

SHELL PROCESS OILS

## TECHNOLOGY EXCELLENCE

How the speciality chemical company Schill + Seilacher GmbH has leveraged Shell's gas-to-liquids (GTL) technology to provide its customers with enhanced spin finishes

**Schill+Seilacher**

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# TECHNOLOGY EXCELLENCE

**“THE OILS HAVE SOME REALLY NICE PROPERTIES. BECAUSE THE CHEMICAL STRUCTURE AND PERFORMANCE OF THESE SYNTHETIC OILS IS MARKEDLY DIFFERENT TO MINERAL OILS, THEY HAVE OPENED UP MANY OPPORTUNITIES AND POSSIBILITIES. FINDING THE BEST WAY TO EXPLOIT THESE IS AN ONGOING OBJECTIVE FOR OUR RESEARCH AND DEVELOPMENT TEAMS.”**

Speciality chemicals company Schill + Seilacher was quick to see the potential value that Shell Risella X oils could have for its products and was an early adopter of GTL technology. This proactive move has helped to create competitive advantage for the company and for its customers.

“We are always looking for ways to improve our products,” says a company representative. “So, when we heard about Shell Risella X and learned about the oils’ purity characteristics, particularly that they have an extremely narrow hydrocarbon distribution range, we were very interested. We saw opportunities straight away.”

For instance, the oils’ low volatility offered the company’s spin finish business the chance to reduce the formation of mist in customers’ facilities. “We immediately began researching whether, by replacing one of our existing process oils with a Shell Risella X oil, we could improve some of the properties of our spin finishes,” says the representative.

Less mist translates into fewer cleaning cycles in customer’s facilities. In turn, that can translate into bottom-line benefits. Just as importantly, when mist is created during the processing, such as occurs when manufacturing man-made fibres at high temperature, it can be a health and safety issue for workers. In some countries it is also subject to environmental pollution legislation. There is more legislative focus on this in Europe and the USA, but awareness is growing in Asia.



## ABOUT SCHILL + SEILACHER

Schill + Seilacher is a leading global supplier of speciality chemicals and serves sectors including leather, textiles, paper and cosmetics. The company, which was founded in 1877 and remains a family owned business, employs over 600 staff at its production sites in Böblingen, Hamburg and Pirna in Germany, and Stow and Hudson in the USA.

The company is a major investor in research and development, and attributes its global success to continual innovation in all its product line areas.

## ABOUT SPIN FINISHES

Schill + Seilacher’s first application of Shell Risella X oils has been to its spin finish products. These are applied to man-made fibre products to help improve their downstream handling when they are processed to make textiles and other products. For instance, they help to lubricate the fibres, dispel static electricity and prevent microorganism growth.

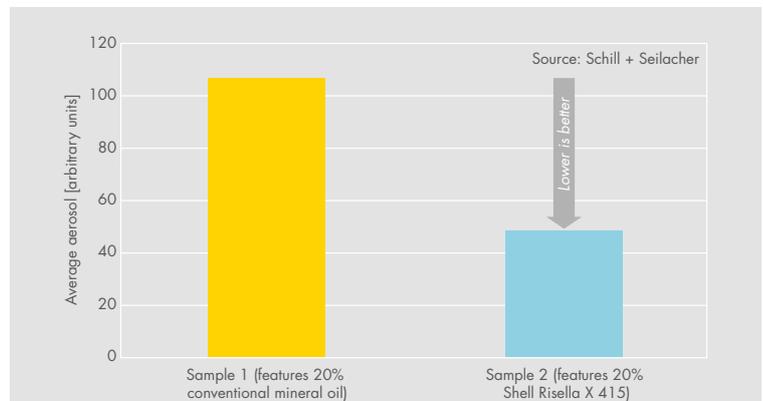


Conventional mineral oils, which are produced from crude oil, can contain significant levels of polyaromatic components. These levels are generally trending lower, but can still be appreciable. Shell Risella X oils are synthetic oils made from natural gas and contain virtually no aromatics.

