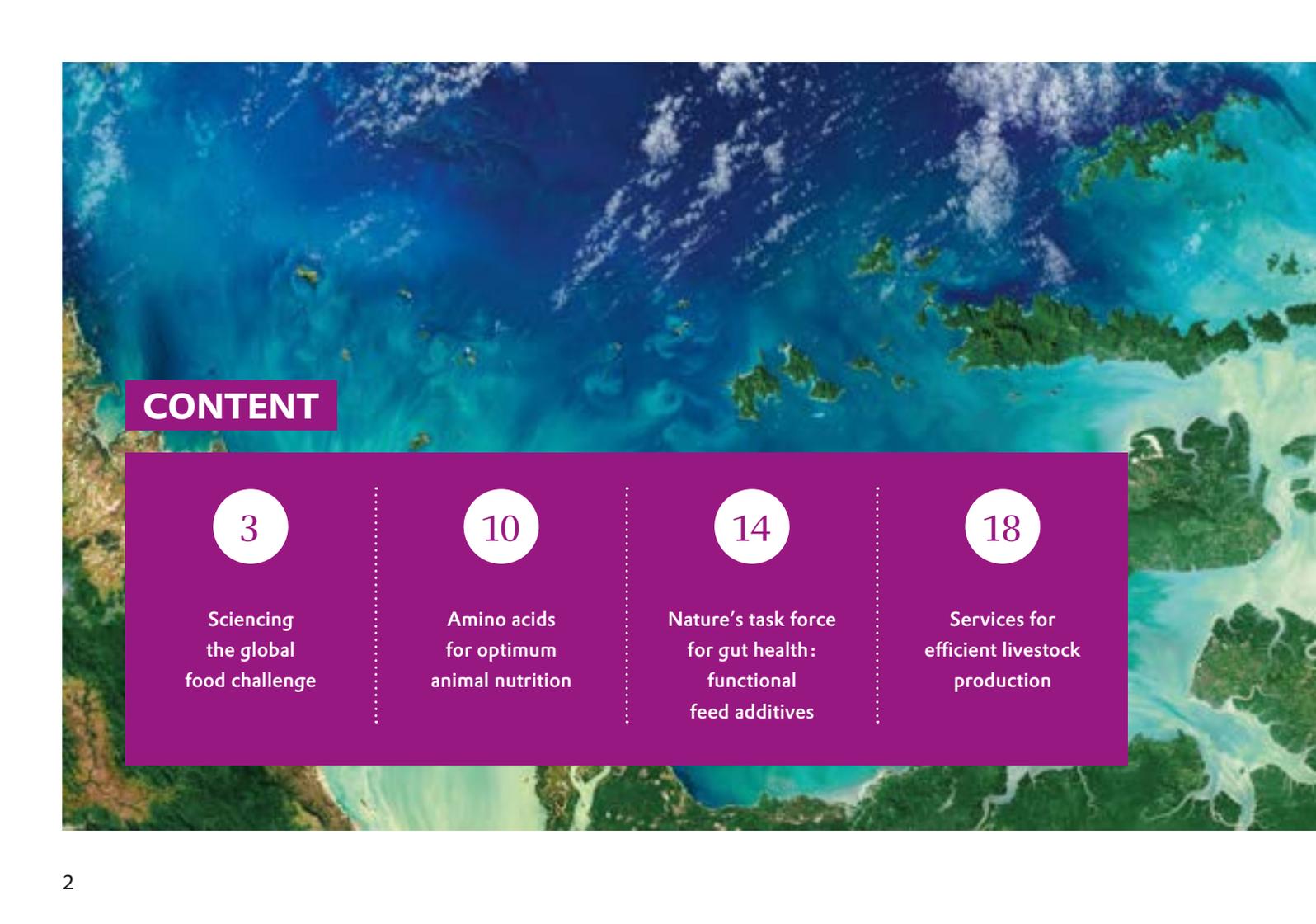


**ANIMAL
NUTRITION**

PRODUCT
AND SERVICE
OVERVIEW



SCIENCING THE GLOBAL
FOOD
CHALLENGE



CONTENT

3

Sciening
the global
food challenge

10

Amino acids
for optimum
animal nutrition

14

Nature's task force
for gut health :
functional
feed additives

18

Services for
efficient livestock
production



THE FUTURE OF LIVESTOCK PRODUCTION

BECAUSE IT'S ALL ABOUT LIFE

Ensuring food security is one of the greatest global challenges. Eight billion human lives depend on it. But how we source animal protein matters because it has consequences that affect animals, humans, and ultimately the entire planet. There is only one way to do it right: using science. Only considered, evidence-based solutions can establish and maintain a truly sustainable and secure food supply.

