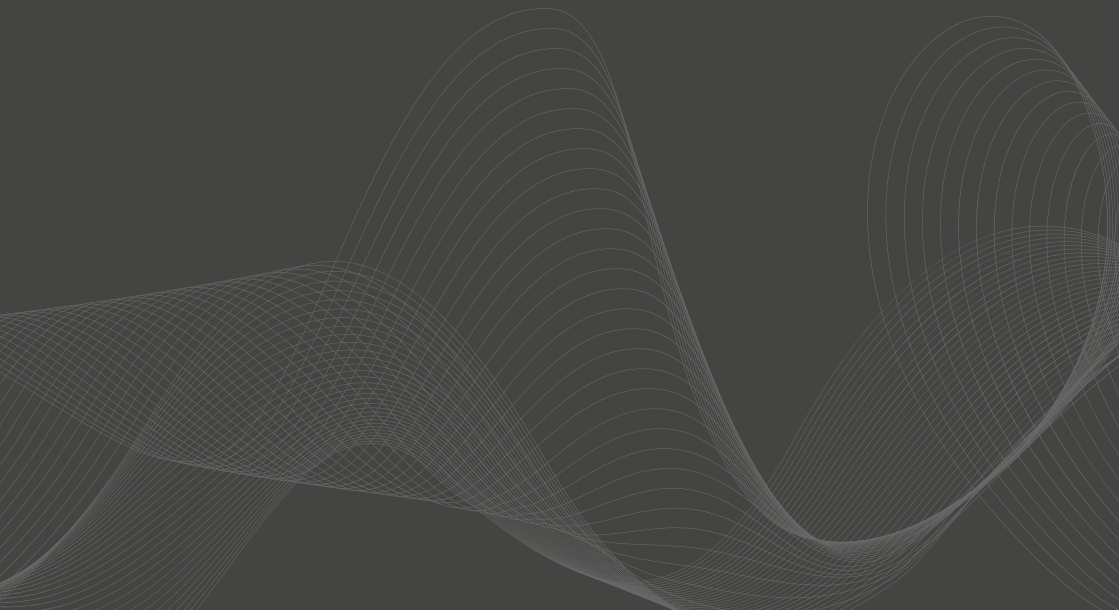
Uquifa
Chemistry for a better life

SONEAS
Chemistry for a better life

TECHNOLOGY TOOL BOX

INTEGRATED PARTNER FOR YOUR RSM &
API DEVELOPMENT AND MANUFACTURING

SONEAS社輸入元・日本代理店　ヒドラス化学株式会社
TEL.03-3258-5031　FAX.03-3258-6535　info@hydrus.co.jp



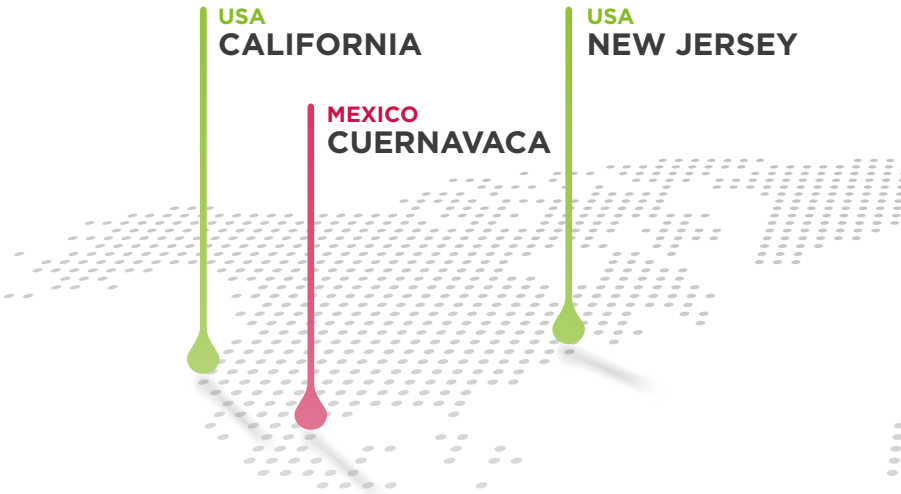
ONE-STOP SHOP
FOR YOUR RSM & API DEVELOPMENT & MANUFACTURING NEEDS FROM EUROPE AND MEXICO

88 YEARS
OF EXPERIENCE
In small-molecule API development, scale up and manufacturing

FULL-SERVICE
offering to support projects from proof-of-concept to commercial manufacture

DEVELOPMENT & SCALE UP CAPABILITIES
through 3 R&D centres and 3 Pilot Plants in Europe and North America

LARGE SCALE MANUFACTURING
across 2 cGMP API, 1 ISO 9001 compliant KSM/Intermediates & 1 cGMP Pelletisation site in Europe and North America



UQUIFA Group is a Contract Manufacturing Organisation (CDMO), with a legacy spanning over 88 years, is a trusted leader in API development and manufacturing. Our comprehensive services support projects from discovery, proof-of-concept through to commercial manufacturing.

Our global footprint includes headquarters in Europe, with manufacturing sites and R&D centers strategically located across Europe and North America. We also maintain sales offices in Europe and East and West coast of the United States of America, as well as a purchasing office in India, ensuring a broad and responsive customer service network.

Our state-of-the-art manufacturing infrastructure comprises 3 pilot plants, 2 large-scale cGMP API manufacturing plants, and a dedicated GMP KSM/intermediates site. With the capability to produce 40-45 unique products each month, we demonstrate our commitment to meeting diverse industry needs.

Our R&D operations are supported by 3 research and development centers, equipped with strong scientific expertise and proprietary technologies, allowing us to deliver enhanced value to our clients. Serving a global customer base, we work with clients in over 70 countries and have forged long-term relationships with our top 10 customers. Our clientele includes leading pharmaceutical innovators, as well as small to mid-sized biotech companies.

Our dedicated team, consisting of 225 employees in Spain, 204 in Mexico, and 260 in Hungary, is at the heart of our operations, driving our continuous pursuit of excellence and innovation.

SPAIN
BARCELONA
SANT CELONI

HUNGARY
BUDAPEST

INDIA
HYDERABAD

OUR 3 P's

PEOPLE

Are the **backbone of the organization**: Every task, idea and ounce of effort contributes to our collective progress **leading us to success.** We genuinely value people's contributions, **expertise**, and **enthusiasm.**

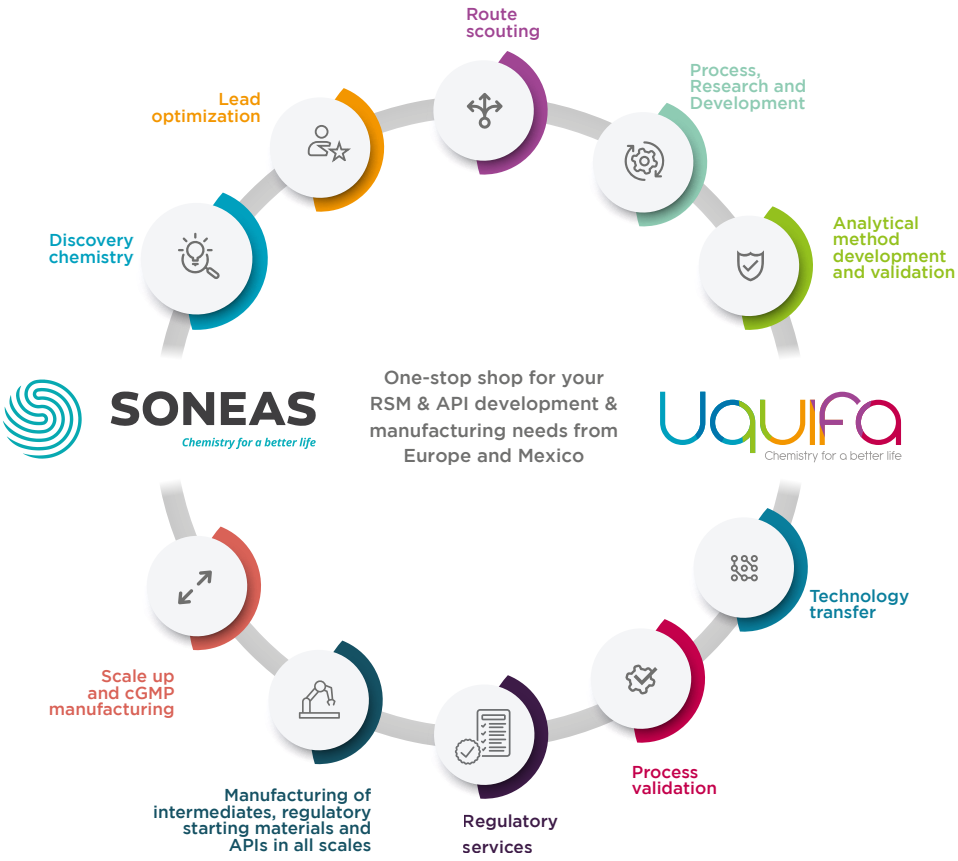
PRODUCTS

Are the **lifeblood** of **our business** and the result of our collective efforts. We work hard for consistently delivering a **high-quality product** reinforcing the **UQUIFA Group** as a reliable and trustworthy supplier.

PLANTS

Our number one priority is to **ensure a safe working environment**: With the right infrastructure, machinery, and technology in place, we can **optimize workflow** and **maximize productivity** allowing us to meet customer demands effectively and delivering a **high-quality product** on time. Investing back in our Plants through **CAPEX programs** is a consistent aspiration for us.

