



JM

Catalysts for Edible Oils & Oleochemicals

A range of hydrogenation catalysts for use
in the edible oils and oleochemicals industries



Johnson Matthey
Inspiring science, enhancing life

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Why Johnson Matthey?

At Johnson Matthey we supply an established range of catalysts with excellent history of use in a wide range of hydrogenation processes using a vast selection of raw materials. Our catalysts offer unparalleled reliability, repeatability and performance combined with a strong offering of technical support to ensure the best results when using our products.

Our portfolio of catalysts offers solutions for a range of applications:

- Fats & Oils for edible products
- Fatty acids (and triglycerides) hydrogenation for technical products
- Polyols

The **PRICAT™**, **AMCAT™** and **Sponge Metal™** nickel hydrogenation catalysts for use in edible oils and oleochemicals offer superior activity, consistency and selectivity. Johnson Matthey (JM) have a long history in catalysis and maintain extensive technical capabilities in these applications. We offer our customers expert technical support to help instil confidence in selection of

the right catalyst, advice on process conditions and fine tuning of processes to ensure optimisation.

Our high-quality catalysts and comprehensive technical service combine to offer our customers a complete package that focuses on our customers success by helping gain a distinctive competitive edge and generate maximum returns.



Fats & Oils

JM are market leaders in the supply of catalysts into the fats and oils industry. Our range of **PRICAT** 99 series catalysts are formulated to maximise desired products, give optimum product characteristics, minimise unwanted by-products to ensure efficient, effective processes.

For hydrogenation of fats and oils we have a range of products to suit specific customer needs. These include:

- selective hydrogenation catalysts with optimum selectivity in partial hydrogenation
- full hydrogenation catalysts
- catalysts specifically tailored for steep melting curve fats with extremely high selectivity

Our catalysts are formulated to have the properties our customers value to ensure their processes work in the best possible way. JM catalysts are:

- easy to filter enabling processing without the need for filter aids
- highly active and resistant to catalyst poisons ensuring success using a wide range of feed stocks
- easy to disperse in oil feedstocks to allow rapid start up
- highly efficient meaning dosing can be optimised and catalysts potentially reused

Our products

JM's two manufacturing sites for their **PRICAT** products in Emmerich, Germany and Taloja, India give sufficient manufacturing capacity and flexibility to reliably supply customer needs globally. The catalysts are supplied pre-reduced for ease of use without a long pre-reduction step. The active catalysts are encapsulated in hardened fat to give protection from air and ensure safe, easy handling, dispensing and dispersion in the process.

PRICAT 9910 – Regular/full hydrogenation

Our standard catalyst for edible oil hydrogenation has an outstanding track record for use in production of a wide variety of fats. It possesses high activity even in poorer quality feedstocks, and delivers medium selectivity. High catalyst-poison resistance and high activity make this an excellent choice for full hydrogenation applications (e.g. for the production of high oxidative stability, high melting point fats/hardstock).

PRICAT 9920 – Selective hydrogenation

The catalyst of choice for polyene-selective, partial hydrogenation of oils. Optimal for hydrogenation where the aim is the removal of less stable, highly unsaturated fatty acids with minimal formation of fully saturated fats (e.g. for the production of oils with enhanced oxidative stability).

PRICAT 9908 – Steep melting curve fats

This sulphur-promoted catalyst maximises the isomerisation of double bonds and is extremely effective in generating steep melting curve fats in non-lauric oils (e.g. for the production of cocoa butter replacers/substitutes).

PRICAT 9936 – High acidity hydrogenation

For use in poorer quality and/or industrial triglycerides. This catalyst can handle very high levels of free fatty acids, and can be very effectively used for partial or full hydrogenation of these feedstocks.





Fatty acids

JM also supply catalysts for selective and full hydrogenation of fatty acid feeds for industrial applications. Fatty acids require specially formulated catalysts which have increased resistance to nickel soap formation meaning better performance in fatty acid feeds.