Sciencing the global food challenge.



BECAUSE
IT'S ALL
ABOUT **LIFE**



THE TASK:

ENSURING FOOD SECURITY FOR US ALL

Animal protein is a key part of a balanced diet for many people across the globe. Providing enough affordable animal protein for eight billion people is a challenge. An even greater challenge is how to respect the health and welfare of animals and ensure responsible use of antibiotics, while protecting our environment. How we source animal protein affects animals, humans and the planet. It affects life itself. There is only one way to do it right: using science.

Because it's about life.



BECAUSE
IT'S ALL
ABOUT **LIFE**



THE CHALLENGE:

STAYING WITHIN PLANETARY BOUNDARIES

Everything we do has an impact on our environment. How we source animal protein affects animals, humans, the entire planet. We need to do more with less to reduce our ecological footprint while ensuring food security, food safety and animal welfare. This complex set of challenges requires an holistic, scientific approach. That's why we are sciencing the global food challenges.

Because it's about life.



BECAUSE
IT'S ALL
ABOUT **LIFE**



THE OPPORTUNITY:

SCIENCING THE GLOBAL FOOD CHALLENGE.

Livestock farming affects wildlife – both directly or indirectly. Eutrophication, water and land use, as well as biodiversity are as important as animal welfare. With the help of science, we're making land use more efficient, reducing the need for deforestation and monoculture, maintaining biodiversity and reducing fertilizer and freshwater use. Our sustainable farming solutions not only enhance growth and animal health but also reduce reliance on natural resources. That's why we are scienicing the global food challenge.

Because it's about life.



*Scan the QR code
and get more information.*

AMINO ACIDS

for optimum animal nutrition

THE BUILDING BLOCKS OF LIFE: AMINO ACIDS ARE THE ESSENCE OF A HEALTHY, GROWTH-SUSTAINING DIET.

For decades, Evonik has played a pioneering role in the development and application of easy-to-handle amino acid livestock feed supplements of unsurpassed purity.

Alongside the essential methionine, we provide the full spectrum of amino acids to enable perfectly balanced diets for each livestock species and growth stage.



MetAMINO®

ESSENTIAL

Ideal for ensuring an adequate supply of sulfur amino acids, particularly the essential amino acid methionine, MetAMINO® is the product of choice featuring unsurpassed purity and easy handling. As the first-limiting amino acid in typical poultry diets, methionine is well-established in laying and broiler production. MetAMINO® has also shown excellent results in diets for piglets and growing pigs, where considerable deficiencies in methionine can occur, especially when feed is formulated to reduce nitrogen excretion for ecological reasons. Such deficiencies can be easily and cost-effectively compensated for with MetAMINO®.

Biolys®

AMINO ACIDS IN BALANCE

Biolys® is a highly effective and reliable source of lysine. It enables unsurpassed precision in balancing amino acids. Along with lysine, Biolys® contains nutritionally valuable biomass and energy. The result is lower feed costs for pigs, poultry and aquatic species.

ThreAMINO®

OPTIMUM PROTEIN UTILIZATION

Supplementing feed with L-threonine, an essential amino acid that cannot be formed by the animal, supports optimum protein synthesis and muscle deposition. Threonine is known to be essential for maintaining gut health and function, leading to better animal welfare and improved feed utilization. The benefit: optimum utilization of protein sources, reduced nitrogen excretion and lower feed costs.



AMINO ACIDS FOR RUMINANTS

In ruminant nutrition, supplemental amino acids must be protected against microbial degradation in the pre-stomach rumen system. For this reason, Evonik's DL-methionine supplement Mepron® is equipped with a time-release film coating. Rumen-protected Mepron® delivers methionine in a highly concentrated form, ensuring that the nutrient arrives in the small intestine to be absorbed.

