



Shell
Risella X



High-quality technical white oils based on
gas to liquids (GTL) technology

NEXT GENERATION PROCESS OILS



TECHNOLOGY WORKING FOR YOU

SHELL GTL TECHNOLOGY OPENS EXCITING NEW OPPORTUNITIES FOR THE NEXT GENERATION OF PROCESS OILS.

It enables high-quality process oils that have a more uniform chemical structure than those based on crude oil (Figure 1) to be produced from natural gas (Figure 2).

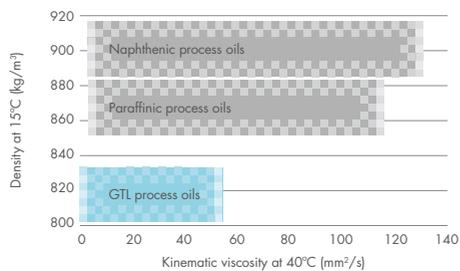


Figure 1: The density and viscosity of GTL base oils are different to those based on naphthenic and paraffinic crude oils. This can help to unlock performance advantages.

Moreover, the Shell Risella X range offers several advantages over conventional process oils, including

- **extra purity**
- **excellent performance in selected applications.**

Shell Risella X oils are manufactured at Shell's new Pearl GTL plant in Qatar, which is the culmination of some 35 years of research and development. It is also the world's largest source of GTL products: It has a capacity of 260,000 barrels of oil equivalent a day and produces diesel and aviation fuel, valuable chemical feedstocks and premium base oils for lubricants and process oils. Shell holds more than 3,500 patents covering all stages of the Pearl GTL process.



THE BASIC TECHNOLOGY BEHIND THE GTL PROCESS, KNOWN AS FISCHER-TROPSCH SYNTHESIS, WAS DEVELOPED BY GERMAN SCIENTISTS IN THE 1920S AND HAS BEEN REFINED BY SHELL'S PROPRIETARY TECHNOLOGY. WITH **OVER 35 YEARS OF RESEARCH IN THIS FIELD**, SHELL HAS BEEN AT THE **FOREFRONT OF GTL TECHNOLOGY AND PRODUCTION.**

FROM NATURAL GAS TO LIQUID ENERGY

How Shell creates products from natural gas that would otherwise be produced from oil.

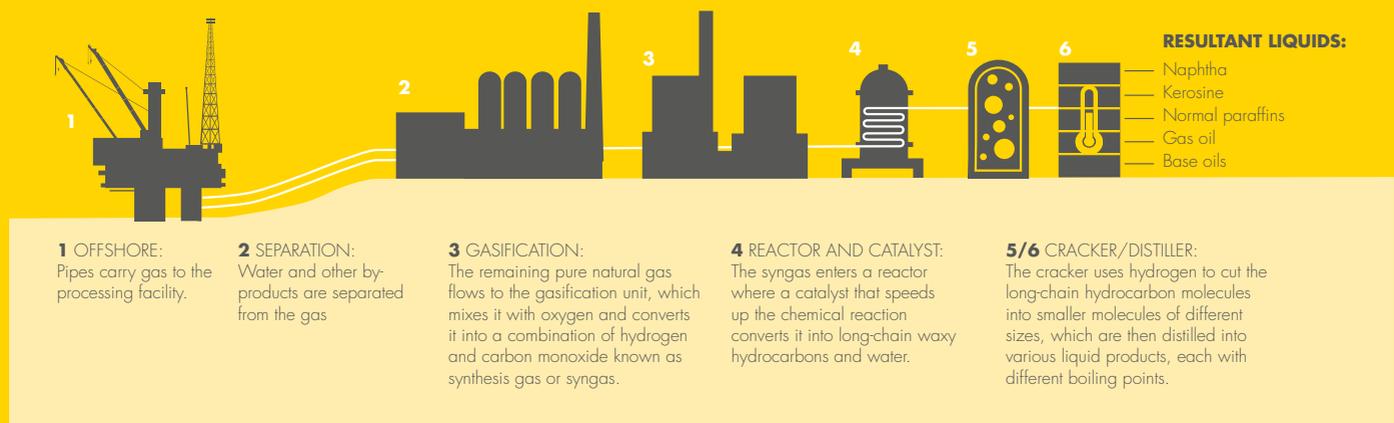


Figure 2: The GTL process converts clean-burning natural gas into clean fuels and high-quality base oils through the Fischer-Tropsch process.



GAME CHANGERS FOR YOUR PRODUCTS AND OPERATIONS

SHELL RISELLA X OILS ARE HIGH-QUALITY TECHNICAL WHITE OILS THAT OFFER VALUABLE PERFORMANCE ADVANTAGES.



Shell Risella X oils offer excellent performance in selected applications because, in contrast to other process oils that are derived from crude oil, they are made from pure synthesis gas; therefore, they are mineral-oil free. This leads to final products with a distinct molecular structure, which can provide the valuable features and benefits shown below.

Extra purity

Shell Risella X oils contain a high proportion of paraffinic hydrocarbons and are very pure, which provides qualities that are key in many applications. For instance, they

- are colourless
- are almost odourless
- contain virtually no sulphur, nitrogen or aromatics
- have an extremely narrow hydrocarbon distribution range.

Excellent performance in selected applications

Shell Risella X oils are synthetic process oils offering an outstanding combination of characteristics that can facilitate enhanced performance in the applications in which they are used. These properties include

- low volatility
- low pour point
- high flash point
- high viscosity index
- outstanding UV and thermal colour stability.

Few other process oils can offer the same combination of properties.



UNDERSTANDING YOUR NEEDS

Shell is one of the leading process oil manufacturers and has more than 25 years' experience in the process oils business. We recognise the crucial role that process oils play in your products and operations. We also understand that the quality of these vital oils is paramount, and that using a process oil that has a highly consistent quality can have a major bearing on the success of your business.

