

# SHELL RISELLA X OILS IN THE METALWORKING INDUSTRY



Shell Process Oils

UNLOCKING COMPETITIVE ADVANTAGE

## UNDERSTANDING YOUR NEEDS

The metalworking industry involves metal removal, whether in chips or powder; metal deformation or shaping; metal surface treatments; and rust prevention. It includes all kinds of metals, alloys and composites.

Having worked closely with the world's leading metalworking fluid manufacturers, Shell understands the challenges that you face.

We know that to succeed in the competitive global marketplace it is essential to maximise productivity and process efficiency while minimising emissions and improving workplace conditions.

The Shell Risella X range is the next generation of process oils based on gas-to-liquids (GTL) technology. They have been developed to unlock competitive advantage because they offer

- **excellent performance**
- **extra purity.**

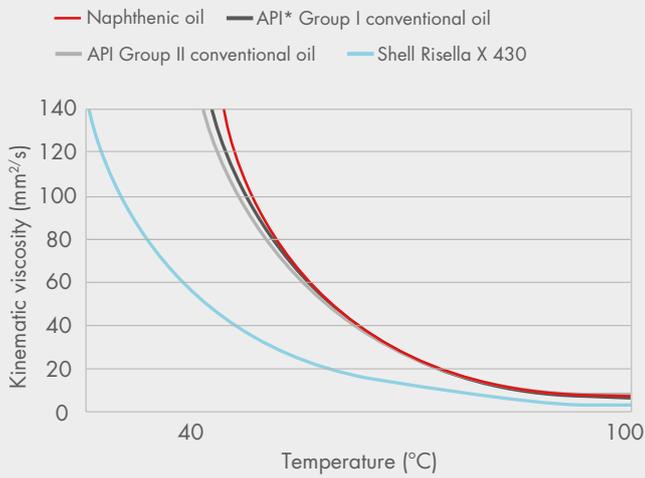
## Performance at a glance

Performance at a glance			
<b>EXCELLENT PERFORMANCE</b>	Process efficiency (high viscosity index)	Reduced foam formation	Value-adding for your products
<b>EXTRA PURITY</b>	Technical white oil classification FDA 178.3620 (b)	Low evaporation loss and enhanced workplace conditions Very low polycyclic aromatic hydrocarbon (PAH) levels	

## PROCESS EFFICIENCY

Shell Risella X oils offer excellent process efficiency, as their viscosity is less influenced by temperature changes than that of other process oils typically used in similar applications, as shown in Figure 1 (overleaf). In fact, Shell Risella X oils have a high viscosity index, which indicates that their viscosity is relatively unaffected by temperature changes. This means that there will be minimal variation in oil viscosity from the start of a shift to when operations are in full swing. The viscosity will also change less than it would for a conventional oil if the machining severity were to increase and generate higher temperatures.

		Properties of Shell Risella X technical white oils				
Property	Method	Shell Risella X 409	Shell Risella X 411	Shell Risella X 415	Shell Risella X 420	Shell Risella X 430
Colour Saybolt	ASTM D156	+30	+30	+30	+30	+30
Density 15°C, kg/m <sup>3</sup>	ISO 12185	785	800	806	816	828
Refractive index 20°C	ASTM D1218	1.438	1.445	1.450	1.454	1.460
Flash point COC, °C	ISO 2592	136	168	200	230	265
Pour point, °C	ISO 3016	-18	-15	-39	-36	-24
Kinematic viscosity 40°C, mm <sup>2</sup> /s	ISO 3104	3.3	6.0	9.3	18.0	43.0
Kinematic viscosity 100°C, mm <sup>2</sup> /s	ISO 3104	1.3	1.95	2.6	4.1	7.6
NOACK volatility (1 h, 250°C), % m	ASTM D972	11 (1 h, 150°C)	74	40	12	2.0



Source: Shell  
\*American Petroleum Institute

Figure 1: The viscosity of Shell Risella X oils is less influenced by temperature changes than other process oils typically used in metalworking applications.