BALANCE

THE DIET

**OPTIMUM ANIMAL
PERFORMANCE
CAN BE ACHIEVED
BY SUPPLYING
ALL AMINO
ACIDS IN THE
FEED ACCORDING
TO THE IDEAL
PROTEIN CONCEPT.**

CUSTOMER PORTAL

myAMINO

TAKE ADVANTAGE OF OUR DIGITAL PORTAL

Access our digital tools, training videos, information and documentation about our products and concepts. You can also place your orders conveniently, anywhere and anytime.



Enjoy exploring myAMINO to experience technical solutions on demand.

.....
Visit us on **myamino.evonik.com**





NATURE'S TASK FORCE FOR ANIMAL HEALTH, WELL-BEING AND PERFORMANCE: Functional Feed Additives

AN INCREASING DEMAND FOR ANIMAL WELFARE AND ELIMINATING THE USE OF ANTIBIOTIC UTILIZATION IN ANIMAL FEED LEAD TO NEW CHALLENGES FOR LIVESTOCK FARMING.

Diseases, environment and feed ingredient types can negatively impact the intestinal microbial balance in animals, leading to slower growth and reduced performance. An overgrowth of pathogenic strains of *clostridium perfringens* can result in different disorders such as diarrhea, necrotic enteritis, gangrenous dermatitis and focal duodenal necrosis. These can ultimately impair the feed efficiency, growth and wellbeing of the animals and can cause economic losses for animal farmers.

K-pron®

BOOST YOUR MILK YIELD WITH K-PRON®, THE MOST EFFECTIVE POTASSIUM SOURCE FOR DAIRY COWS.

At the onset of lactation, a cow's need for potassium increases. Various stress factors can drive up the potassium requirement even further. For example, heat leads to potassium loss through sweating. If these needs are not met, both milk yield and animal health can melt like ice in the sunshine. With K-pron®, you can simply and cost-effectively adjust the potassium content of your ration and increase milk yield, profits and animal welfare.

GuanAMINO®

IMPROVING ANIMAL ENERGY METABOLISM

GuanAMINO® is a creatine source that ensures optimal nutrient utilization and returns over feed cost. Furthermore, it spares metabolic energy and works towards an optimized amino acid metabolism.

GutCare®

FOR A HEALTHY MICROBIAL BALANCE

GutCare® is a direct-fed microbial solution based on a spore-forming *Bacillus subtilis* DSM 32315 strain with an inherent capacity to produce a variety of secondary metabolites. It supports a more balanced intestinal microbial population.

Fecinor®

FOR HEALTHY PIGLETS AFTER WEANING

Fecinor® is a feed additive which consists of a natural fast-growing *Enterococcus faecium* CECT 4515 strain. Fecinor® supports intestinal health and benefits the host due to its capacity to produce lactic acid.

GutPlus®

FOR INTENSIVE FARMING OPERATIONS

GutPlus® contains the patented Evonik strain *Bacillus subtilis* DSM 32540. GutPlus® resists the passage through the gastric tract and takes effect within the intestinal environment, where it effectively supports a balanced microbiome and contributes to growth.

Ecobiol®

STABILIZING THE GUT MICROBIOTA

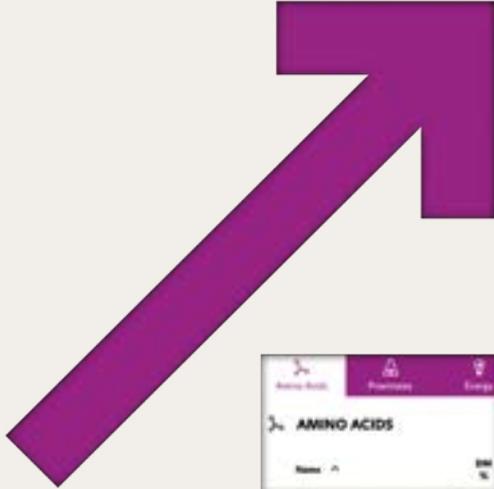
Based on a natural fast-growing *Bacillus amyloliquefaciens* CECT 5940 strain, Ecobiol® can improve the gut health of the animal and help producers solve quality, profitability and sustainability challenges.

Ecobiol® Fizz

SPARKLE UP YOUR FLOCK'S MICROBIOTA – AND YOUR PROFITS WILL SHINE.

