condition of the plantation. Application of the fertilizer according to recommendations ensures:

- Improving winter frost resistance
- Improving spring frost resistance
- Improving plant health significantly

Magnesium sulphate Monohydrate

MgO – 23% | SO₃ – 46% (with trace elements Zn, Mn)

Magnesium sulphate monohydrate 23% MgO – a well-known and highly-valued fertilizer incorporating the core principles of fertilization. Plant nutrition with magnesium sulphate monohydrate is the best way to supply plants with **magnesium** and **sulfur**: nutrients needed to ensure proper growth, high yields and structural quality.

- Supplementing magnesium and sulfur deficiency
- Intensifying photosynthesis and nitrogen utilization

Actipol Chelates Fe | Mn | Zn | Cu | Co

Fe-13 | Mn – 13 | Zn-15 | Cu-15 | Co-13

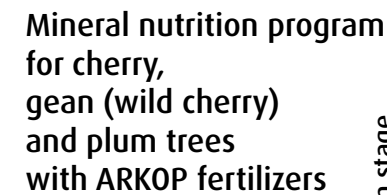
Innovative technology for production of micro element chelated fertilizers procures stable compounds with a wide range of pH values offering resistance to external factors, digestibility and absorption to sustain performance when facing periods of hindered nutrient acquisition. Chelates may be used in intervention to fill gaps in micronutrient deficiencies. In the right doses they can be used jointly with other fertilizers or pesticides.

- Preventing or eliminating shortages of individual micro elements
- Increasing efficiency of photosynthesis
- Improving plant productivity
- Increasing resistance to stress factors



CHERRY | GLEAN (WILD CHERRY)

PLUM



growth stage



Cracking buds



Green bud



White bud



Outset of flowering



End of flowering



Fruit development












Fruit ripening



After fruit harvest

Product	Application	Frequency	Dose	Notes
Activ Start Orchards	2-3 preventive reinforcement treatments every 10-14 days at a dose of 3 kg / ha Interventional procedures before and after the occurrence of a stress factor at a dose of 3-5 kg / ha			
Activ ProWigor Orchards			2-3 treatments every 10-14 days at a dose of 3-5 l/ha	2-3 treatments every 10-14 days at a dose of 3-5 l/ha
Activ ProAmin Orchards			3-5 treatments every 10-14 days at a dose of 1-3 l/ha	
Actibor 150 Super Actibor 21			2-3 treatments at a dose of 0.5-1.0 l/ha	2-3 treatments at a dose of 0.5-1.0 kg/ha
Activ Fruit NPK				1-2 treatments every 10-14 days at a dose of 3 kg/ha
ActiCal				3-4 treatments every 10-14 days at a dose of 1.5-1.8 l/ha
Bor-Cynk Activ				2-3 treatments every 10-14 days at a dose of 3-4 kg/ha
Activ Antichlorosis				3-5 treatments every 10-14 days at a dose of 3-5 kg/ha
Activ Zinc-Manganese	One treatment at a dose of 2-3 kg/ha			1-2 treatments at a dose of 4-5 kg/ha
Magnesium Sulphate Monohydrate				3-4 treatments every 10-14 days at a dose of 5-10 kg/ha
Chelates Fe Mn Zn Cu				3-5 treatments every 10-14 days at a dose of 1.0-1.5 kg/ha

	Cracking buds	Green bud	White bud	Outset of flowering	End of flowering	Formation and growth of buds	Intensive growth and fruit ripening	After fruit harvest
Activ Start Orchards 	2-3 preventive reinforcement treatments every 10-14 days at a dose of 3 kg / ha,Interventional procedures before and after the occurrence of a stress factor at a dose of 3-5 kg / ha							
Activ ProWigor Orchards 						3-4 treatments every 10-14 days at a dose of 3-5 l/ha		
Activ ProAmin Orchards 			3-5 treatments every 10-14 days at a dose of 1-3 l/ha					
Actibor 150 Super Actibor 21			2-3 treatments at a dose of 0.5-1.0 l/ha 2-3 treatments at a dose of 0.5-1.0 kg/ha					
Activ Fruit NPK 					2-3 treatments every 10-14 days at a dose of 3 kg/ha			
ActiCal 					3-4 treatments every 10-14 days at a dose of 1.5-1.8 l/ha			
Bor-Cynk Activ 								2-3 treatments every 10-14 days at a dose of 2-4 kg/ha
Activ Antichlorosis 				3-5 treatments every 10-14 days at a dose of 3-5 kg/ha				
Activ Zinc-Manganese 	1 treatment at a dose of 2-3 kg/ha							1-2 treatments at a dose of 4-5 kg/ha
Magnesium Sulphate Monohydrate		3-4 treatments every 10-14 days at a dose of 5-10 kg/ha						
Chelates Fe Mn Zn Cu 	3-5 treatments every 10-14 days at a dose of 1.0-1.5 kg/ha							