SAFETY **QUALITY** **ENVIRONMENT** **FLEXIBILITY** **INNOVATION** **PASSION**


Route scouting
Process, Research and Development
Analytical method development and validation
Technology transfer
Process validation
Regulatory services
Manufacturing of intermediates, regulatory starting materials and APIs in all scales
Scale up and cGMP manufacturing
Discovery chemistry
Lead optimization
SONEAS
Chemistry for a better life
One-stop shop for your RSM & API development & manufacturing needs from Europe and Mexico
UQUIFA
Chemistry for a better life

Chemistry Capabilities

- Alkylation (for example with diethyl sulfate)
- Alkylations, *N*-alkylations and *O*-alkylations
- Amidations (pivaloyl & tosyl chloride, chloroformates, CDI, DCC)
- Amidations (for example FDPP, EDC/HOBtNH, EDC/HOBt)
- Boron Organic compounds (Organo boronic acids and esters)
- Carbonylation with CO
- Chiral Chemistry using chiral agents
- Cross coupling reactions C-C (Heck, Suzuki reactions)
- Cross coupling reactions C-N (Buchwald-Hartwig reaction)
- Cryogenic reactions (-80°C to -70°C)
- Cyanations/Thiocyanations
- Cyclopentadiene chemistry
- Cyclopropanation
- Diazotation (for example Sandmeyer)
- Diels - Alder reactions
- Flow Chemistry
  - Nitration
  - Hydrogenation
  - Organolithium chemistry
  - Oxidation (for example O_2)
  - Cryogenic reaction

UQUIFA SITE - SPAIN **UQUIFA SITE** - MEXICO **SONEAS SITE** - HUNGARY

- Friedel-Crafts reactions
- Halogen chemistry
  - Fluorination (for example DAST, XtalFluor)
  - Chlorination (for example chlorine gas, NCS)
  - Acyl Chloride formation (for example SOCl)
  - Bromination with Bromine
- Heterocyclic ring formation with pyrazine, triazine, thiazole, thiazepine
- High Temperature reactions (150°C to 250°C)
- Hydrazine reactions
- Hydrogenation (catalytic, high pressure)
- Hydroxyethylation/propylation with ethylene & propylene oxide
- Isomerization
- Metathesis reactions (with Mo, W, Ru catalysts)
- Optical resolutions
- Organo peroxide chemistry
- Organometallic reagents (Grignard, Organolithium reactions)
- Phosphorylation (for example POCl)
- Protection/Deprotection of N or O (for example BOC, Triflate)
- Reductions by Metal hydrides (for example with $NaBH_4$, Vitride)
- Salt formation (for example with HClm succinate, fumarate, maleate)
- Sulphur chemistry
- Triphosgene chemistry

Quality Assurance

UQUIFA Group is committed to maintaining the highest quality standards across its global manufacturing sites, with robust Quality Management Systems in place to ensure regulatory compliance, risk mitigation, and process efficiency.

UQUIFA Group's global sites are certified by multiple regulatory bodies:

- **UQUIFA Group site in Spain:** GMP Certified by the FDA, GenCat Generalitat de Catalunya (Spanish local Agency), Korean FDA, PMDA Japan, ANVISA Brazil, ISO 14001 and EcoVadis Silver for 2023.
- **UQUIFA Group site in Hungary** is EUGMP certified by Hungarian National Public Health and Pharmaceutical Center (NNGYK) at GMP Site, and ISO 9001 standard is followed at three sites.
- **UQUIFA Group site in Mexico:** Certified by the FDA, COFEPRIS Mexico, Health Canada, PMDA Japan, ANVISA Brazil, EDQM, and EcoVadis Bronze for 2023.

These certifications reflect UQUIFA Group's commitment to maintaining the highest quality regulations and standards across its global operations.

At UQUIFA Group site in Spain, the Quality Management Systems is designed to meet the stringent regulatory requirements of the Active Pharmaceutical Ingredients (API) and Regulatory Starting Materials (RSM) manufacturing industry. The system focuses on maintaining uniform, high-quality standards in API production through comprehensive processes such as document management, change control, Corrective and Preventive Actions (CAPA) management, and risk assessments. As part of UQUIFA Group's digitalization strategy, the site in Spain is transitioning to an electronic Quality Management System (eQMS), fully compliant with FDA 21 CFR Part 11 and EU cGMP Annex 11 standards, to enhance compliance, improve process efficiency, and foster a strong quality culture.

At UQUIFA Group's Hungary site, all manufacturing processes follow ISO 9001 standard and align with our quality management strategy. Five in-house quality levels are applied based on the product's intended use and development stage, from starting materials to APIs. Equipment cleaning follows multilevel procedures tailored to each project. The UQUIFA Group GMP site in Hungary complies with current Good Manufacturing Practice (cGMP) regulations, adhering to EudraLex Vol. 4 and ICH guidelines. The UQUIFA Group's Hungarian sites Quality Management System ensures strict control over documentation, manufacturing, materials, labs, training, change control, Out of Specification (OOS) management, Corrective and Preventive Actions (CAPA), and deviations.

At UQUIFA Group site in Mexico, the Quality Management Systems is fully aligned with cGMP regulations, as stipulated by COFEPRIS and international standards such as ICH Q7. The site operates with comprehensive SOPs to ensure traceability, change control, deviation management, and Corrective and Preventive Actions (CAPA), with a focus on meeting global regulatory requirements. With a quality structure that covers commercial-scale production, the Mexico site ensures top-tier quality since the development of the process to across all stages of manufacturing trough Quality by Design (QbD, ICH Q8)

Collectively, UQUIFA Group's sites in Spain, Hungary, and Mexico reflect a shared commitment to excellence in quality management, compliance, and continuous improvement across the pharmaceutical manufacturing industry.


EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH


NNGYK
NNGYK
NEMZETI NÉPEGÉSZSÉGÜGYI
ÉS GYÓGYSZERÉSZETI KÖZPONT


agencia española de
medicamentos y
productos sanitarios


edqm


Health
Canada


KFDA
Korea Food & Drug Administration
식품의약품안전청


ANVISA


SILVER
2023
ecovadis
Sustainability
Rating


Generalitat
de Catalunya


Pmda


ICH
harmonisation for better health


TÜVRheinland
CERTIFIED
Management
System
ISO 9001:2015
www.tuv.com
ID 9000029715


TÜVRheinland
CERTIFICADO
Sistema de
Gestión
ISO 14001:2015
www.tuv.com
ID 9105015214


Cofepris
Comisión Federal para la Protección
contra Riesgos Sanitarios

Quality Control - Analytical Support

For UQUIFA Group, as a leading Regulatory Starting Material (RSM) and Active Pharmaceutical Ingredient (API) manufacturer, ensuring product quality is of high importance. RSMs and APIs are the foundational components of medications, and their purity, potency, and consistency directly affect the safety and efficacy of the final drugs. The Quality Control (QC) team is dedicated to thoroughly analysing all incoming materials used in production, including intermediate products, while conducting continuous testing of manufactured products to maintain these high standards.

A key element of UQUIFA Group's quality control approach is the use of in-process methods, which are critical in ensuring product integrity throughout the manufacturing process. The primary goal of the QC team is to guarantee that all products meet established regulatory requirements. This is achieved by subjecting the products to rigorous analytical testing, ensuring that each one adheres to applicable quality standards and meets the requirements of regulatory dossiers.

UQUIFA Group offers comprehensive QC services, ranging from compendial methods verification and qualification to the development and validation of new analytical methods, through to routine quality control testing, all under cGMP regulations. Across UQUIFA Group global sites in Spain, Hungary, and Mexico, the QC departments employ a broad range of analytical techniques to safeguard the integrity of raw materials, intermediates, and final products. Each site is equipped with fully qualified laboratories that adhere to cGMP standards and are committed to maintaining the highest quality through meticulous testing procedures.

UQUIFA Group site in Spain plays a vital role in analysing and characterizing intermediates and final products, with a strong focus on the evaluation of raw materials as a key step in ensuring product integrity. cGMP-certified analytical laboratories at this site support production through in-process and intermediate testing, as well as final product release testing. Stability testing and degradation studies are conducted in accordance with ICH Q1A (R2) guidelines, ensuring the long-term reliability of products. UQUIFA Group site in Spain also provides extensive analytical support for regulatory filings, including method development, validation, and reference standard qualification.

UQUIFA Group site in Mexico mirrors many of the processes established at the UQUIFA Group site in Spain. Its control laboratory specializes in accelerated and long-term stability testing, following ICH Q1A (R2) guidelines. UQUIFA Group site in Mexico's in-process control laboratory provides crucial production support, focusing on in-process and intermediate testing. UQUIFA Group site in Mexico also provides analytical support of high quality throughout the whole life cycle of its products. Its services include analytical support for regulatory filing purposes, development and validation or verification of analytical methods, and offers reference standard qualification.

Continuous improvement is embedded in the culture at UQUIFA Group site in Mexico, with the implementation of 5S and Overall Equipment Effectiveness (OEE) frameworks to ensure a safe work environment, efficient use of resources, and Right First Time (RFT) outcomes for all tests.