Feed changes, vaccinations, reduced feed intake – your flock faces ongoing challenges. So it's good to know Ecobiol® Fizz gives you a fast and easy way to support a naturally balanced microbiota. The soluble probiotic tablet distributes spores homogenously in water tanks and stock solutions, without biofilm formation or clogging in water lines.





AMINO ACIDS		
Name		BM %
Corn	↑	84.00
Global, 2019-2023	↓	84.00
Corn	↑	84.00
Argentina, 2017-2020	↓	84.00
Corn	↑	84.00
Bangladesh, 2021-2021	↓	84.00
Corn	↑	84.00
Brazil, 2017-2017	↓	84.00
Corn	↑	84.00
China, 2019-2017	↓	84.00
Corn	↑	84.00
Egypt, 2021-2021	↓	84.00
Corn	↑	84.00



SERVICES FOR EFFICIENT LIVESTOCK PRODUCTION

EVONIK OFFERS A RANGE OF TAILORED TOOLS, ANALYTICAL & HANDLING SERVICES ALLOWING YOU TO SELECT, PRECISELY FORMULATE AND PRODUCE THE OPTIMAL DIET DEPENDENT ON SPECIES AND AGE PHASE.

In addition, we provide cutting-edge whole flock DNA test solutions. This holistic portfolio is rounded off with news and information services covering the latest animal nutrition topics.

Your benefit: complete support for cost-effective, healthy and efficient livestock production.

ANALYTICAL SERVICES

NUTRITION

HANDLING SOLUTIONS

KNOWLEDGE

ANALYTICAL SERVICES

AMINONIR®

ALL PARAMETERS FROM ONE SCAN

The fast and reliable analysis service AMINONIR® uses near infrared spectroscopy (NIR) to predict nutritionally relevant parameters in more than 60 vital feed ingredients. Samples can be processed through onsite NIR equipment, preferably Bruker or FOSS, or alternatively sent to Evonik labs. It works for ground and unground ingredients.

AMINONIR® AA

FAST AND EASY FEED INGREDIENT SCREENING

Evonik has developed specific calibrations for the prediction of crude protein, dry matter, essential and non-essential amino acids for all major feed ingredients, compiled in AMINONIR® AA. A large and diverse set of globally sourced samples form the basis of the tool. The advantages of AMINONIR® AA are easy sample preparation, speed and low operating costs, allowing you to carry out extensive feed ingredient screening programs at moderate expense.



AMINONIR[®] NRG

ENERGY CHECK

AMINONIR[®] NRG allows quick and reliable estimates of important energy parameters in feed ingredients and finished feeds. Readings include gross energy, apparent metabolizable energy (AME_n) for poultry (broiler, turkey, duck, layer), digestible energy, metabolizable energy and net energy for growing pigs and sows.

AMINONIR[®] Prox

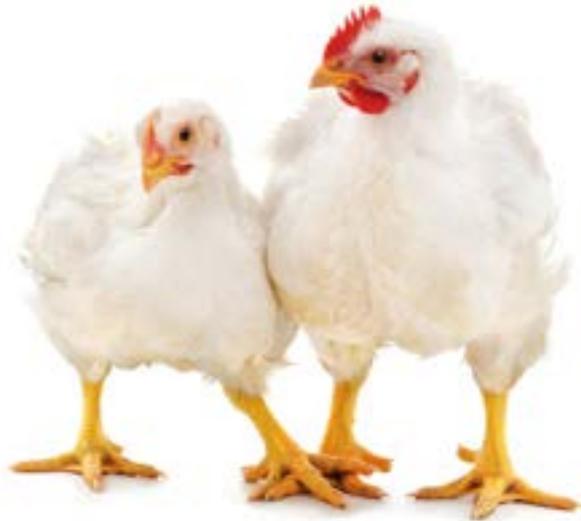
PREDICTIVE FEED ANALYSIS

Using near-infrared technology, AMINONIR[®] Prox predicts nutrients from proximate analysis and phosphorus in feed ingredients, as well as in finished feeds for poultry (broiler, turkey, duck and layer), pigs (sow, piglets, grower, finisher) and fish (carp, pangasius, sea bass, sea bream, trout, tilapia).

