



'Understanding Friction, Lubrication and Wear'

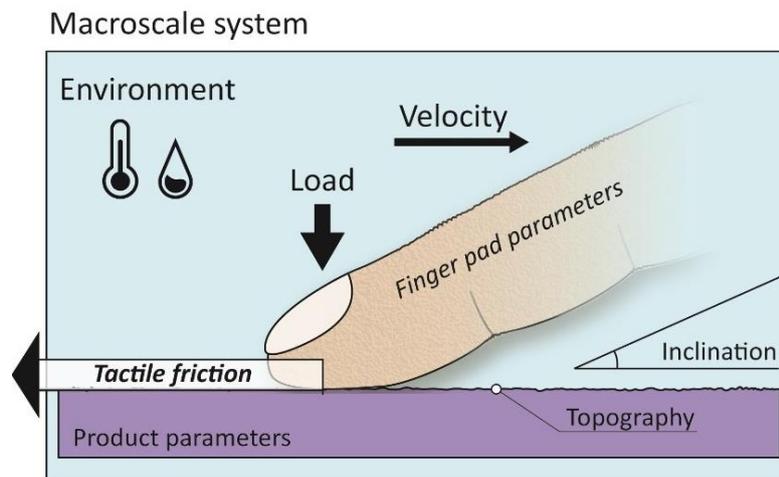
SAIT's Office Hours: 09:00 – 15:00, Mondays to Thursdays; Fridays we work from home.

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SAIT Technical Newsletter, August 2021

Tribology

Tribology starts with, and is as old as, the human touch. Touch perception is all about tactile friction – an excellent article in TRIBONET leads with the following visual that summarises the subject:



Tactile friction. Credit @ Dmitrii Sergachev

As humans, we interact with the environment via our senses (sight, hearing, smell, taste, and touch). Touch perception has been the attention of scientists for decades, with applications in the textile, robotics and sports industries. The objective of studying touch perception can be to give certain properties such as gripping, stickiness or smoothness to a material (known as texture design), to mimic the sensations when touching a surface in robotic implants, or it can be simply to predict how a surface will be perceived by a subject.

Please read further about this fascinating insight and visit:

https://www.tribonet.org/touch-perception/?utm_source=tribonet+community&utm_

What Is Synthetic Oil?

The general definition of a synthetic oil is a lubricant made up of artificially made chemical compounds; these compounds are made by breaking down and then rebuilding the petroleum molecules. This ensures that all the

molecules are nearly the same size and structure. Conversely, mineral or conventional oil is made using refined crude oil, resulting in molecules with different shapes, sizes and structures.

Full synthetic oils use a synthetic base stock, are uniquely designed molecule by molecule without using petroleum and include additives meant to help minimise degradation of the oil. A **synthetic blend** is a mix of conventional motor oil and synthetic base stocks. Adding the synthetic base stock to the conventional mineral oil gives you a little bit more protection than just using the conventional oil by itself.



Picture from: <https://www.spectrumbaautogilbert.com/blog/conventional-versus-synthetic-oil>

There are multiple types of synthetics with distinctly different properties and applications. However, most synthetics used in automotive service are polyalphaolefins (PAO). These have been classified as group IV base oils.

However, group III base oils are often used in this segment as well. They are essentially highly refined and generally are severely hydrocracked (higher pressure and heat). This longer process is designed to achieve a purer base oil, but still being manufactured from crude oil, Group III base oils are sometimes termed 'synthesized hydrocarbons'.

There is generally a performance difference between these different groups of base oils, mainly due to the molecular differences and interactions, as well as the cost difference. However, as there is no legislation that clearly defines the differences, the **marketing of finished lubricants is often 'blurred' between "Full synthetic"; "Synthetic"; "Synthetic technology" & "Synthesized hydrocarbons"**. The performance may however be different between the different grades in-terms of energy efficiency, wear, and life.

Reference: John Fitton john@onfo.co.za

SAIT Training

For full SAIT Training information Please review <http://sait.org.za/events/training/>.

Introductory Courses:

- **Lubrication Engineering**
- **Wear and Materials**

If you are interested in attending one of our **1-day Introductory Courses**, email us at secretary@sait.org.za or admin@sait.org.za.