UQUIFA Group site in Hungary is an integral part of UQUIFA Group's global QC operations. The site's analytical laboratories evaluate and test intermediates and final products while maintaining strict adherence to cGMP standards. Stability testing and degradation studies, aligned with ICH Q1A (R2) guidelines, further ensure the quality and reliability of products. UQUIFA Group site in Hungary also provides extensive analytical support for regulatory filings, including method validation, and reference standard qualification.

In line with UQUIFA Group site in Group's commitment to growth, all sites continue to invest in additional analytical capabilities to support its expanding synthetic capacity.

Collectively, the QC operations across UQUIFA Group' sites in Spain, Hungary , and Mexico are unified by a shared commitment to product integrity, regulatory compliance, and continuous improvement. Together, they ensure the highest standards of quality control throughout the production process, delivering products that meet the stringent demands of the pharmaceutical industry.

UQUIFA Group offers a comprehensive range of analytical capabilities, covering a wide spectrum of competencies essential for ensuring product quality and regulatory compliance. By utilizing advanced analytical techniques, we provide thorough testing and support for various stages of the manufacturing process. Our expertise includes:

- **Compendial Testing** (EP, USP)
- **Physicochemical Properties** analysis (KF, PSD, DSC, LOD, IR, pH, optical rotation, melting point, UV, IR)
- **Identity and Purity** determination
- **Impurity Profiling and Identification**
- **Residual Solvents** determination
- **Elemental Impurities Analysis**
- **Cleaning Validation**
- **Nitrosamines Analysis**
- **Genotoxicity Testing** including MPF Ames test (OECD 471), MNA (OECD 487), MLA (OECD 490), SARAH-DEREK to predict toxicity and mutagenicity, TOX-TREE for toxic hazard estimation, QSAR Toolbox for chemical hazard assessment and VEGA HUB for carcinogenicity and fish acute toxicity.

In addition to these core services, UQUIFA Group offers full analytical support for regulatory filing purposes, including method development, validation, and reference standard qualification. We also provide a wide array of services to support synthetic projects, including:

- Synthesis and cerification of reference standards
- Analytical method development and validation
- Impurity profiling
- Stability studies (stress tests, accelerated, intermediate, and long-term conditions)
- Optimization of crystallization conditions and physical form
- Physical form characterization
- Regulatory support to carry out the commercialization of the product in the country that the customer needs.

These capabilities ensure that UQUIFA Group consistently delivers reliable, high-quality analytical solutions to meet the regulatory and developmental needs of our clients.

EQUIPMENT

- Automatic Karl Fisher titrators
- Automatic potentiometric titrators
- Climatic Chambers (in accordance with ICH requirements for stability studies)
- Conductimeter
- DSC, Differencial scanning calorimeter
- TGA, TGA-DSC themogravimetric analysis
- Eudralex Vol4.; CFR part 11 complying chromatographic data system
- FT-IR, ATR-FT-IR spectrophotometer
- Fully qualified cGMP analytical laboratory
- Gas chromatograph/ FID
- Gas chromatograph/Head Space
- Gas chromatograph/Head Space with MS detector (MSD)
- Gas chromatograph/Head Space with ECD detector
- HPLC/UHPLC with, PDA, DAD, RID, CAD and MS detectors equipped
- HPLC with MS detectors (single quadrupole and triplequadrupole), UHPLC
- ICP-OES for elemental impuriy determination

UQUIFA SITE - SPAIN **UQUIFA SITE** - MEXICO **SONEAS SITE** - HUNGARY

- HPLC
- Melting point
- Micro Phazir NIR
- Microwave digestion oven for residue on ignition (ROI)/sulphated ash determination
- NMR Spectrometer (Bruker 500 MHz Ultrashield)
- Particle size distribution (PSD) determination
- Polarimeter
- Refractometer
- Power XRD
- Thermobalance
- UV-VIS spectrophotometer
- APHA colour determination
- Vacuum dryer for loss on drying (LOD) determination,
- LC-MS
- Microscope

UQUIFA SITE - SPAIN **UQUIFA SITE** - MEXICO **SONEAS SITE** - HUNGARY

Business Model

At UQUIFA Group, we recognize the need for flexible and client-centric delivery models to ensure that every project is tailored to meet specific requirements efficiently. Our flexible business models are designed to provide a wide range of options, allowing clients to choose the most suitable engagement model for their unique needs, while maintaining strong collaboration and transparency.

FLEXIBLE DELIVERY MODELS

We offer various models that give clients the freedom to select the engagement framework that best aligns with their project scope, budget, and timelines.

Our clients have direct access to our technical teams, ensuring that they remain involved throughout the development and delivery process. Regular updates, followed by telephone conferences and detailed development reports, form the cornerstone of our communication. This level of transparency ensures that clients are always informed about progress, challenges, and solutions, fostering a partnership based on trust and shared goals.

AVAILABLE BUSINESS MODELS

Our clients can choose from the following models based on their preferred level of engagement, financial structure, and operational flexibility:

- **Price/kg:** This model allows clients to pay based on the weight of the product delivered, which is ideal for projects with clearly defined physical outputs.
- **Full-Time Equivalent (FTE):** Clients can opt for this model to hire dedicated resources for their projects. This approach provides them with dedicated team members who work full-time on their project, ensuring consistent focus and support.
- **Fee-for-Service/Fixed Fee (FFS):** In this model, the client agrees to a fixed fee for a specific service or project deliverable. It is ideal for projects with well-defined outcomes and scope, providing cost certainty and minimizing risk.
- **Time and Materials (T&M):** For projects where the scope is evolving or difficult to define upfront, the T&M model offers flexibility. Clients pay based on the time and materials used, giving them the ability to adjust project scope as needed without the constraints of a fixed fee.
- **Long-Term Supply Agreement:** For clients looking for a reliable, ongoing partnership, the long-term supply agreement offers a stable pricing structure and consistent service over a set period. This model is perfect for businesses looking for sustained support and delivery over time.

Each of these models provides clients with the opportunity to balance risk, cost, and control according to their unique needs. Whether a project requires fixed-cost certainty or flexible engagement,

CAPITAL INVESTMENTS

In addition to the flexible business models, UQUIFA Group is open to collaborating with clients through direct investments to ensure successful project delivery. We recognize that some projects may require significant capital expenditures, and UQUIFA Group is willing to invest alongside our clients to keep the project in-house, leveraging our infrastructure, expertise, and resources.

Virtual Screening

The need for selective, low-side-effect treatments for chronic diseases is driving the search for new bioactive molecules. With drug discovery efforts expanding, large compound libraries with potential pharmacological activity are being generated through combinatorial chemistry. However, evaluating these vast libraries is resource-intensive and doesn't guarantee success.

To streamline this, virtual screening is used to computationally search for "hit" compounds, which are then tested in the lab. This reduces drug development time and resources. Molecular docking techniques predict how small molecules bind to target proteins, improving the quality and quantity of potential drug candidates. Computational tools also assess toxicological and biopharmaceutical properties, increasing the chances of success in later preclinical and clinical stages.

At UQUIFA Mexico we can support customer's drug discovery development program with the screening and data analysis for a wide range of applications.

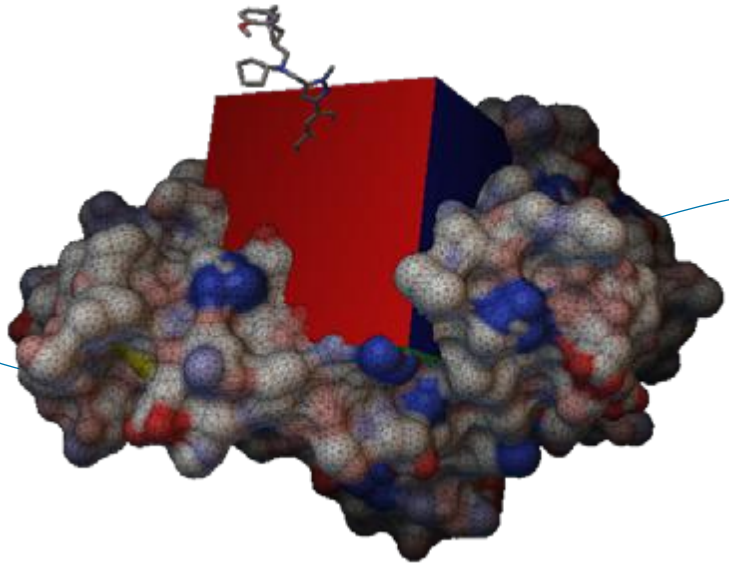
The methodologies and computational tools that Uquifa team uses are the following:

- Ligand-based drug design studies to determine the properties that increase activity and improve ADMETox (PK and PD) characteristics like QSAR-2D and 3D. Determination of several molecular descriptors for the potential ligand by computational chemistry at difference level of theory from semi-empirical, ab-initio, and DFT. Identify hit to lead molecules for further optimization.

- Structure-based drug design from receptor structure. By difference docking protocols like rigid-rigid, flexible-rigid and flexible-flexible is possible elucidate the binding mode, pose and interactions relevant to the desired activity and thereby improve them and screen a wide variety of potential compounds before proceeding to their synthesis, thereby achieving greater efficiency in time and development of novel drugs. In other hand, these studies in conjunction with the molecular dynamic simulation allow to explore different site in the target molecule and mechanistic action in example by binding in allosteric site.

- Pharmacophore elucidation, determination of the three-dimensional arrangement and minimum structure responsible for the activity as well as the selection of suitable aptophoric groups to improve it.