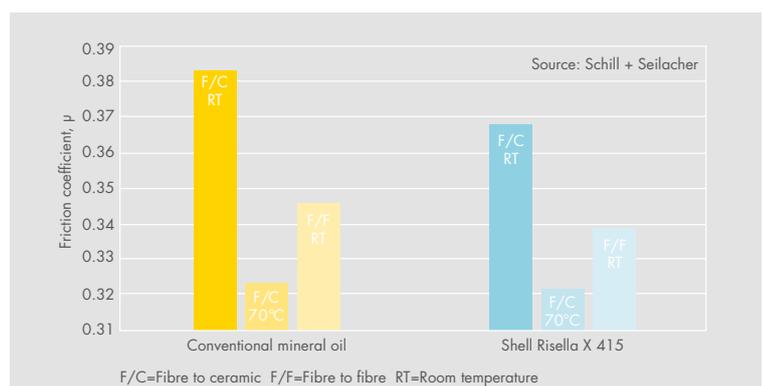
Schill + Seilacher has made a direct comparison of its product containing a conventional mineral oil normally used in the industry and one in which that oil is substituted with a Shell Risella X oil (1:1 ratio). These tests suggest that Shell Risella X can help reduce mist formation (see Figure 1). In fact, the formulation containing Shell Risella X achieved, on average, up to 55% less aerosol than the conventional one.

In addition, friction was reduced in the Shell Risella X-based spin finish by up to 2.5% (based on the average results of the data, see Figure 2). In spin finishes, low (balanced) friction is an important characteristic because it influences the production process of the yarn itself. It is also important during many downstream processes. For instance, it enables the speed of the weaving process to be increased.

Enhanced colour stability is another advantage. It is well known that mineral oils may discolour when they are exposed to light and, although there is usually no technical or aesthetic issue with this (it is unlikely to be seen on a yarn), production managers value clear oils and they prefer them to remain as colourless as possible. Because Shell Risella X oils have outstanding light and thermal colour stability, Schill + Seilacher believes that they could help to meet customers' requirements.



**FIGURE 1:** Two spin finish formulations, identical except for the process oil, were compared. The first (yellow bar) shows 20% conventional mineral oil (Shell Catenex T 121) which has a viscosity at 40°C of 19.4 mm<sup>2</sup>/s. The second (blue bar) shows 20% Shell Risella X, which has a viscosity at 40°C of 9.3 mm<sup>2</sup>/s. In this test, mist formation in the Shell Risella X-based sample was reduced by 55%.



**FIGURE 2:** Two spin finish formulations, identical except for the process oil, were compared. The first (yellow bar) shows 20% conventional mineral oil (Shell Catenex T 121) which has a viscosity at 40°C of 19.4 mm<sup>2</sup>/s. The second (blue bar) shows 20% Shell Risella X, which has a viscosity at 40°C of 9.3 mm<sup>2</sup>/s. In this test, friction in the Shell Risella X-based sample was reduced by 2.5%.

## ABOUT SHELL RISELLA X

Shell Risella X is a range of top-tier process oils based on GTL technology. It offers several advantages over conventional process oils, including extra purity and excellent performance in selected applications. Few other process oils can offer the same combination of properties.

### Extra purity

Shell Risella X oils contain a high proportion of paraffinic hydrocarbons and are very pure. These features provide 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 light and thermal colour stability.

**“SHELL RISSELLA X OILS HAVE OPENED UP A WHOLE NEW FIELD OF RESEARCH FOR US AND WE HAVE TEAMS INVESTIGATING THE BEST WAYS TO EXPLOIT THEM AND CREATE ADVANTAGES FOR OUR CUSTOMERS.”**

### **UNLOCKING OPPORTUNITIES**

To date, Schill + Seilacher has used a Shell Risella X oil in two spin finish product families called Limanol® and Convidol®.

These products have been positively received by customers, and the organisation expects to use Shell Risella X in other products and applications such as automotive leather.

The automotive industry requires various materials that have an extremely low propensity to form a hazy layer of chemical residue on interior glass, an issue known as fogging. These new oils have lower evaporation loss when compared with conventional ones and, therefore, lower volatility. Schill + Seilacher believes that these characteristics are likely to help to minimise the tendency for the oil in the materials to evaporate and condense on car windows.

Schill + Seilacher’s research into that application is ongoing.

### **ABOUT SHELL PROCESS OILS**

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.

Whatever your needs and applications, Shell can provide a full range of process oils; customers in a wide range of industries have unlocked value by using Shell process oils. 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](http://www.shell.com/processoils)



[www.schillseilacher.de](http://www.schillseilacher.de)