A certificate of attendance will be awarded to delegates who complete each course. Delegates will also earn 0.8 CPD Credits, as the courses are registered with ECSA.

A full report-back on **Lubrication Engineering 131**, held from 26 - 30 July, will be published in the July/August Training Newsletter, coming out soon.

The Lubrication Engineering Course, Scheduled for Cape Town from 30 August 2021, **will not take place**. It will be re-scheduled for the New Year.

Lubrication Engineering 133, Johannesburg, 18-22 October. The Registration Form and full information for this course can be downloaded at: <http://www.sait.org.za/events/training/>.

Lubrication Engineering 134, Johannesburg, 21-25 February 2022. The Registration Form and full information for this course can be downloaded at: <http://www.sait.org.za/events/training/>.

SAIT Events

The 37th SAIT Annual General Meeting, 2021

The 37th Annual General Meeting of the South African Institute of Tribology was held online on Wednesday 4 August 2021 at 18:00.

The Meeting was chaired by SAIT Director, Treasurer and Public Officer, **David Beard**, with proxy from **SAIT President Patrick Swan**.

Sixteen SAIT Members were present, with two proxies and one apology; the required quorum of twelve members was met and the Meeting declared Open.

The Minutes of the 36th AGM of the SAIT, held on 5 August 2020 on Zoom, were accepted without change.

The SAIT President's Report was read by David Beard, on behalf of the President, Patrick Swan. The SAIT President thanked Gill Fuller for her years of excellent service for the SAIT, from 1985 until February 2021.



David Beard



Gill Fuller



Patrick Swan

The Treasurer's verbal Report was accepted by all. The Annual Financial Statements were not yet available and will be published shortly.

Ten nominations were received for the SAIT Executive Committee; one was invalid.

The required number of Executive Committee Members is eight; however, the meeting agreed that the ninth nominee would be co-opted to act on the Committee.

The 2021/22 SAIT Executive Committee are, in alphabetical order:

David Beard
Howard Benadé

Eben du Plessis
Dave Gamble

Henco Booysen
Leon Bradley
Johan Claasen

Faiz Regal
Patrick Swan

Portfolios will be allocated at the first meeting of the 2021/22 Committee in September.

SAYTA, Under the Auspices of SAIT:

To promote Tribology among younger people in tribology related industry, the South African Young Tribologists Association (SAYTA) was recently formed. The aim of this group is to function as a support network, linking young members to experts in the industry. This will facilitate continuity in the transfer of knowledge and experience. The group will also focus on addressing current issues experienced in industry. SAIT members already qualify, at no extra cost, to become a member of SAYTA.

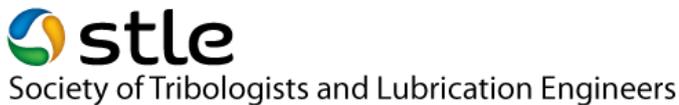


Howard Benadé

Watch the SAIT Website at <http://www.sait.org.za/membership/page/> as the group forms and progresses.

International Events

For a full list of upcoming international events please visit [Tribonet Conferences](#) where links take you to each event in full detail, including Plenary Speakers and Important Dates.



Every Wednesday, a new recorded webinar is available, free, to all STLE Members. We also provide links to TLT articles related to the webinar topic. *For more information, please go to:*

https://www.stle.org/WebinarWednesdays?utm_source=Real%20Magnet&utm_medium=email&utm_campaign=156033357

Please note this international fuel event

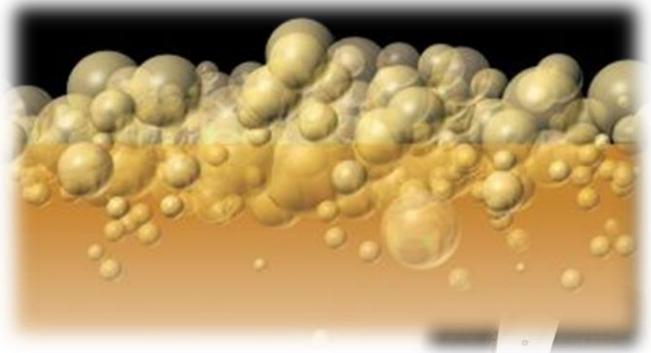
13th International Colloquium Fuels
15-16 **September 2021 Ostfildern Stuttgart Germany**
In person and online – a hybrid event.