- Molecular dynamics simulations to predict the mode of action and ligand-receptor interaction with solvent simulation interactions. With those tools can be predict the overall process of interaction between target-drug like molecule and elucidate the different conformational changes through the time induced by solvent and macromolecule in addition nature and the strong of interaction is determined.



From Discovery to Clinical Development: Your Trusted Chemical Support Partner

UQUIFA Group member, SONEAS Chemicals Ltd., specializes in early-phase development, offering comprehensive end-to-end solutions in Active Pharmaceutical Ingredient (API) development with unmatched flexibility and exceptional turnaround times. Our team of highly skilled chemists, holding PhDs and MScs, is dedicated to delivering innovative and efficient solutions tailored to meet your project needs.

DISCOVERY SERVICES

Our discovery chemistry team offers extensive services, including:

- **Targeted Library Synthesis:** Custom synthesis of compound libraries to facilitate lead optimization.
- **Lead Optimization:** Supported by computational chemistry partnerships and advanced AI algorithms, we optimize lead compounds for enhanced efficacy and safety. Our AI-supported drug discovery accelerates the identification and refinement of potential drug candidates, ensuring more accurate and efficient outcomes.
- **Asymmetric Synthesis:** Expertise in asymmetric transformations, including the use of carbohydrate-based molecules and natural product analogues.
- **Organometallic Chemistry:** Proficiency in metathesis and other complex transformations for economical compound production.
- **Building Blocks and Reference Compounds:** Synthesis of high-purity building blocks, scaffold analogs, and reference compounds.
- **Specialized Chemistries:** Expertise in heterocyclic chemistry, natural product synthesis, impurities & metabolite synthesis, route scouting, and both early and late-stage process optimization (PRO).

ANALYTICAL SUPPORT

Our high-quality chemistry services are complemented by robust analytical support, ensuring the integrity and purity of synthesized compounds:

- **NMR Spectroscopy:** Equipped with a 500 MHz Bruker NMR for detailed structural analysis, including ^{1}H, ^{13}C, ^{19}F, ^{31}P, ^{11}B, and ^{15}N nuclei.
- **LCMS, HPLC, and UPLC:** Advanced chromatographic techniques with PDA and CAD detection for precise purity assessments.
- **GC-FID and GCMS:** Comprehensive support for GC-compatible molecule analysis.
- **Chiral Method Development:** Specialized methods for both HPLC and GC to ensure the highest purity of enantiomers.
- **Full Characterization Tools:** Including FTIR, UV-VIS spectroscopy, polarimetry, titrations, DSC, and melting point analysis.

CASE STUDY: DEVELOPMENT OF A NEW ROUTE FOR COMPLEX HETEROCYCLIC ACTIVE PHARMACEUTICAL INGREDIENT (API)

Background

UQUIFA Group member, SONEAS Chemicals Ltd., was approached by European Biotech company who faced a critical challenge: developing a commercially viable synthesis route for a complex heterocyclic Active Pharmaceutical Ingredient (API) within an ex-tremely short timescale. The European Biotech company's initial multistep synthesis route was not feasible for commercial production, necessitating an innovative solution.

Aim

To create a commercially viable and efficient synthesis route for a complex heterocyclic API suitable for toxicology studies and clinical trials.

Actions

Initial Supply and Research:
Supplying Multigram Quantities for Toxicology: To meet immediate needs, we supplied multigram quantities of the API using the client's original linear medicinal chemistry route. This approach ensured the continuation of toxicology studies while we developed a more scalable solution.

Research into Scalable Routes: We initiated comprehensive research to develop key building blocks through scalable routes. Our goal was to identify methods that would streamline the synthesis process, enhance efficiency, and reduce costs.

R&D Programme:
Parallel Development Effort: Our R&D team carried out an extensive development programme in parallel with the toxicology supply effort. This dual approach ensured that we could meet short-term needs while focusing on long-term manufacturing feasibility.

Determining the Future Manufacturing Route: The R&D programme was designed to identify the most efficient and scalable synthesis route for future large-scale production. We focused on optimizing each step to improve yield, reproducibility, and cost-effectiveness.

Production of Representative Samples: As part of our validation process, we produced representative samples of the API using the newly developed synthesis route. These samples were rigorously tested to ensure they met all required specifications.

Achievements

Successful Large-Scale Production:
Preparation of Multi-Kilogram Batches: We successfully prepared multi-kilogram batches of the complex heterocyclic API. This achievement demonstrated the scalability and robustness of the new synthesis route, providing the client with the quantities needed for toxicological studies and clinical trials.

Patent and Technology Transfer:
Patent of New Synthesis Route: The new synthesis route, characterized by its reproducibility and higher yield, was patented by the client. This patent underscores the innovation and effectiveness of the developed process.

Transfer to a Large-Scale CMO: We successfully transferred the technology to a large-scale Contract Manufacturing Organization (CMO). This transfer ensures that the client can meet future production demands with a commercially viable process.

Conclusion

Our project showcased significant efficiency and cost-effectiveness by reducing production costs and improving yield and reproducibility, making the API commercially viable for large-scale manufacturing. Through innovative approaches, we transformed an initially unfeasible process into a scalable and efficient route, emphasizing our expertise in complex API development. The successful technology transfer to a CMO ensures scalability to meet future demands, facilitating the transition from clinical trials to market readiness. By maintaining close collaboration and providing ongoing support, we aligned our solutions with the client's needs and timelines. Our ability to deliver immediate supply and ensure long-term manufacturing feasibility underlines our commitment to supporting the client's clinical and commercial objectives.

CASE STUDY: STREAMLINING LEAD OPTIMIZATION IN NEUROLOGICAL DISEASE TREATMENT - A COLLABORATIVE APPROACH

Introduction:

In the pursuit of developing novel treatments for neurological diseases, the collaboration between chemical and biology teams plays a crucial role. This article sheds light on UQUIFA Group member, SONEAS Chemicals Ltd.'s contribution as the chemical support in a consortium working towards the optimization of a New Chemical Entity (NCE) for neurological disease treatment.

Background:

UQUIFA Group member, SONEAS Chemicals Ltd., as part of a consortium, assumed the responsibility of providing chemical support for targeting a novel NCE intended for the treatment of neurological diseases. The primary focus was to optimize the lead compound from its initial identification, ensuring it evolves into an effective chemicals available molecule.

Aims:

The overarching goal was to streamline the lead optimization process, transitioning from traditional linear synthesis methods to a more dynamic and efficient approach. This involved identifying key intermediates and developing scalable processes that not only saved time and resources but also facilitated a swift response to biological results.

Abandonment of Traditional Synthesis:
The consortium decided to move away from old, traditional linear synthesis methods, recognizing the need for a more adaptive approach in the complex field of neurological disease treatment.

Identification of Key Intermediate:
A pivotal milestone was achieved by identifying a key intermediate collaboratively with the biology team. This intermediate contained a base structure that could be easily modified to optimize biological properties.

Scalable and Robust Process Development:
A scalable and robust process was developed for the key intermediate, emphasizing efficiency to save both time and money during the lead optimization phase.

Analytical Method Development:
To ensure the quality of the synthesized compounds, analytical methods were developed to monitor both chemical and chiral purity. This step was essential for maintaining the integrity of the compounds throughout the optimization process.

Close Collaboration with Biology Team:
A close collaboration system was established with the biology team, allowing for the daily delivery of new molecules. This enabled a rapid response to biological results, with the synthesis of new compounds occurring within a few days.

Actions, Achievements:

Lead Compound Selection in 12 Months:
The collaborative efforts between the chemical and biology teams resulted in the selection of a highly effective lead compound within a remarkably short timeframe of 12 months. This success was attributed to the excellent collaboration involving three Full-Time Equivalents (FTEs) in the chemical part.

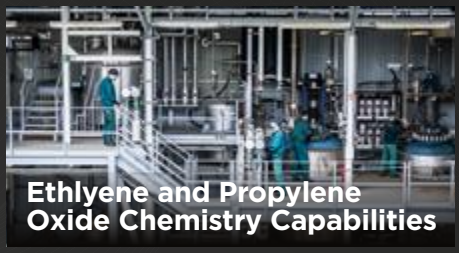
Scalable Synthetic Procedure for Pre-clinical Activities:
A scalable synthetic procedure was developed, ensuring the readiness of the lead compound to support further pre-clinical activities. This laid the foundation for the compound's progression towards clinical trials.

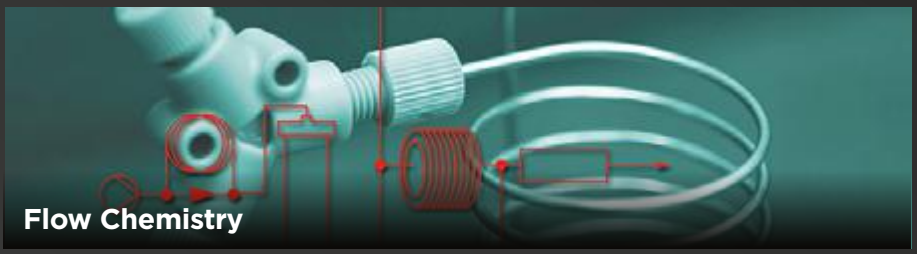
Capability for Quantity Scaling:
UQUIFA Group member, SONEAS Chemicals Ltd., proved advantageous, as it enabled the capability to scale up the production of Active Pharmaceutical Ingredients (APIs). This positioned UQUIFA Group member, SONEAS Chemicals Ltd., to provide extensive support for delivering the lead compound at higher quantities, crucial for advancing into clinical phases.