PRICAT 9932 – Regular fatty acid hydrogenation

This catalyst achieves high activity in distilled and un-distilled fatty acids and is formulated for excellent stability against fatty acid dissolution. **PRICAT 9932** is an excellent choice for full hydrogenation of fatty acids (e.g. for the products with high oxidative stability or high melting points).

PRICAT 9953 – Low nickel fatty acid hydrogenation

Delivers similar benefits to **PRICAT 9932** and achieves this with a lower nickel content.

PRICAT 9955 – Selective fatty acid hydrogenation

This catalyst maximises the isomerisation of double bonds and is very effective in generating steep melting curve products for specialist fatty acid applications.

PRICAT 9956 – Partial fatty acid hydrogenation

Offers polyene-selective, partial hydrogenation of fatty acids allowing hydrogenation where the aim is delivery of high performing selectivity towards polyunsaturate removal and mono-unsaturated retention giving products with enhanced oxidative stability and melting behaviour.



Quality and consistency

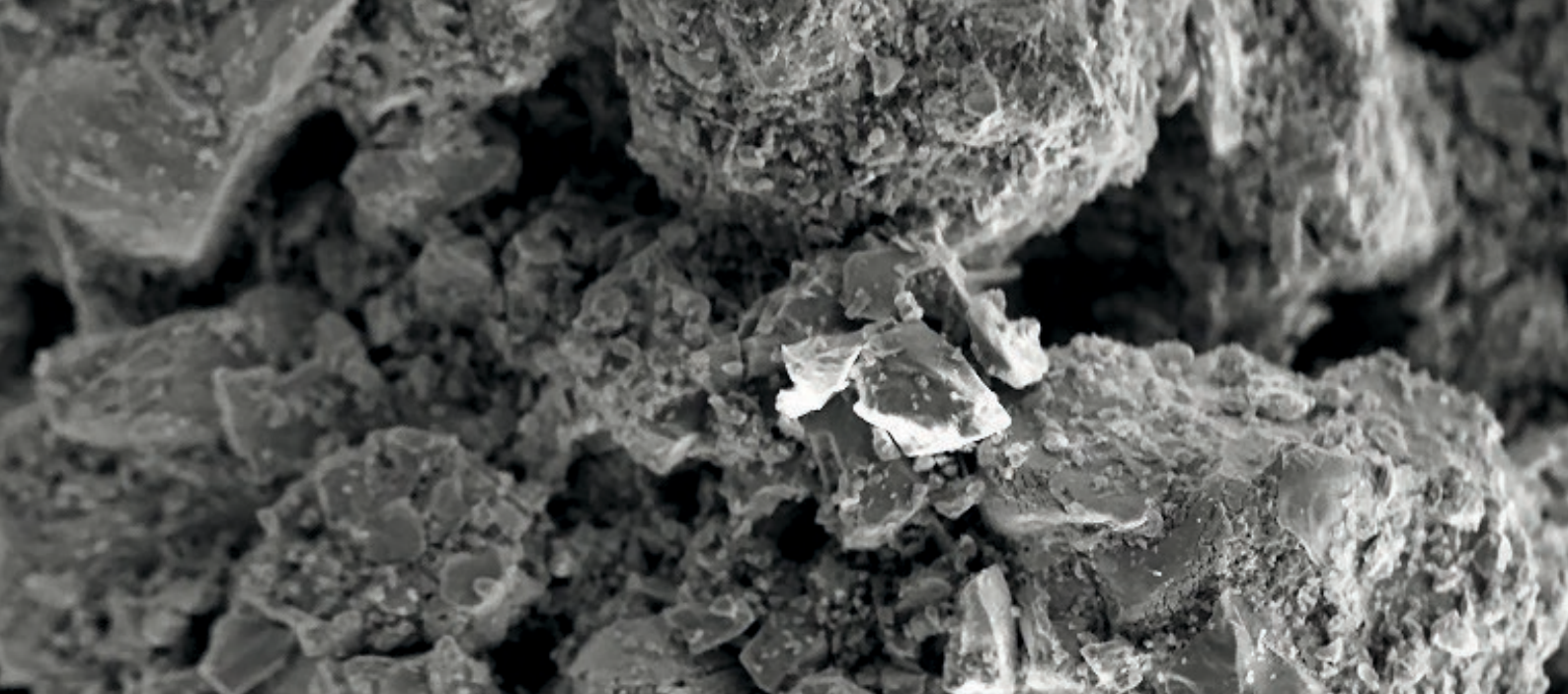
Detailed laboratory analysis and testing of manufactured catalysts under real hydrogenation reactions ensure that we consistently supply catalysts of the highest quality.

