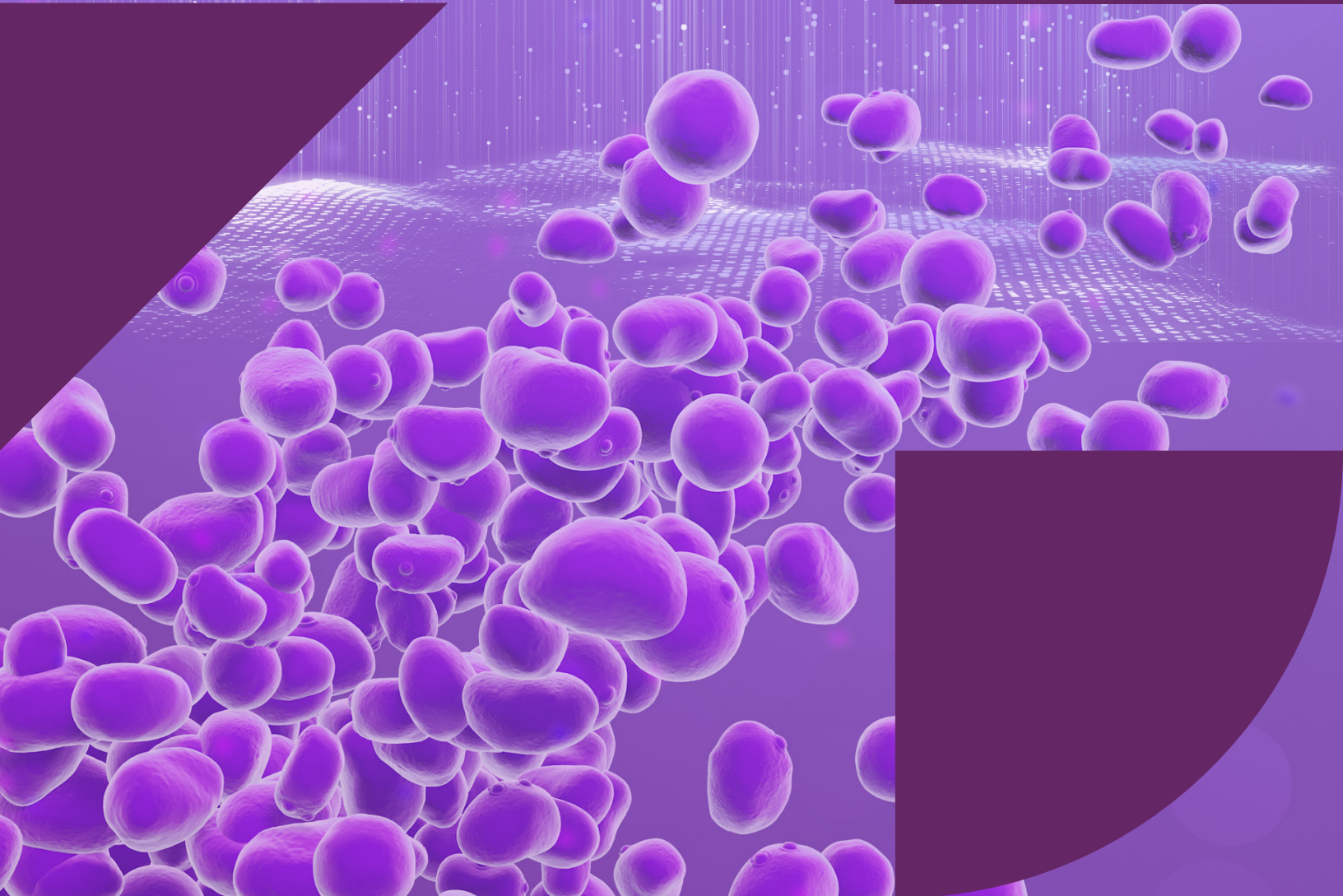


**FLEXIBILITY.
SYNERGY.
PERFORMANCE.**

iff



**UNLOCK YOUR PLANT'S
FULL POTENTIAL WITH THE
SYNERXIA® GEMSTONE COLLECTION.**

PRIORITIZING YOUR PLANT'S PERFORMANCE: THE SYNERXIA® GEMSTONE COLLECTION

Introducing the SYNERXIA® Gemstone Collection

IFF's versatile, high-performance yeast solutions, specially engineered to optimize fermentation for better biofuel production.