AMINONIR[®] RED

FAST AND RELIABLE FEED ANALYTICS

Deeper understanding of soya, rapeseed and distiller's dried grains with solubles (DDGS) products and a precise evaluation of their quality can be achieved through our AMINONIR[®] RED service. This allows more accurate feed formulation for more consistent long-term livestock performance. The service uses NIR analytics to estimate the Processing Conditions Indicator (PCI) of raw material samples – quickly, reliably and conveniently. Your benefit: ensured feed quality and better purchasing decisions.



ScreenFloX®

DIGITAL PATHOGEN MONITORING SOLUTION FOR POULTRY

Monitor your flocks before health and food safety issues arise: the service allows for the quantification of total DNA of *Clostridium perfringens* type G, *Salmonella enterica*, *Campylobacter jejuni*, *Eimeria* spp. (*E.tenella*, *E. acervulina*, *E. maxima*) in real time. This one-stop solution for continuous monitoring provides you the pathogen levels and progression with an early warning system to prevent disease and improve production.

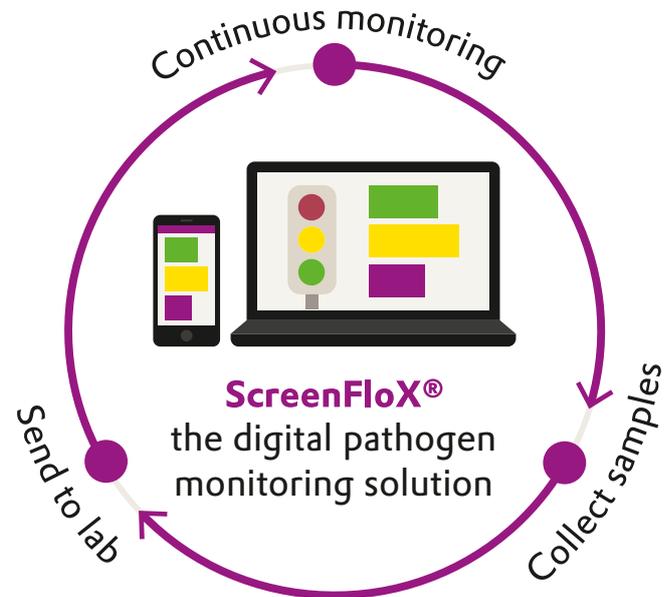
OUR DIGITAL MONITORING SOLUTION: A BETTER WAY

ScreenFloX® is a unique SMART qPCR-based digital pathogen monitoring tool, specialized for the most important gut pathogens in poultry; *Campylobacter jejuni*, *Salmonella enterica*, *Eimeria* spp., and *Clostridium perfringens*.

Part of Evonik's Precision Livestock Farming portfolio, ScreenFloX® allows you to continuously monitor and quantify gastrointestinal and foodborne pathogens quickly, precisely and reliably, with an early warning system enabling you to take quick and effective preventative action.

HOW DOES IT WORK?

ScreenFloX® uses samples of faeces collected in the barn and sent to a lab for reliable qPCR analysis of your flock's pathogen status. It is the only digital pathogen monitoring solution that non-invasively quantifies pathogens from an entire poultry flock based on qPCR.



Continuously monitor the pathogen status of your poultry flocks with ScreenFloX®.

For up-to-date licensing product-specific disclaimers, see the respective handbook or user manual.
Regulatory requirements vary by country, products may not be available in your geographic area.

AMINOLab®

THE GOLD STANDARD

With AMINOLab®, you can reliably determine the total amino acid, dry matter and crude protein content in your feed ingredients and finished feeds. Our sites in China, Germany and Singapore demonstrate our unrivalled laboratory capacity when it comes to animal nutrition. At these three labs, we perform sophisticated analysis with outstanding accuracy. Using internationally recognised wet-chemistry methods, our experts evaluate samples and promptly return findings. This efficiency and reliability enables nutritionists, purchasers, quality control and livestock production managers to make informed decisions in good time.

Analytical Data Advanced

ONE ACCESS POINT FOR LAB DATA

Evonik has established its *Analytical data Advanced (ADA)* to give you one easy-to-use access point for all your proprietary lab data. This secure, web-based platform can be accessed through our customer portal. It's a highly flexible system, allowing you to filter data by feed ingredient or time-frame and configure the data columns according to your needs. *ADA* will e-mail you when your new lab results become available.