Conclusion:

UQUIFA Group member, SONEAS Chemicals Ltd.'s strategic actions and achievements in collaboration with the biology team underscore the importance of a multidisciplinary approach in drug development. The successful transition from traditional methods to an adaptive and collaborative framework not only expedit-ed lead optimization but also positioned the consortium for further advancements in the treatment of neurological diseases.

PROPRIETARY EXPERTISE





Ethylene and Propylene Oxide Chemistry Capabilities

Hydroxyethylation and hydroxypropylation are versatile technologies applicable to numerous synthetic transformations. Therefore, hydroxyethylation and hydroxypropylation are routinely encountered in drug substance synthesis.

UQUIFA Group member, SONEAS Chemicals Ltd., has vast experience in developing hydroxyethylation and hydroxypropylation processes and operates this technology up to commercial scale. Our development team has a wide range of laborator y scale hydroxyet hylation and hydroxypropylation available for process development, optimization and scale up purposes. For subsequent scale up we have extensive large scale hydroxyethylation and hydroxypropylation capacity.

Reactor Capacity	Material of construction
3700 L	Stainless steel
6300 L	Glass line
3000 L	Glass line

Supporting equipment

- Ethylene/Propylene oxide treatment system

Hydrogenation

Catalytic hydrogenation is a versatile technology applicable to numerous synthetic transformations. Therefore, hydrogenation is routinely encountered in drug substance synthesis.

UQUIFA Group member, SONEAS Chemicals Ltd., has vast experience in developing hydrogenation processes using heterogeneous catalysis and operates this technology up to commercial scale. Our development team has a wide range of laboratory scale hydrogenators available for process development, optimization and scale up purposes. For subsequent scale up we have extensive large scale hydrogenation capacity.

Reactor Capacity	Pressure Rating	Material of construction
100 L	10 bar	Stainless steel
500 L	10 bar	Stainless steel
1000 L	6 bar	Stainless steel

Supporting equipment

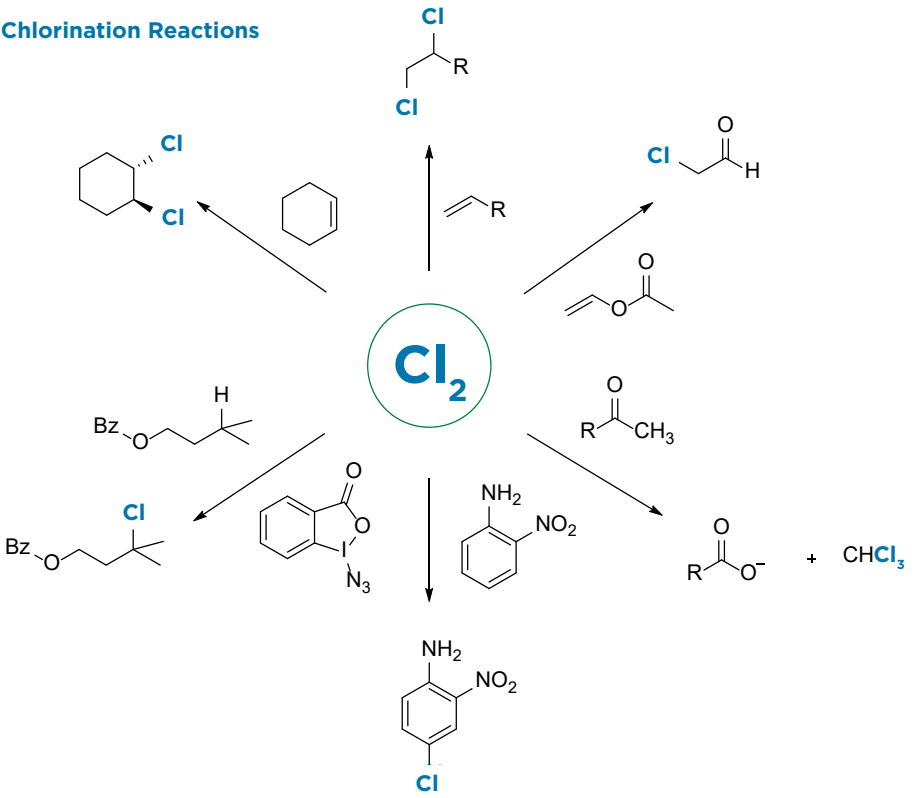
- 3,000 L stainless steel reactor for dissolution and work-up
- Buss-SMS LB01100-typefilm evaporator

Chlorination by Chlorine Gas

Chlorination reactions are essential processes in the chemical industry, used to produce solvents, building blocks, starting materials, and intermediates for products like specialty chemicals, agrochemicals, and pharmaceuticals. Chlorine, a yellow-green gas, is a strong oxidizing agent. Its use poses significant hazards, therefore, chlorination processes must be carefully evaluated, subjected to stringent safety studies, and conducted under strict security measures. At UQUIFA Mexico, we have extensive expertise in handling a wide range of chemical reactions. However, our most specialized technology is chlorination using chlorine gas, where we excel at performing these reactions at Laboratory, pilot, and commercial scale.

Chlorination is a key step in the development of many crucial industrial products, with our knowledge and experience ensuring safety and optimal performance and product quality at every stage.

Chlorination Reactions



Equipment

Reactor Capacity	Material of construction	Temperature	Pressure
7570 L	SS Glass lined	-7 °C to 125 °C	up to 3 kg/cm^2
3785 L	SS Glass lined	-7 °C to 125 °C	up to 3 kg/cm^2

Supporting equipment

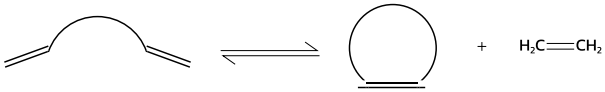
- 5678 L Hastelloy Reactor
- 460 L and Diameter 48'' Hastelloy Centrifuge

Metathesis

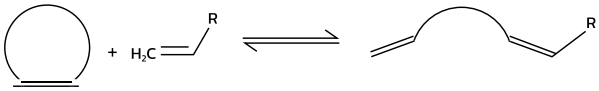
Olefin metathesis is an important catalytic reaction that is perfect for making carbon-carbon bonds and building molecules. Carbon-carbon double bonds are simultaneously broken and re-formed as the reaction progresses, along with a substituent exchange, ring closing, ring opening, or polymerization. This essential family of reactions now makes a wide range of small-, medium-, and large-ring carbo- and heterocycles and a variety of acyclic unsaturated compounds. These reactions need catalysts.

Cross-Metathesis

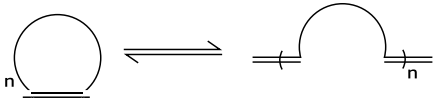
Ring-Closing Metathesis



Ring-Opening Metathesis



Ring-Opening Metathesis Polymerisation

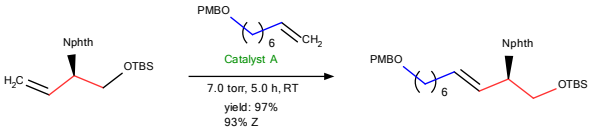


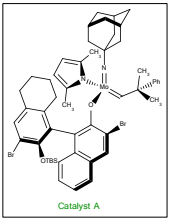
The molybdenum (Mo) and tungsten (W) catalysts that represent a new generation of metathesis catalysts are based on the breakthrough scientific research of the two founders, Amir H. Hoveyda, Richard R. Schrock, co-winner of the 2005 Nobel Prize in Chemistry. Presently these are the most popular metathesis catalysts.

Mo and W catalysts are particularly efficient and valuable catalysts in various selective transformations (including regio-, stereo- and enantioselective/asymmetric metathesis reactions) of industrial interest. From relatively simple intermediates to complex natural products synthesis, those catalysts can be widely used.

The types of reactions, that can be carried out using different Mo and W based catalysts, are the following:

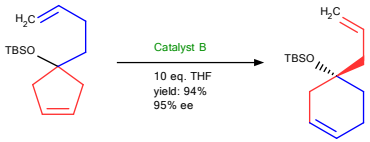
Z-Selective Metathesis Reactions

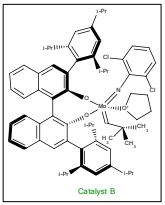




Literature: Hoveyda, Schrock, et al. *Nature* 2011, **471**, 461-465.

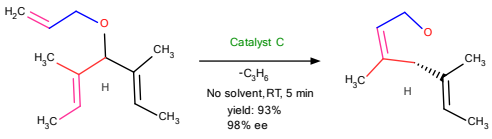
Enantioselective Metathesis Reaction

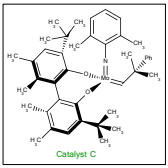




Literature: Schrock, Hoveyda. et al. *J. Am. Chem. Soc.* 2002, **124**, 10779-10784.

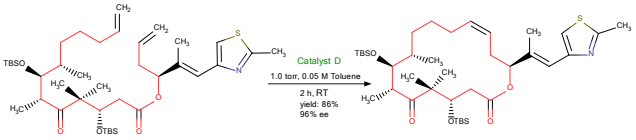
Asymmetric Ring-Closing Metathesis (RCM)

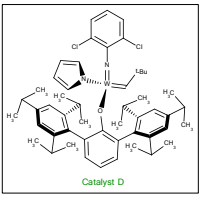




Literature: Hoveyda, Schrock, et al. *J. Am. Chem. Soc.* 1998, **9720**.,
Hoveyda, et al. *Angew*. Chem. Int. Ed. 2010, **49**, 34-44.