As part of our XCELIS® Ethanol Solutions platform, the collection is built on a holistic approach to partnering with our customers in the ethanol industry - to de-risk their decision making and drive innovation. At the core of this mission is XCELIS® AI, our proprietary data analytics and predictive modelling tool. Harnessing smart modelling, analysis and training, XCELIS® AI allows our experts to accurately predict full-scale performance from small-scale experiments, giving our partners the knowledge they need to unlock their plant's full potential.

Together we can level-up your decision making, and deliver the process optimizations you need to achieve your ethanol production goals.

Ready to discover more?

FUELING YOUR VISION IS OUR MISSION

We're here to support your needs – whatever they may be.

From our years of experience partnering with companies across the biofuels industry, we understand that ethanol production can be a complex and challenging process. Most yeast solutions are geared for specific operating conditions, making it difficult for manufacturers to pivot operations when market conditions change. The ethanol fermentation process itself poses challenges, including high temperatures, high organic acid stress, high dry solids and high ethanol titers, all of which can impede yeast growth, resulting in poor performance and lower yields.

**What makes the SYNERXIA® Gemstone Collection different?
Its flexibility and synergy.**

Underpinned by years of research from experts around the world, our portfolio features a range of high-performance yeasts that are powerful alone, and can work in perfect harmony when blended to help you achieve the ideal balance of plant throughput, yield or robustness for your unique process.

Our leading solutions are only one facet of our holistic approach to ethanol production. To deliver the best possible outcome for our partners every time, we support production planning, right from its inception.

Yeast blends are often greater than the sum of their parts. At IFF, we see synergy.

Get to know the SYNERXIA® Gemstone Collection

Our SYNERXIA® Gemstone Collection is designed to maximize performance in fuel ethanol production with the perfect combination of fermentation yield, speed, robustness and enzyme expression. Find your ideal solution with an individual yeast or yeast blend:



SYNERXIA® RUBY

Our highest yielding portfolio of yeasts, also offering strong robustness.

- Offers the highest ethanol yield.
- Exhibits strong robustness.
- Contributes to high levels of glucoamylase reduction.
- Delivers ultra-low residual starch.

SYNERXIA® SAPPHIRE

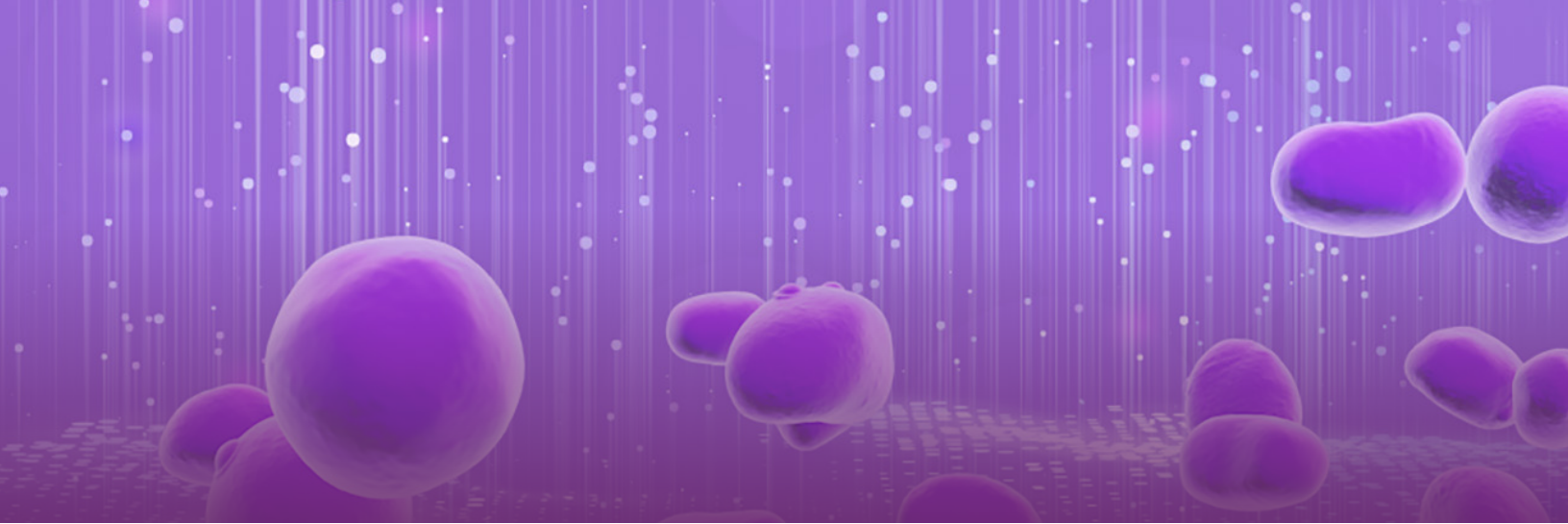
Our most robust yeast, delivering a powerful combination of yield and glucoamylase expression.