From selecting and using high quality raw materials right through to our finished products, quality is assessed and checked ensuring it is at the heart of our manufacturing. Use of sophisticated tools and methods, such as statistical process control, ensure we supply the most consistent and technically robust catalyst on the market today.

In addition to this, our catalysts are safe and simple to handle and our range of products carry appropriate certifications including suitability for Kosher and Halal applications and are free from genetically modified ingredients.

Our customers are our priority

JM actively engage with customers to understand their needs and work with them to achieve success. We supply a range of catalysts manufactured to the highest quality and world class technical support to ensure our customers have no problems and no surprises in use of our products. Our goal is to enhance your process efficiency by supplying catalysts that consistently deliver outstanding performance. We accomplish this using a combination of extensive research and development, state-of-the-art manufacturing technology and expert customer support. We deliver a range of catalysts that delight our customers time and time again.



Sponge Metal catalysts

For the slurry-bed hydrogenation of dextrose to sorbitol, we have a wide choice of our molybdenum promoted nickel Sponge Metal catalysts. These catalysts are also used in hydrogenation reactions in the production of other polyols, like mannitol, maltitol, xylitol and lactitol.

JM's **Sponge Metal** catalysts manufacturing site is located in Sevierville, Tennessee, USA, at the foothills of the beautiful Great Smoky Mountains. The modern production plants and laboratory facilities produce high quality alloy powders and activated catalysts with great consistency. The plant is ISO 9001:2015, ISO 14001:2015, Halal and Kosher certified.

The extensive **Sponge Metal** catalyst range is prepared from alloys of transition metals and aluminium. The aluminium is leached from the alloy structure, leaving behind an active metal surface covered or saturated with adsorbed hydrogen. The activated catalysts are stored under water to protect them from oxidation. **Sponge Metal** catalysts are in a fully active form when

shipped and require no pre-activation prior to use. JM operates its manufacturing facilities with maximum effort and commitment to produce a safe and sustainable product in a safe working atmosphere with minimum detrimental effect on the environment.



Fatty amines

Hydrogenation of fatty nitriles to fatty amines can be achieved with our **Sponge Metal** catalysts (either nickel or cobalt based).

These catalysts are prepared from alloys of nickel (or cobalt) and aluminium.

Our proprietary **AMCAT** catalysts are activated **Sponge Metal** encapsulated catalysts in which water has been displaced by an aliphatic amine. They offer unique handling and safety properties, as well as being highly effective catalysts. The properties of our **AMCAT** catalysts offer plant operations the following benefits:

- non-pyrophoric
- non-dusting
- easy to weigh
- no water addition into the process
- no requirement for pre-activation



Technical service

Our technical services help support effective and efficient running of your plant. Use of JM catalysts and the technical support available helps ensure success, efficiency and profitability for our customers.

JM offers technical services including:

- catalysts selection
- process optimisation
- technical information on use of catalysts/ hydrogenation
- technical seminars for all levels of users of catalysts - process/plant operators, engineers and plant managers
- troubleshooting

JM technical services will help optimise:

- efficiency
- throughput
- reliability
- safety



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