## LOW EVAPORATION LOSS AND ENHANCED WORKPLACE CONDITIONS

Shell Risella X oils offer limited levels of oil evaporation, which may enhance the safety and security of operations because there is less potential for fuming and mist. This supports a cleaner environment for people working in the plant. Shell Risella X oils are synthetic process oils that, when compared with traditional mineral oils, offer very low volatility and so reduce the possibility of mist formation.

## VALUE-ADDING FOR YOUR PRODUCTS

Shell Risella X oils add value to your products as they may provide better and safer workplace conditions; help to improve metal working operations; and have excellent behaviour.

### Better for human health

- Increased occupational safety
- Less fire risk
- Better working conditions
- Kinder to skin

### Better for processing

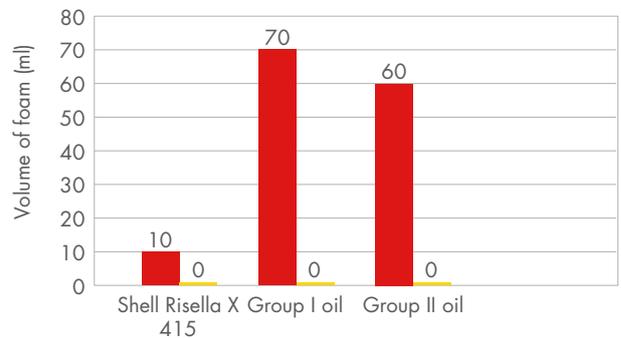
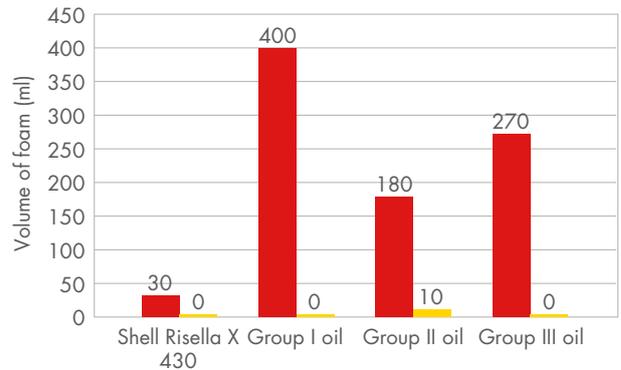
- Lower consumption compared with conventional mineral or hydrocracked oils
- Easier maintenance of aspiration systems
- Longer oil life
- Longer cleaning bath life
- Improved cold working

### Excellent behaviour

- Very low fogging and volatilisation
- Less foaming
- Good air separation

## REDUCED FOAM FORMATION

Shell Risella X oils produce **up to six times less foam** than alternative conventional oil technologies. This is known as the foaming tendency (see red bars in Figure 2). Moreover, its rapid air-release properties are demonstrated by its foaming stability (see yellow bars in Figure 2).



■ Foaming tendency. Foam after air blown through sample for 5 min  
 ■ Foaming stability. Residual foam after air ingress stopped for 10 min  
 Test used ASTM D 892 at 25°C – Sequence 1  
 The oils used have comparable viscosities at the test temperature.

Source: Shell

Figure 2: Shell Risella X oils offer reduced foam formation.

## VERY LOW PAH LEVELS

Shell Risella X oils have very low PAH levels comparable with those of medical white oils. Their purity is in line with the requirements for formulations that meet more stringent legislation, which makes them appropriate for applications requiring higher levels of purity.

## FIND OUT MORE: TALK TO SHELL PROCESS OILS

To learn more about our experience in the industry, watch our on-demand webcast. It is available on our website. If you are interested in unlocking valuable competitive advantage, talk to Shell about the benefits that Shell Risella X oils could have for your business.



[www.shell.com/processoils](http://www.shell.com/processoils)