STRAWBERRY

RASPBERRY

Activ Start Orchards

growth stage



Beginning of vegetation



Peak leafage



Outset of flowering



Peak flowering



Fruit growth and development



Yield



After fruit harvest

Beginning of vegetation

Intensive shoot growth

Outset of flowering

Peak flowering

Fruit growth and ripening

After fruit harvest

* At the beginning, peak and end of flowering

** After cutting down the leaves

2-3 preventive reinforcement treatments every 10-14 days at a dose of 3 kg / ha | Interventional procedures before and after the occurrence of a stress factor at a dose of 3-5 kg / ha

2-5 treatments every 10-14 days at a dose of 2-4 l/ha

2-3 treatments at a dose of 0.5-1.0 l/ha

				2-3 treatments every 10-14 days at a dose of 1.5-1.8 l / ha
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3-5 treatments every 10-14 days at a dose of 3-5 kg/ha	2-3 treatments every 10-14 days at a dose of 4-5 kg/ha
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[illegible]

3-4 treatments every 10-14 days at a dose of 5-10 kg/ha

3-5 treatments every 10-14 at a dose of 1.0-1.5 kg/ha



Mineral nutrition
program for
blackcurrants and
blueberries with
ARKOP fertilizers



Fertilizer type

Activ Start Orchards	
Activ ProAmin Orchards	
Activ ProWigor Orchards	
Actibor 150 Super Actibor 21	
Activ Fruit NPK	
ActiCal	
Bor-Zinc Activ	
Activ Antichlorosis	
Activ Zinc-Manganese	
Magnesium Sulphate Monohydrate	
Chelates Fe Mn Zn Cu	

growth stage

Beginning of vegetation

Peak leafage

Flowering

Fruit growth and ripening

After fruit harvest

2-3 preventive reinforcement treatments every 10-14 days at a dose of 3 kg / ha Interventional procedures before and after the occurrence of a stress factor at a dose of 3-5 kg / ha				
2-4 treatments every 10-14 days at a dose of 1-2 l/ha				
		4-5 treatments every 10-14 days at a dose of 3-5l/ha		
2-3 treatments at a dose of 0.5-1.0 l/ha 2-3 treatments at a dose of 0.5-1.0 kg/ha				
			1-2 treatments every 10-14 days at a dose of 3-5 kg/ha	
			2-3 treatments every 10-14 days at a dose of 1.5-1.8 l/ha	
				2-3 treatments every 10-14 days at a dose of 3-4 kg/ha
4-5 treatments every 10-14 days at a dose of 3-5 kg/ha				
One treatment at a dose of 2-3 kg/ha				1-2 treatments at a dose of 4-5 kg/ha
3-4 treatments every 10-14 days at a dose of 5-10 kg/ha				
3-5 treatments every 10-14 days at a dose of 1.0-1.5 kg/ha				

Swelling buds

Outset of flowering

End of flowering

Fruit growth and ripening

After fruit harvest

2-3 preventive reinforcement treatments every 10-14 days at a dose of 3 kg / ha Interventional procedures before and after the occurrence of a stress factor at a dose of 3-5 kg / ha				
		2-4 treatments every 10-14 days at a dose of 1-3 l/ha		
			4-5 treatments every 10-14 days at a dose of 3-5l/ha	
2-3 treatments at a dose of 0.5-1.0 l/ha 2-3 treatments at a dose of 0.5-1.0 kg/ha				
			1-2 treatments every 10-14 days at a dose of 3-5 kg/ha	
			2-3 treatments every 10-14 days at a dose of 1.5-1.8 l/ha	
				2-3 treatments every 10-14 days at a dose of 3-4 kg/ha
		4-5 treatments every 10-14 days at a dose of 3-5 kg/ha		
One treatment at a dose of 2-3 kg/ha				1-2 treatments at a dose of 4-5 kg/ha
3-4 treatments every 10-14 days at a dose of 5-10 kg/ha				
3-5 treatments every 10-14 days at a dose of 1.0-1.5 kg/ha				