Contamination Corner

This Q & A from Noria.com is worth noting

"We have recently noticed a significant increase in foam in one of our lube systems. A supplier recommended adding an after-market antifoam agent, is this a good idea?"

While in some circumstances, adding an antifoaming agent may resolve the issue, it is, in general, not a good idea to add any aftermarket additive to a lube system. **If foam has traditionally never been a problem, but has suddenly started, think about treating *not* the symptom (the foam), but the *cause*.**



If nothing has changed with the design of the lube system or reservoir, it is likely that this sudden increase in foaming tendency is caused by contamination. Because foam suppression in a lubricating oil is closely related to the air/oil surface tension, any contamination that can result in either an increase in air entrainment, such as solid particles, or a decrease in surface tension can cause this type of effect. Common contaminants that can decrease the surface tension include water, grease and surfactants, such as soaps and detergents used during machine wash down.

To diagnose the root cause of your problem, try looking for significant increases in water or particle contamination or the appearance of unexpected elements in your spectrometric analysis data, such as lithium, calcium, aluminium, or barium that may signal some other ingested grease or chemical contaminant.

FAQS – Did You Know?

Frequently asked lubricant test-sampling questions that impact on friction, the cost of operating and downtime, or positively speaking, the effect on uptime:

- How often should I sample my equipment?

Although the original equipment manufacturer's recommendations provide a good starting point for developing preventive maintenance practices, sampling intervals can easily vary. How critical a piece of equipment is to production is a major consideration for determining sampling frequency, as are environmental factors such as hot, dirty operating conditions, short trips with heavy loads and excessive idle times.

- What is normal?

The definition of normal varies from machine to machine depending on its workload and the environment in which it operates. Oil analysis interpretations are based on trends rather than specific limits..

Visit: <https://www.wearcheck.co.za/info/faq/faq-oils.html>



From the President's Desk – Patrick G. Swan

My thanks to the Directors, Committee and Ladies in the Office for running the AGM so smoothly. I apologize for not attending but was unavoidably occupied elsewhere.

We look forward to resuming our regular monthly Technical Meetings as Webinars in the near future.

It was unfortunate that we could not run our Cape Town Lubrication Engineering Course this year but look forward to re-scheduling it for the New Year.

Parting Shot!

Why base oil suppliers need an audit: lubricant standards and quality all start with base stock. If the base oil is suspect, then no number of additives or marketing claims for performance are sustainable. In a world where logistical chains have been broken by COVID-19 and the Suez Canal / Evergiven debacle (jammed with 18000 containers), lube supply chains have taken a serious knock. The price of base stock has also gone through the roof – shortage and price create a scramble for base stock where quality is not the over-riding consideration.



It is vital to protect product reputation. A 2-page advertorial in Lubes 'N' Greases Anniversary issue supported by ExxonMobil (exxonmobil.com/basestocks) lists the right questions for lubricant manufacturers to initiate a base stock audit process:

1. Beyond your product specifications, how do you guarantee that your base stock will always perform in my formulations?
2. How can your base stock design help improve efficiency for my business?
3. What is the breadth of your base stock supply network and delivery capabilities?
4. How can you support me if an unexpected supply issue occurs?
5. How do you envision your products evolving long-term?
6. How can you support me in formulating my products so that I can extract the most value?

We Want to Hear from YOU

1. Please let us know what topics are of interest to you.
2. Please submit interesting paragraphs or articles that we can share with the SAIT community, by sending them to secretary@sait.org.za for forwarding to The Editor. This will assist in disseminating information to all involved in Tribology.
3. Please let us know what would interest you for technical sessions or webinars
4. Please let us know of interesting presenters from whom you would like to hear.





Bringing the SAIT Executive Committee Closer to SAIT Members and the Wider Tribological Community.

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