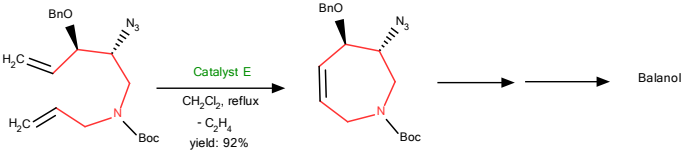
Z-Selective Catalytic Ring-Closing Metathesis (RCM) Reactions

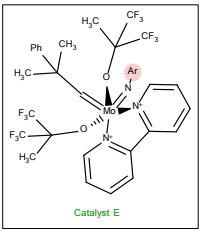




Literature: Hoveyda, Schrock, et al. *Chem. Eur. J.* 2013, **19**, 2726 – 2740.; Hoveyda, Schrock, et al. *Nature* 2011, **471**, 461 and 479, 88.

Z-Selective Catalytic Ring-Closing Metathesis (RCM) Reaction





Literature: Fürstner, et al. *J. Org. Chem.*, 2000, **65** (6), 1738–1742; Fürstner, et al. *Angew. Chem. Int. Ed.* 2011, **50**, 7829-7832.

UQUIFA Group member, SONEAS Chemicals Ltd., chemistry team can perform metathesis reaction in laboratory scale, scale up and perform multi tonne scale.

Reactors

Reactor Capacity	Material of construction
6300 L	Glass line
2500 L	Glass line

Destillation / rectification columns

Column diameter	Material of construction
500 mm	Stainless steel
500 mm	Stainless steel
150 mm	Glass line, Glass, Graphite

Flow Chemistry

In the fast-evolving pharmaceutical landscape, UQUIFA Group is committed to accelerating the development of new active compounds and reducing time-to-market through innovative solutions. As pressures from generics competition, rising clinical trial costs, and the growing demand for niche products increase, we recognize the need for streamlined, efficient processes. Continuous manufacturing, particularly through flow chemistry, is a key part of UQUIFA Group's strategy to enhance productivity, reduce costs, and bring new therapies to market faster.

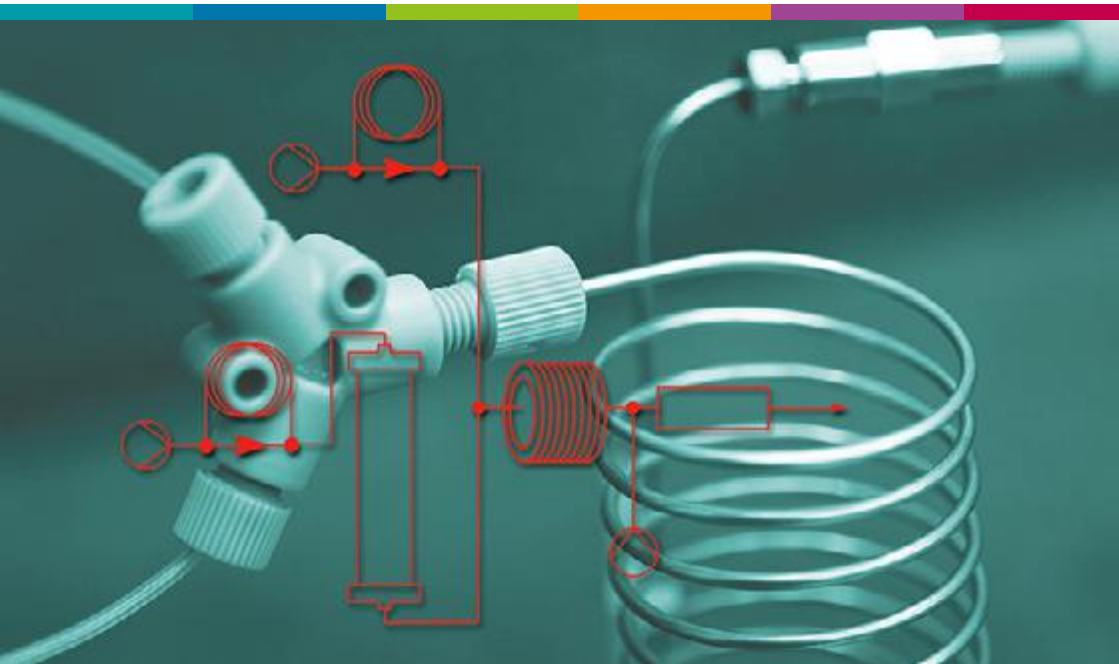
UQUIFA Group's Flow Chemistry in Active Pharmaceutical Ingredient (API) Synthesis

At UQUIFA Group, we leverage flow chemistry as a cutting-edge solution to optimize chemical synthesis. Flow chemistry enables continuous processing of reactants through microreactors, ensuring more efficient mixing, heat, and mass transfer compared to traditional batch reactors. This results in higher yields and improved product profiles, especially for challenging reactions like nitration, hydrogenation, or processes involving hazardous materials. With flow chemistry, we gain access to advanced chemical spaces previously unreachable with batch methods, ensuring safer and more efficient production. Furthermore, flow chemistry simplifies scaling up for industrial application, reduces operational costs, and shortens commercialization timelines, making it a pivotal tool in UQUIFA Group's commitment to excellence in API development and manufacturing.

CASE STUDY: ADVANCING API PRODUCTION WITH FLOW CHEMISTRY

UQUIFA Group member, SONEAS Chemicals Ltd., modernized its API production, originally developed in 1964 for Obsessive-Compulsive Disorder and recognized as an Essential Medicine by the WHO, to tackle challenges of high costs, production inefficiencies, and supply chain disruptions in its legacy batch process. By implementing continuous flow chemistry for the acetylation and nitration steps, UQUIFA Group member, SONEAS Chemicals Ltd., achieved a 99.5% conversion rate with 85-90% yield in acetylation, optimizing sulfuric acid and acetic anhydride use. The nitration reaction was fine-tuned to improve selectivity, increasing the overall process yield from 37.9% in batch to 49.2% in flow. This transformation also boosted space-time yield to 488 kg/m^3/day, a significant increase from 6.75 kg/m^3/day, while reducing production costs by 18%. Crucially, UQUIFA Group member, SONEAS Chemicals Ltd., enhanced supply chain resilience by moving production in-house, reducing reliance on external suppliers.

Looking ahead, UQUIFA Group member, SONEAS Chemicals Ltd., aims to scale up production to 30 kg/day by H1 2025 and broaden its flow chemistry portfolio to include gas-liquid and cryogenic reactions. These innovations position UQUIFA Group member, SONEAS Chemicals Ltd., for safer, more efficient, and cost-effective API manufacturing, paving the way for future advancements in pharmaceutical production.



Chromatographic Purification

As the pharmaceutical industry advances, the demand for high-purity compounds becomes increasingly critical. Chromatographic purification plays a key role in ensuring the quality, safety, and efficacy of some complex Active Pharmaceutical Ingredients (APIs). Whether working with small molecules, peptides, or complex biologics, the precise separation and purification of active ingredients are essential for regulatory approval and successful commercialization.

At UQUIFA Group, we utilize a state-of-the-art downstream system, equipped with preparative chromatographic columns of various sizes offering a broad spectrum of purification services tailored to meet our customers specific needs, including:

- Affinity Chromatography
- Size Exclusion Chromatography
- Reversed Phase Chromatography
- Ion-Exchange Chromatography
- Chiral Chromatography

Equipment:

- Laboratory Unit: Capable of a maximum flow rate of 25 mL/min, perfect for early-stage development and small-scale purification.
- Pilot-Scale Units:
  - MPLC 200 mm Column: Optimized for mid-scale projects, offering precision and flexibility.
  - MPLC 300 mm Column: For high-volume purification, ideal for scaling up and efficient production.

This advanced equipment allows us to seamlessly manage projects from laboratory development to pilot-scale production, ensuring a smooth transition toward commercial readiness.

UQUIFA Group's downstream technology offers unmatched versatility, enabling the purification of both small molecules and complex biopharmaceuticals. Our cutting-edge system handles diverse purification challenges while consistently delivering high purity and quality, making us a reliable partner for purification needs.

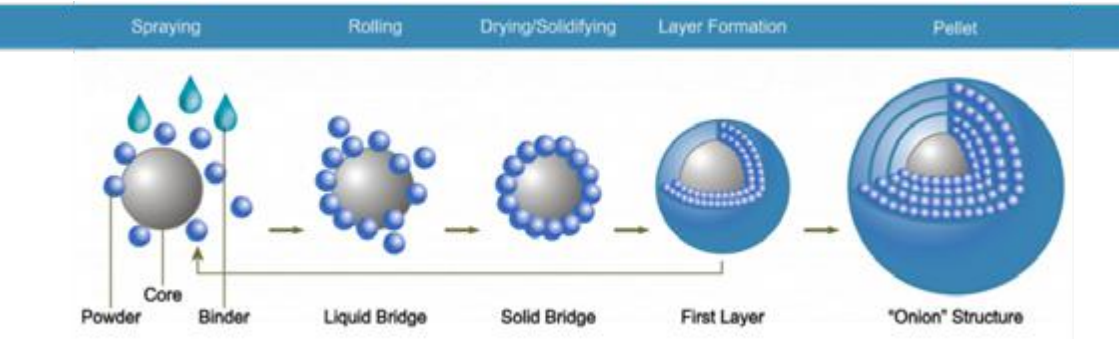
Particle Engineering

As the pharmaceutical industry continues to evolve, particle engineering has become an essential tool to address key challenges such as poor solubility and bioavailability of drug substances. UQUIFA Group brings its expertise and advanced capabilities to deliver customized particle engineering solutions for Active Pharmaceutical Ingredients (APIs) and excipients ensuring optimal performance and product quality.