General comments
to the extra-root nutrition program:

- Extra-root nutrition treatments should be performed without exposure to full sunlight, at the temperature below 25°C and with high air humidity
- The fertilizer solution should be applied to plants in the form of a fine spray until the leaf blade, especially the bottom side of the leaf, is fully moistened
- The minimum dose of the fertilizer recommended should be applied with a reduced volume of the working solution per ha and in the case of joint application of the fertilizer with another fertilizer or pesticide
- In the case of mixing the fertilizer with pesticides make sure that there are no contraindications for preparation of the given mixture of the agro-chemicals
- In the case of preparation of a mixture of several agro-chemicals observe the maximum concentration of the working liquid that is safe for the plants at the given development phase,
- Extra-root nutrition treatments should be performed not more frequently than once per 7-10 days,
- For preparation of the working liquid it is best to use soft water (e.g. rainwater) at the temperature similar to ambient temperature,
- Recommended quantity of working liquid is 700-1000 l/ha

We recommend fertilizers for orchard plants



Activ Start Orchards



Activ ProWigor Orchards



Activ ProAmin Orchards



Actibor 150 | Super Actibor 21

Activ Fruit NPK



ActiCal



Bor-Cynk Activ



Activ Antichlorosis



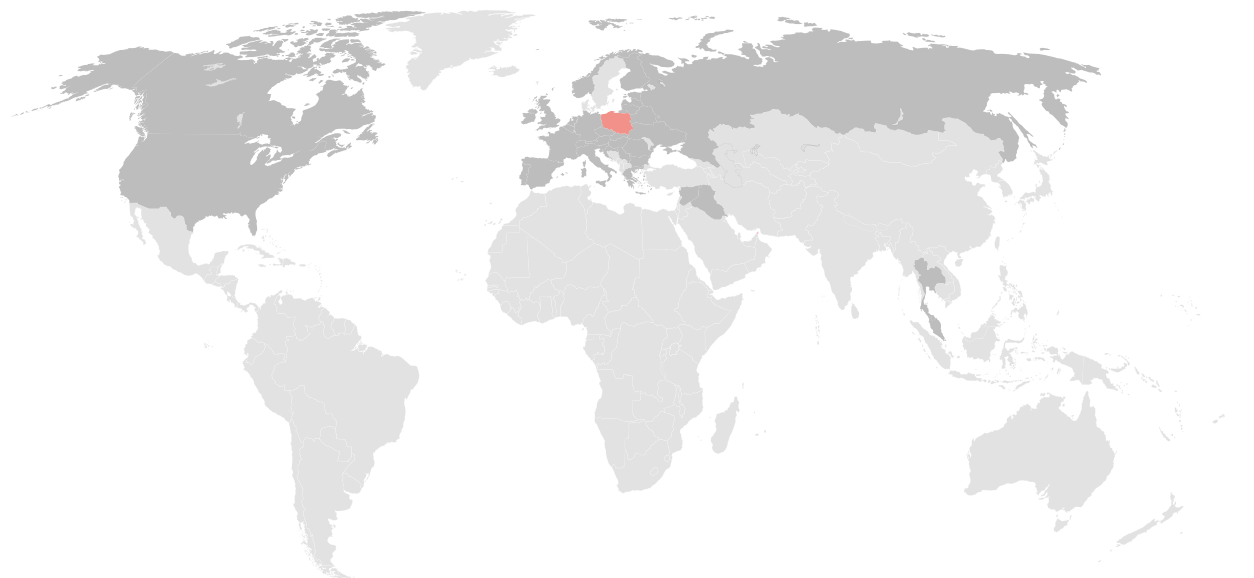
Activ Zinc-Manganese



Magnesium Sulphate Monohydrate

Chelates

Fe | Mn | Zn | Cu | Co



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We strive to enhance product quality on an ongoing basis in cooperation with our customers. We meet the needs and requirements of the most demanding customers while adhering to European Union standards. We are a member of the Association of Polish Exporters.

We employ and continue to develop an integrated quality management and food safety system according to ISO 22000 (HACCP) and ISO 9001. As evidence of compliance with the most stringent requirements in this industry, we have obtained an integrated management system certificate in Quality and Food Safety: HACCP - HACCP - PN-EN ISO 9001:2009 and PN-EN ISO 22000-2006. We have also acquired the FAMI-QS European quality certificate for feed additives and premixes.

We proudly cooperate with growers from across the world.

We enhance nature



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