The process oils market has seen a clear trend towards the use of high-purity products in recent years. Manufacturers in a range of sectors are increasingly looking for process oils that have low concentrations of

- aromatics
- polycyclic aromatic structures
- sulphur
- nitrogen
- volatile components.

Lowering hydrocarbon emissions caused by process oils in customers' end products is also increasingly important, along with the tendency to use process oils with a brighter colour and increased colour stability.

Shell Risella X oils have been designed in response to these challenges and could be **game changers for your products and operations.**



GLOBAL REACH, GLOBAL CONSISTENCY

SHELL RISSELLA X OILS HAVE A CONSISTENT CHEMICAL STRUCTURE, WHICH CAN HELP TO ENHANCE THE QUALITY OF YOUR PRODUCTS.

Our international organisation has established a dedicated supply chain that begins with two independent production trains in Qatar, and includes three regional storage hubs in Houston, USA; Hamburg, Germany; and Hong Kong (Figure 3), as well as dedicated supply points around the world. These maintain significant buffer stocks to meet customers' requirements.



Figure 3: Shell's GTL hubs are located strategically around the globe.



GLOBAL CONSISTENCY OF QUALITY

Applying a process oil that maintains its chemical composition with minimal variations can help to enhance the quality of your products. Shell Risella X oils have a consistent chemical structure, as they are derived from natural gas rather than crude oil.

PORTFOLIO RANGE

The Shell Risella X portfolio includes

- Shell Risella X 415*
- Shell Risella X 420*
- Shell Risella X 430.

Your Shell representative can help you to identify the most appropriate grade for your application.

*According to the Regulation (EC) No 1272/2008 on Classification, Labeling and Packaging of substances and mixtures/Globally Harmonised System (CLP/GHS), owing to their low viscosity (<20.5 mm/s at 40°C), Shell Risella X 415 and Shell Risella X 420 have a category 1 aspiration hazard classification.



APPLICATIONS

Customers in a variety of industries have unlocked value by using Shell Risella X oils. These include manufacturers of

- crop protection spray oils
- defoamers
- explosives
- fertilisers
- hot-melt adhesives
- optical cable fill gels
- petroleum jelly
- textile and leather auxiliaries
- thermoplastic elastomers.

Moreover, because of the advantages and opportunities that Shell Risella X oils offer, new applications are being identified.

OUR EXPERIENCED PROCESS OILS EXPERTS CAN WORK WITH YOU TO ANALYSE YOUR NEEDS AND PROPOSE SOLUTIONS TO HELP SOLVE YOUR PROBLEMS. THE RESULT? TECHNOLOGY THAT **DELIVERS VALUE TO YOUR OPERATIONS.**

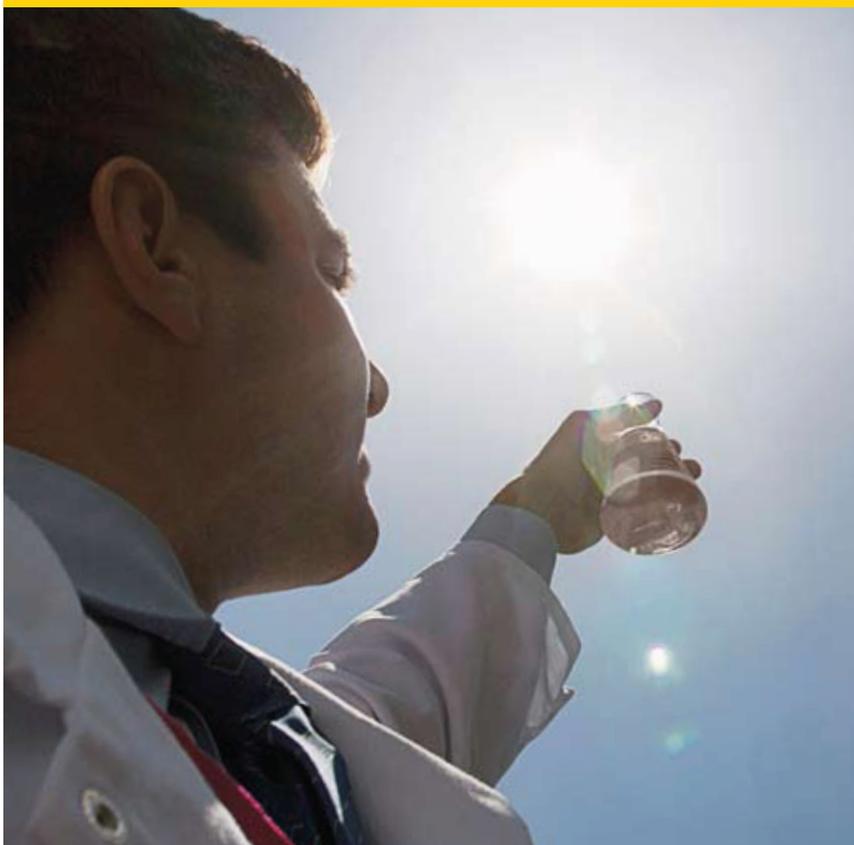
COMPREHENSIVE PRODUCT AND SERVICE PROVISION

Shell is constantly investing to develop better process oils to support your business.

Whatever your needs and applications, Shell can provide a full range of process oils, including

- naphthenic oils: Shell Gravex and Shell Edelex
- paraffinic oils: Shell Catenex and Shell Flavex
- white oils: Shell Ondina and Shell Risella.

In addition, Shell offers expert consultation and technical advice to support your business needs.



WORKING WITH SHELL

If you are interested in unlocking valuable performance advantages, talk to us about the benefits that Shell Risella X could have for your business.



www.shell.com/processoils