UQUIFA Group offers end-to-end solutions from development to commercial scale manufacturing, specializing in Micronization, Freeze Drying and Pelletizing to meet the specific particle engineering needs of our customers.

Equipment

- Container Blender
- Freeze Drying Unit
- Jet Milling Units
- Pelletizing Unit
- Pin Mill Grinding
- Powder Sieving
- Roller Compaction Unit
- Rotor Beater Mill
- Stokes Milling



At UQUIFA Group, we understand the critical factors that impact pharmaceutical formulation and final product quality. Our particle engineering capabilities can help customers to achieve:

- Improved Flowability: Optimizing powder behavior during manufacturing processes.
- Enhanced Storage and Transport: Ensuring product stability and ease of handling.
- Optimized Drug Formulation: Suitable for capsule filling and tablet compression.
- Bioavailability Enhancement: Through pH-dependent delivery systems, such as enteric coatings.

UQUIFA Group has the capability of formulating enteric-coated dosage forms designed to improve bioavailability and protect drug substances from degradation in acidic environments.

Our advanced facility supports large-scale production with a batch capacity of up to 500 kg per day, ensuring we meet your commercial manufacturing needs efficiently and reliably.

PILOT PLANT MANUFACTURING CAPABILITIES

UQUIFA SITE – SPAIN (cGMP)

SS: 1000 L, 200 L, 50 L
Hastelloy: 500 L
GL: 1000 L, 400 L, 200 L, 50 L
Filter Dryer SS 65 L (Class D/H14 HEPA)
Centrifuges, Hastelloy 800mm and SS 800 mm (Class D/H14 HEPA)
Micronizer MC Dec Jet. Nitrogen (Class D/H14 HEPA)
Hastelloy Vacuum Tray dryer (Class D/H14 HEPA)
Liquid-Liquid Column Extraction, Glass Koch Modular, 3", 9 m MPLC Columns, 300 mm and 200 mm

UQUIFA SITE – MEXICO

Hastelloy: 1000 L, 630 L, 320 L
GL: 3 x 450 L, 225 L
SST: 1000 L
2 Centrifuges
Vacuum Nutsche filter
Rotatory Dryer (up to 75 kg in Clean Room conditions) (ISO-8)
Micronizer (Max rate up to 24 kg/day in Clean Room conditions) (ISO-8)

SONEAS SITE – HUNGARY (cGMP)

SS hydrogenator 100 L (10 bar), 20L (10 bar)
Hastelloy: 1000 L, 35 L
GL: 1600 L, 1000 L, 630 L, 250 L
GL: 1600 L, 2 x 1000 L (HEPA environment, Class 100000, on demand)
GL reactor with DN100 distillation column
Centrifuges, SS 1000 mm (HEPA Class 100000) and PFA coated 600 mm
Filter-Dryer SS 2 x 0.4 m^2 (HEPA environment, Class 100 000), 1 x 0.15 m^2, 1 x 0.09 m^2
Vacuum Tray-Dryer, up to 50 kg (HEPA environment, Class 100000)
7 Thin Evaporator QVF Glass 0.6 m
Mobile Drum Blender, SS 20 L

cGMP LARGE SCALE MANUFACTURING FACILITY

UQUIFA SITE – SPAIN

Total capacity 170000 L
16 x SS Reactors in the range 1000 - 8000 L (-40-150ºC)
14 x GL Reactors in the range 2000 - 12000 L (-40-150ºC)
3 x Automatic Bottom discharge Centrifuges 1250 - 1400 mm SS
(ISO 8. Class D/H14 HEPA)
2 x Automatic Bottom discharge Centrifuges 1250 mm SS
9 x Bag Centrifuges 1200 mm, SS, halar coated and Hastelloy
3 x Rosemund Guedu filter-dryer 6000 L SS (ISO 8. Class D/H14 HEPA)
2 x Filter-dryer 3000 L SS (ISO 8. Class D/H14 HEPA)
4 x Paddle Dryer, SS 4000 L, 2 x 2000 L, 400 L (ISO 8. Class D/H14 HEPA)
1 Nauta Dryer, SS 4000 L

UQUIFA SITE – MEXICO

Total capacity 190000 L
38 x SST & GL & Titanium Reactors in the range 2000 - 10000 L
14 x Centrifuges, approx. 300 kg, SST (6 in clean-rooms)
15 x Filters (Press filters, Horizontal Plate filters, Nutsche filters, cartridge filters, SST)
2 x Rectification columns, 3000 L and 12000 L

LARGE SCALE MANUFACTURING FACILITY

SONEAS SITE – HUNGARY

Total capacity 170000 L
11 x SS Reactors: 500 L, 1000 L, 2000 L, 2 x 2500 L, 3 x 3000 L, 4000 L, 2 x 8000 L
29 x GL reactors 250 L, 500 L, 5 x 2500 L, 4 x 3000 L, 8 x 4000 L, 8 x 6300 L, 10000 L, 12500 L
Copper lined reactor 1000 L
9 x Centrifuges: 5 x 1000 mm, 3 x 1250 mm, 800 mm
Filter-dryers: Comber 4 m^2; Delta 3 m^2
GL Double cone-dryer
Vacuum tray dryer - 1000 L
2 x Paddle dryer
Hastelloy reactor - 2500 L

SONEAS SITE – HUNGARY

HYDROXYETHYLATION UNIT
Stainless Steel 3700 L
Glass Line 6300 L and 3000 L

HYDROGENATION UNIT
Stainless Steel 500 L (10 bar) and 1250 L (6 bar)
3000 L Stainless Steel reactor for dissolutions and work up
Buss SMS LB01100-type thin film evaporator

METATHESIS UNIT
Glass line: 6300; 2500 L
Destillation/rectification columns:

- Stainless steel: 2 x 500 mm
- Glass line, Glass, Graphite: 150 mm
- Glass line, Stainless steel, Graphite: 150 mm

PARTICLE ENGINEERING TECHNOLOGIES

UQUIFA SITE – SPAIN

Powder sieving (2 indsutrial units)
Container blender (1 industrial unit)
Rotor Beater Mill (Retsch SR300 unit)
Powder sieving (1 industrial unit)
Pin Mill Grinding (5 industrial units)
Jet milling (1 industrial unit and 1 pilot scale)
Roller Compaction (1 industrial unit)
Freeze Drying (1 industrial unit)
Pelletizing (1 industrial unit)

UQUIFA SITE – MEXICO

Powder sieving (5 industrial units)
Pin Mill Grinding (1 industrial units)
Jet milling (2 industrial units)
Stokes milling (2 industrial units)

PURIFICATION CAPABILITIES

Destillation Column

250 L QVF GL reactor, DN150 glass distillation column filled with Sulzer Mellacarbon packing with 20 theoretical plate numbers. 2 x 3000 L SST reactor with DN500 with Sulzer MellapakPlus distillation columns with 15 theoretical plate numbers.

Film Evaporator

0,6 m^2 QVF glass thin film evaporator, 1 m^2 SST thin film evaporator

Purification Chromatography

1 laboratory unit: max flow rate up to 25 mL/min
2 pilot scale units, MPLC 300 mm and 200 mm

UQUIFA SITE - SPAIN **UQUIFA SITE** - MEXICO **SONEAS SITE** - HUNGARY

DRYING CAPABILITIES

Paddle Dryers

- 2 x 1000 L, MoC: SST
- 1 x 3900 L, 2 x 2210 L, 1 x 560 L
- 1 x 1500 L, MoC: SST

Vacuum Tray Dryers

- 1 large unit (Class 100000 HEPA environment) - up to 50 kg
- 2 small units - up to 5 kg
- 1 industrial unit (1000 L MoC: SST)
- 1 industrial unit (1 x 4500 L MoC: SST)
- 2 small units (1 x 11 L, 1 x 115 L MoC: Hastelloy)

Double Cone Dryer

- 1 industrial unit 1600 L

Filters Dryers

- 20 L & 50 L mobile processfilter/dryer
- 2 x 387 L process filter/dryer
- 4 industrial units (2 x 5900 L, 1 x 5000 L)
- 1 x 3000 L (MoC: all SST)
- 1 pilot unit 1 x 64 L 1 x 3000 L (MoC: SST)

Vacuum Conical Dryers

- 1 x 4000 L SST
- 1 x 1400L, 1 x 1200 L, SST
- 1 x 1200 L GL

Fluid Bed Dryer

- 1 equipment (MoC: SST)

