



# FROM PROTECTING TRANSFORMERS TO POWERING NATIONS

SHELL DIALA MAKES IT POSSIBLE

The Shell Diala range of transformer oils helps to protect your equipment and to ensure efficient operation throughout its lifetime.

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**SHELL LUBRICANTS**  
TOGETHER ANYTHING IS POSSIBLE



**The Shell Diala range of transformer oils helps to protect your equipment and to ensure efficient operation throughout its lifetime.**

The Shell Diala range has been extended with the introduction of Shell Diala S4 ZX-I, a new GTL-based product engineered for optimum performance in the latest generation of transformers.

Shell Diala S4 ZX-I offers enhanced protection, longer oil life and greater efficiency.<sup>1</sup> It helps to meet the specific demands of today's transformers such as reduced sizes, increased loads, higher voltages and longer operational lifetimes.



**ENHANCED PROTECTION**

Oil is at the heart of your transformer. The Shell Diala range offers several options for the best possible protection. The new Shell Diala S4 ZX-I exceeds IEC 60296:Ed 4 2012 higher-oxidation stability, low-sulphur specification. In fact, it has essentially zero sulphur (below the detection limits), which means that the risk of oil-related copper corrosion is removed.

**LONGER OIL LIFE**

Shell Diala transformer oils are designed to last, thereby supporting the extension of your transformer's lifetime. Shell Diala S4 ZX-I exceeds the 500-hour oxidation test limit and extends oil life through its exceptional resistance to the effects of ageing, sludge formation and deposit build-up.

**GREATER EFFICIENCY**

For optimum transformer performance, electrical insulating oil must maintain its characteristics over a wide range of operating temperatures. Theoretical modelling predicts that Shell Diala S4 ZX-I could deliver improved operational performance under overload conditions owing to its enhanced thermal properties.<sup>1</sup>

**RESISTANCE TO CORROSION**

Shell is committed to minimising the possibility of insulating-oil-related corrosive sulphur developing, and the resultant copper corrosion. All Shell Diala products meet the industry standards for corrosive sulphur.

**SHELL HAS DESIGNED A PORTFOLIO OF FLUIDS THAT ENABLES YOU TO CHOOSE A PRODUCT TO MATCH YOUR TECHNICAL AND OPERATIONAL NEEDS.**

**SPECIALIST APPLICATIONS**

Shell offers products designed for specialist applications. Within the Shell Diala range, these include

- **Shell Diala S4 ZX-IG** – which is designed to meet the gas-absorbing challenges presented by high-voltage instrument transformers and bushings, and is effectively sulphur free. It helps to improve transformer reliability compared with conventional mineral oils.
- **Shell Naturelle Transformer Oil S4 I** – this is a synthetic-ester-based product that offers excellent low-flammability characteristics. It has a flash point of 275°C, is readily biodegradable and meets European Union Ecolabel requirements.






<sup>1</sup>Based on tests compared with Shell and competitors' products.



## A RANGE OF TRANSFORMER OILS TO MEET YOUR NEEDS

To meet the challenges of a wide range of equipment designs and applications, Shell has designed a portfolio of fluids that enables you to choose a product to match your technical and operational needs.



EFFICIENT PROTECTION

THE SHELL DIALA RANGE FOR STANDARD APPLICATIONS	THE SHELL DIALA RANGE FOR SPECIAL APPLICATIONS
<p><b>TIER 4</b></p> <p>Shell <b>Diala S4 ZX-I</b></p>	<p>Shell <b>Diala S4 ZX-IG</b></p>
<ul style="list-style-type: none"> <li>■ Effectively zero sulphur</li> <li>■ Extra performance</li> <li>■ Exceeds IEC 60296: Edition 4 (2012) high oxidation stability and low sulphur content</li> </ul> 	<ul style="list-style-type: none"> <li>■ Effectively zero sulphur</li> <li>■ Gas absorbency</li> <li>■ Exceeds IEC 60296: Edition 4 (2012) high oxidation stability and low sulphur content</li> </ul>  <p>Shell <b>Naturelle Transformer Oil S4 I</b></p> <p><b>SYNTHETIC</b></p> <ul style="list-style-type: none"> <li>■ Low flammability</li> <li>■ Readily biodegradable</li> <li>■ Meets IEC 61099 T1</li> </ul> 