- Exhibits revolutionary thermotolerance and infection robustness.
- Provides high yield while finishing fermentation with ultra-low DP1.
- Expresses a novel glucoamylase with high affinity for residual starch.
- Contributes to high levels of glucoamylase reduction.

SYNERXIA® JADE

Our fastest yeast, geared to maximum plant throughput.

- Enhances fermentation rate.
- Maximizes fermenter ethanol throughput.
- Maximizes glucose conversion during heat excursions and bacterial infections.
- Displays ultra-high ethanol titer tolerance in fermentation.
- Contributes to high levels of glucoamylase reduction.



**Your processes.
Our solutions and support.**

Our service begins by understanding the specific goals of ethanol producers. We call on the predictive modelling capabilities of our XCELIS® AI during our research and development process, combining its smart insights with data analysis to find the best performing yeast strains. The flexibility offered by XCELIS® AI means we can give our partners true agility, empowering them to seamlessly switch yeasts or yeast blends according to evolving processing parameters, market developments and more.

Next, we focus on applications. During the design process for our innovative solutions, we employ our global Applied Innovation Centers (AIC) to test and optimize our solutions for current market needs, and those on the horizon. This means we can recommend yeasts or yeast blends in an intentional and efficient way that helps our partners stay ahead of the curve.

IFF's commitment to innovation doesn't end with product delivery. Our sales and technical service team regularly visit our partners' facilities to provide on-site training and support, ensuring that our partners are fully equipped to benefit from our solutions – today, tomorrow, and always.

The right yeasts, at
the right time, for the
right purpose.

Let's work together
to help your process
shine.

WHY PARTNER WITH IFF?

Discover how we can support your process

The XCELIS® Ethanol Solutions Platform

Flexible yeast and enzyme solutions.
Advanced technical support.

At IFF, we prioritize our partners' performance in the biofuels industry. This means bringing together decades of tried and tested expertise with smart technology to deliver the best possible outcomes for our customers. With XCELIS® AI, we empower fuel ethanol producers by analyzing thousands of data points to gain advanced insights into their current process and how it can be optimized.

But our commitment to innovation goes deeper. We start with a diverse collection of yeasts then we mix and match the best yeast strains through breeding and use a rigorous selection process to identify the most promising candidates for our partners' needs. By combining cutting-edge technology with a customer-focused approach, we stay at the forefront of the industry and deliver real value to our partners.

Meet your performance goals

Ready to take your biofuel production process to the next level? Get in touch to learn how our SYNERXIA® Gemstone Collection can unlock your plant's potential.

Connect with us at www.xcelis.com

Innovation isn't just a buzzword for us. It's a promise we make – and keep.

XCELIS® Ethanol Solutions
www.xcelis.com

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