AMINOInsight®

ONGOING QUALITY CONTROL

The quality of a feed ingredient can change over time, or you might get a better quality from a certain supplier. AMINOInsight® enables you to quickly identify the values hidden in large datasets of feed ingredients. Feed ingredient costs are significant in feed milling and animal production, so controlling quality and evaluating sourcing options are essential to profitability.

inoSust®

At Evonik, we take our responsibility towards the environment seriously. That's why we have created our sustainability roadmap to reduce our environmental footprint. But we are also using our long experience in animal nutrition to help your business meet its own responsibilities. With inoSust®, our new consulting service at Evonik, we apply life cycle assessment and innovative tools like Opteinics™ to create transparency on the impact of feed and meat production. This improves your ability to respond to sustainability requests and demonstrate improvements.

Opteinics™ = trademark of BASF



AMINOPig®

FEED RECOMMENDATIONS FOR GROWING PIGS

The software tool AMINOPig® provides amino acid and energy recommendations for growing pigs. It enables you to simulate your particular production conditions by selecting the genetic lean gain, sex and body weight of the pigs and the dietary net energy (NE) content.

AMINOCow®

COMPANION FOR MEPRON®

An easy-to-use and powerful tool for dairy cow ration formulation and evaluation, AMINOCow® supports amino acid balancing with Mepron®, the rumen protected methionine.

AMINO Aqua®

AQUACULTURE SOFTWARE (CARP, SALMONID, SHRIMP, TILAPIA)

Four targeted software tools for quick and easy amino acid recommendations. By simulating production scenarios based on various operation-specific features, the tools allow you to optimize your feed mix for cost-effective production of different aquatic species.

HANDLING SOLUTIONS



AMINOSys[®]

COMPREHENSIVE FEED-MILL SYSTEMS

Consulting, hardware and software solutions for micro-ingredient handling and dosing in feed mills. Our AMINOSys[®] equipment range offers flexible solutions for fully automated direct dosing and conveying of amino acids from bulk storage to your batch mixing line. Comprehensive engineering and commissioning support ensure maximum benefit for the feed mill.

AMINO*Batch*[®]

MIXING QUALITY CONTROL

By analyzing supplemented amino acids in 10 compound feed samples out of one batch of feed, AMINO*Batch*[®] gives you a clear and realistic indication of whether your mixer is operating effectively, evaluating amino acid variation in assays obtained with high analytical accuracy. The AMINO*Batch*[®] test helps you produce homogeneous compound feed, supporting uniform and consistent animal performance.

AMINO*Batch*[®] WPT

ONE TEST FOR ALL

The unique tool AMINO*Batch*[®] *Working Precision Test* delivers comprehensive data on the working precision of the dosing and mixing lines for all amino acids in the process in one single test. The working precision test provides results for the application of dry and liquid additives in the same mixing line under comparable conditions.

AMINO*Trac*[®]

VENDOR MANAGED INVENTORY

To ensure efficient replenishment of silos of amino acids, we provide AMINO*Trac*[®] – the Evonik service for vendor managed inventory and optimization and replenishment. Filling levels of silos are remotely monitored. Based on forecast scenarios, optimal replenishment is scheduled and alerts are triggered to ensure timely call-off or deliveries.

THE LATEST KNOWLEDGE

AMINO*News*[®]

STAY UP TO DATE

AMINO*News*[®] translates scientific data and experience into practical solutions, providing updates on nutritional topics for the feed industry, integrated livestock and poultry operations, consultants and universities.

The content is specifically selected to support decision-making processes in livestock and feed-milling operations. AMINO*News*[®] is available on Google and Apple app stores, as well as on our website.



Facts&Figures

APPLIED SCIENCE, PRACTICAL INSIGHTS

Our *Facts&Figures* (scientific papers) reveal information on trial results, executive summaries on scientific findings and discussions on nutritional and feeding trends.

SOCIAL MEDIA

Follow us on LinkedIn, Instagram and Twitter:
Evonik Animal Nutrition



THE RIGHT SUPPORT for your needs

Whether you run a feed mill or livestock operation, produce meat, dairy products, eggs, fish or shrimp, Evonik provides essential support. Let's talk about what our targeted feed additives, software tools, services and experience can do to take your business to the next level – and set you apart from competitors.

EVONIK OPERATIONS GMBH

NUTRITION & CARE

ANIMAL NUTRITION BUSINESS LINE

animal-nutrition@evonik.com

evonik.com/animal-nutrition

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05/2023