**PRODUCT-NAME SUFFIX KEY**

- G** = Gas absorbing
- I** = Conforms to IEC specifications
- U** = Uninhibited
- X** = Fully inhibited
- Z** = Insulating oil

**APPLICATION ICON KEY**

-  Transformer applications
-  Power station applications

PRODUCT	CATEGORY DESCRIPTOR	BENEFITS	TECHNOLOGY	SPECIFICATIONS AND APPROVALS <small>(Full details of approvals for all products can be obtained from your Shell representative; approvals and claims will vary by viscosity grade.)</small>
Shell Diala S4 ZX-I	Premium, inhibited transformer oil	<ul style="list-style-type: none"> <li>■ Extra performance</li> <li>■ Exceeds IEC 60296: 2012 Edition 4: high oxidation stability and low sulphur content</li> </ul>	Inhibited	Meets the requirements of or is approved by most leading equipment manufacturers and utility companies Industry standards: IEC 60296: 2012 Edition 4, Table 2 Transformer Oil (I) (Inhibited oil); Section 7.1 ("Higher oxidation stability")
Shell Diala S3 ZX-I	Inhibited transformer oil	<ul style="list-style-type: none"> <li>■ Extra performance</li> <li>■ Meets IEC 60296: 2012 Edition 4: high oxidation stability and low sulphur content</li> </ul>	Inhibited	Meets the requirements of or is approved by most leading equipment manufacturers and utility companies Industry standards: IEC 60296: 2012 Edition 4, Table 2 Transformer Oil (I) (Inhibited oil), Section 7.1 ("Higher oxidation stability"); Baader oxidation test (obsolete) DIN 57370-1 (1978)
Shell Diala S2 ZU-I	Uninhibited transformer oil	<ul style="list-style-type: none"> <li>■ Reliable performance</li> <li>■ Meets IEC 60296: 2012 Edition 4</li> </ul>	Uninhibited	Meets the requirements of or is approved by most leading equipment manufacturers and utility companies Industry standards: IEC 60296: 2012 Edition 4, Table 2 Transformer Oil (U) (Uninhibited oil)
SPECIALITY GRADES				
Shell Diala S4 ZX-IG	Premium, inhibited, gas-absorbing transformer oil	<ul style="list-style-type: none"> <li>■ Extra performance</li> <li>■ Exceeds IEC 60296: 2012 Edition 4: high oxidation stability and low sulphur content</li> </ul>	Inhibited	Meets the requirements of or is approved by most leading equipment manufacturers and utility companies Industry standards: IEC 60296: 2012 Edition 4, Table 2 Transformer Oil (I) (Inhibited oil); Section 7.1 ("Higher oxidation stability")
Shell Naturelle Transformer Oil S4 I	Advanced, synthetic transformer oil	<ul style="list-style-type: none"> <li>■ Extra performance</li> <li>■ Meets IEC 61099 T1</li> </ul>	Synthetic ester	Industry standards: IEC 61099 Type T1; European Ecolabel requirements for low-environmental-impact-products; UBA for classification as no hazard to water (NWG)

## COMPREHENSIVE PRODUCT AND SERVICE PROVISION

Shell Lubricants is the number one lubricants supplier (Kline & Company, 2014) and has more than 60 years of innovation. We are constantly investing to develop better lubrication solutions, as demonstrated by

- **Shell Turbo S4 X** – a premium, industrial gas turbine oil based on Shell GTL technology for light- and heavy-duty gas turbines, and turbocompressors
- **Shell Turbo S4 GX** – a premium industrial gas turbine oil based on Shell GTL technology for steam, light- and heavy-duty gas and combined-cycle turbines, including geared turbines with load requirements
- **Shell Mysella S5 N** – which offers extended oil life and extra protection from deposits for demanding stationary gas engines<sup>2</sup>
- **Shell Mysella S5 S** – a specially designed low-ash oil for sour gas applications providing extra protection against deposits and corrosion.<sup>2</sup>

In addition, Shell provides the Shell LubeAnalyst service, an early-warning system that helps to identify potential oil and equipment failures before they become critical and to extend oil-drain intervals. It is a global platform available in 95 countries and 27 languages, and with more than 75 million data points.

<sup>2</sup> Based on tests compared with a competitor's product and lower-tier Shell products.



Find out more by visiting  
[www.shell.com/lubricants](http://www.shell.com/lubricants)