UQUIFA SITE - SPAIN **UQUIFA SITE** - MEXICO **SONEAS SITE** - HUNGARY

Active Pharmaceutical Ingredient (API) Portfolio

Product	Use	CAS number
ACYCLOVIR	Antiviral	59277-89-3
ALBENDAZOLE	Anthelmintic	54965-21-8
ALLOPURINOL	Antigout	315-30-0
BENZYDAMINE HCl	Anti-inflammatory	132-69-4
CIMETIDINE	Antiulcer	51481-61-9
CINACALCET HCl	Anthyperparathyroid	364782-34-3
CIPROFLOXACIN BASE	Antibiotic	85721-33-1
CIPROFLOXACIN HCl	Antibacterial	86393-32-0
CLINDAMYCIN PHOSPHATE	Antibiotic	24729-96-2
DABIGATRAN	Anti-thrombotic	872728-81-9
DOXYLAMINE SUCC.	Sleep aid, antihistamine	562-10-7
DULOXETINE HCl	Antidepressive	136434-34-9
EPSIPRANTEL	Anticestodal	98123-83-2
ESOMEPRAZOLE SODIUM	Antiulcer	161796-78-7
FAMOTIDINE	Antiulcer	76824-35-6
KETOCONAZOLE	Antifungal	65277-42-1
LAMOTRIGINE	Anticonvulsant	84057-84-1
LANSOPRAZOLE	Antiulcer	103577-45-3
LINEZOLID	Antibiotic	165800-03-3

Regulatory Data	CEP	Pharmacopoeias	Site
EDMF, USDMF, CDMF, KDMF	✓	EP, USP	Spain
USDMF, EDMF	✓	EP, USP	Mexico
EDMF, USDMF, CDMF	✓	EP, USP	Spain, Mexico
EDMF		EP, BP	Mexico
EDMF, USDMF, CDMF, KDMF	✓	EP, USP	Spain
USDMF		N.A.	CMO - India
EDMF, USDMF, JDMF, KDMF	✓	EP, USP	Mexico
EDMF, USDMF, KDMF	✓	EP, USP	Spain, Mexico
EDMF, USDMF, CDMF, JDMF	✓	EP, USP	Spain
DMF under filing		DMF In-House	CMO - India
EDMF, USDMF, CDMF	✓	EP, USP	Spain
EDMF, KDMF	✓	EP	Spain
N.A.		N.A.	Mexico
EDMF	✓	EP	Spain
EDMF, USDMF, CDMF, KDMF	✓	EP, USP	Spain
EDMF, USDMF, JDMF, KDMF	✓	EP, USP	Mexico
EDMF	✓	EP, USP	Spain
EDMF, USDMF, KDMF	✓	EP, USP	Spain
EDMF, USDMF, CDMF	✓	USP	Spain

Product	Use	CAS number
MEMANTINE HCl	Treatment of Alzheimers	41100-52-1
METFORMIN HCl	Antihyperglycemic	1115-70-4
MIVACURIUM CHLORIDE	Neuromuscular blocking agent	106861-44-3
MORANTEL TARTRATE	Anthelmintic (Vet)	26155-31-7
NIMODIPINE	Antivascular	66085-59-4
NITRENDIPINE	Antihypertensive	39562-70-4
OMEPRAZOLE	Antiulcer	73590-58-6
OXIBENDAZOLE	Anthelmintic	20559-55-1
PANTOPRAZOLE SODIUM	Antiulcer	164579-32-2
PYRANTEL PAMOATE	Anthelmintic	22204-24-6
PYRANTEL TARTRATE ZEOLEX	Anthelmintic	33401-94-4
QUETIAPINE FUMARATE	Antipsychotic	111974-72-2
RANOLAZINE	Antianginal	95635-55-5
ROBENIDINE HCl	Anticoccidial (Vet)	25875-50-7
SITAGLIPTIN PHOSPHATE	Antihyperglycemic	654671-77-9
SOLIFENACIN SUCCINATE	Overactive bladder	242478-38-2
TERBINAFINE HCl	Antifungal	78628-80-5
TOLTERODINE TARTRATE	Urinary incontinence	124937-52-6
TROPICAMIDE	Anticholinergic	1508-75-4

Pellets - APIs

Product	Use	CAS number
DULOXETINE PELLETS	Antidepressive	N.A.
OMEPRAZOLE PELLETS	Antiulcer	N.A.

Regulatory Data	CEP	Pharmacopoeias	Site
EDMF	✓	USP	Spain, Mexico
EDMF, USDMF, KDMF, JDMF	✓	EP, USP	Mexico
EDMF		N.A.	Spain
TP		EP, USP	Mexico
EDMF, USDMF, CDMF	✓	EP, USP	Spain
EDMF	✓	EP	Spain
EDMF, USDMF	✓	EP, USP	Spain
N.A.		N.A.	Mexico
EDMF, USDMF	✓	EP, USP	Mexico
USDMF		EP, USP	Mexico
USDMF		USP	Mexico
EDMF, USDMF, CDMF, KDMF	✓	EP, USP	Spain
USDMF		N.A.	Spain
EVMF, UVMF, CVMF		N.A.	Spain
EDMF, USDMF	✓	EP, USP	Spain
EDMF, USDMF	✓	EP	Spain
EDMF, USDMF, JDMF, KDMF, CDMF		EP, USP	Mexico
EDMF, USDMF	on-going	EP, USP	Mexico
USDMF, EDMF, CDMF	✓	EP, USP	Mexico

Regulatory Data	CEP	Pharmacopoeias	Site
Dossier available		Not available	Spain
Dossier available		Not available	Spain

PIPELINE PRODUCTS

Validation

Product	Use	Site
BRIVARACETAM	Antiepilepsy	India

Scale-up

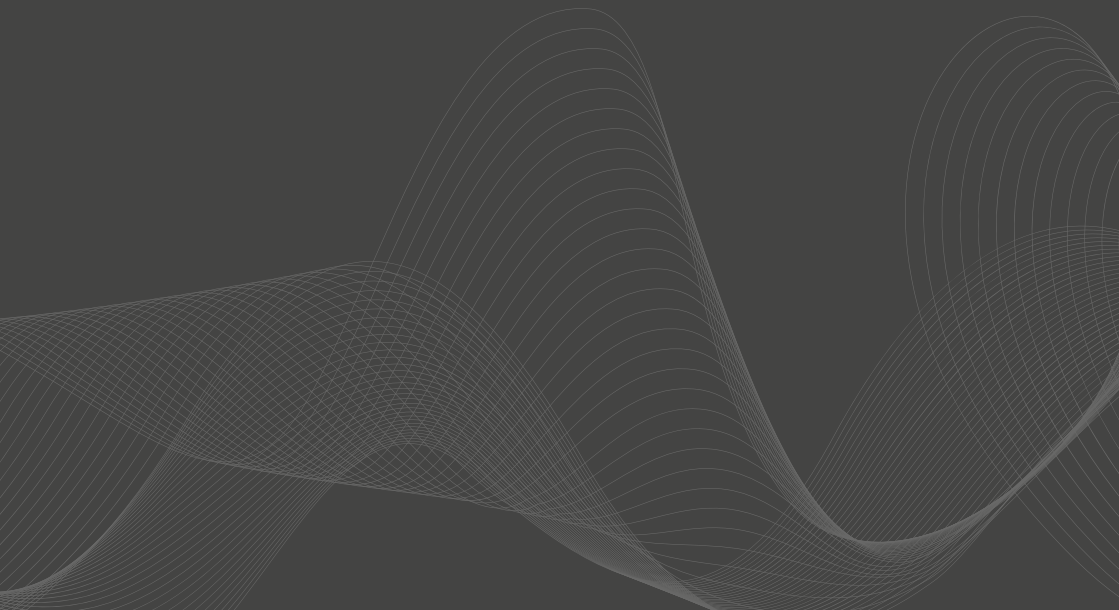
Product	Use	Site
APIXABAN	Antithrombotic	India
CARIPRAZINE	Antipsychotic	Spain
EDOXABAN	Cardiovascular	India
LASMIDITAN	Migraine	India
QUINFAMIDE	Antiamoebic	Mexico
RIVAROXABAN	Anticoagulant	Spain

Under development

Product	Use	Site
ATOMOXETINE	ADHD	Mexico
LEVOKETOCONAZOLE	Cushing's syndrome	India
DORZOLAMIDE	Glaucoma / Ocular hypertension	India
VONOPRAZAN	Antiulcer	India

Disclaimer: Products protected under valid patents are not offered or supplied for commercial use. However, under Bolar Provision, research quantities of such products may be offered for the purpose of regulatory submissions, wherever such regulatory exemptions exist. The buyers should make their independent evaluation of the patent scenario for their respective markets and will be responsible for all patent-related liabilities.

CDMF: Canadian Drug Master File | CVMF: Canadian Veterinary Master File
EDMF: European Drug Master File | EVMF: European Veterinary Master File
JDMF: Japanese Drug Master File
KDMF: Korean Drug Master File
USDMF: USA Drug Master File | USVMF: USA Veterninary Master File
TP: Technical Package



UQUIFA
Chemistry for a better life

SONEAS
Chemistry for a better life

UQUIFA Group

262 Carrer Mallorca Street
08008 Barcelona, **Spain**
Phone: +34 934 674 810

Industrial Area Molí de les Planes
Carrer Font de Bocs s/n
08470 Sant Celoni, Barcelona, **Spain**
Phone: +34 938 484 520

Calle 37 Este N. 126. Civac,
62578 Jiutepec, Mor., **Mexico**
Phone: +52 777 329 5000
www.uquifa.com

SONEAS Chemicals Ltd.

33 Illatos út
H-1097 Budapest, **Hungary**
Phone: +36 1 347 5060
www.soneas.com