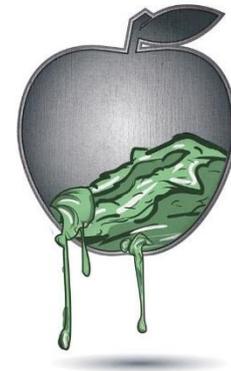


SAIT Newsletter, October 2019

Tribology – especially in the performance of grease – is subject to gravity. Really? What has gravity to do with grease?

An insightful article from *Noria in Machinery Lubrication* points to ‘*Strategies for Overcoming Gravity’s Impact on Grease*’. Here are a few important extracts to note:

- Grease is made up of mostly oil. In fact, most greases are 70% oil or more. The ratio of oil to thickener is very important in the performance of the grease. Not only must grease stay in place, it must be able to get out of the way of moving parts and slump back into contact with them as they move.
- Gravity, shearing and vibration are all forces that can separate oil from a grease thickener. It happens in a machine when moving parts shear through the grease to release oil into contact points.
- Grease is sticky. We apply it to bearings, gears and machine surfaces specifically because we want it to stay in place. We know that oil gets flung around by the movement of the machine. When the movement stops, *gravity takes over and the oil finds its way to the bottom*.
- Grease is often the answer to the effects of gravity. When you have machines that need their lubricant kept close, grease is the choice. Frequently starting and stopping machines are normally designed for grease to counter the effects that gravity can have on an oil lubricant, pulling it down into the housing or reservoir and away from the lubricated parts.



From the Article, [Strategies for Overcoming Gravity’s Impact on Grease](#)

72%

of lubrication professionals say oil separation and bleeding have been a problem when storing grease at their plant, according to a recent survey at [Machinery Lubrication](#).

The way grease guns are stored is critical to grease performance and oil bleeding. Please visit the 1600 word article for detailed advice: [Strategies for Overcoming Gravity’s Impact on Grease](#)

ETT – Essential Tribology Terminology

Three of Tribology's terms that are used and agreed upon:

- **Thickener** - The gellant used to form the structure of a lubricating grease in which the liquid lubricant is held.
- **Timken OK Load** - The maximum load a lubricant will withstand before failure due to breakdown of the lubricant film occurs, as determined on the "Timken EP Lubricant Tester".
- **Total Acid Number (TAN)** - See Acid Number in our first newsletter, repeated here for ease of reference – it 'is the number of mg of potassium hydroxide (KOH) needed to neutralise all or part of the acidity of 1g of a petroleum product. Also specifies as neutralisation number (NN) or neutralisation value (NV) and total acid number (TAN).'

SAIT Training

Follow the path from data to information and into knowledge:

The remaining Lubrication Engineering Course for 2019, LE 124, is currently underway at [CedarWoods of Sandton Conference Centre](#).



Delegates at LE 124, 30 September to 4 October, with Lecturer, SAIT Vice President Patrick Swan

SAIT Training schedule for 2020

- LE 125: 24 to 28 February 2020, Johannesburg

Costs: SAIT Members: R16 031 Non-Members: R17 894 Students: R4 922

From May 2020, all courses will be at revised 2020/21 rates; prices and dates to be announced before the end of 2019.

STLE Examinations at SAIT

The South African Institute of Tribology will host three examinations of the Society for Tribologists & Lubrication Engineers (STLE) on **22 November 2019**. The venue is Science Park, Kelvin, and time is from 09:00 to 12:00. **The exams are open to SAIT members in good standing.**

PLEASE NOTE: Closing date for registration is 25 September 2019, and exam fees must be paid in full by 30 September 2019. Late registrations will be accepted until 9 October.

- **Certified Lubrication Specialist (CLS):** Although not compulsory, it is highly recommended that you first attend the SAIT five-day 'Lubrication Engineering' course. A distinction of 75% is a good indication of success in the CLS exam, where the standard is high and the pass mark is 70%. The recommended books for the CLS exam are the STLE Alberta Section 'Basic Handbook of Lubrication' Third Edition, and/or the AIST 'The Lubrication Engineers Manual' Fourth Edition.
- **Oil Monitoring Analyst (OMA I and OMA II)**
- **Certified Metalworking Fluids Specialist (CMFS)**



Recommended reading for all modules is on the [STLE website](#) under "Professional Development".

For further information, costs and to register, please contact Gill, Isabel or Berice at the SAIT offices: Tel. (+27) (0)11 804 3710 or email secretary@sait.org.za or admin@sait.org.za.

International Events:

- **October 8-11, 2019: Global Lubricant Week 2019** – will be held at the Radisson Royal Hotel in **Moscow**. 650 participants from 25 countries with 50 speakers over 4 days. For more details please contact, contact Elena Konstantinova Tel: +7 495 502-5433 / +7 495 778- 9332; e-mail: konstantinova.elena@rpi-inc.ru and at [Global Lubricant Week 2019, Moscow](#).
- **October 17, 2019: Lansing Michigan USA, the Petroleum, Quality Institute of America**, in conjunction with the Michigan Department of Agriculture & Rural Development, is running a joint industry forum – '**Regulations and Realities in the Lubricants Industry.**' The objective of the forum is to advance efforts to improve the consistency of quality and product integrity of lubricants in the market. The Forum will take place at the Michigan Department of Agriculture and Rural Development's Heffron Metrology Laboratory in Williamston, Michigan. There is no fee to attend and it is open to lubricant manufacturers, distributors, retailers, and regulatory representatives.
- **December 1-4, 2019: IndiaTrib 2019**, is the International Conference being organised by the Indian Institute of Science and Tribology Society of India. The conference will be held at the Indian Institute of Science, Bangalore. IndiaTrib 2019 is going to be a unique event with a galaxy of international Tribology experts who have already confirmed their participation as plenary and Keynote speakers. This could be a once-in-a-lifetime opportunity to hear from among the best Tribologists around the world.. [IndiaTrib - 2019](#)
- **January 2020: the 22nd International Colloquium Tribology** will take place at the Technische Akademie Esslingen. The conference provides an international exchange forum for the industry and the academia. Leading university researchers present their latest findings, and representatives of the industry inspire scientists to develop new solutions. Discussions and co-operations enable attendees to meet current tribological challenges.
One of the main topics is the forthcoming e-mobility technology, its various aspects and its consequences for the lubrication and tribology community.

Local Event



[The ICIS 8th African Base Oils and Lubricants Conference](#) is coming up on **5-7th of November in Cape Town, South Africa.**

The Conference and Seminar will focus on the challenges and opportunities for the African market, with topics covering the African free trade agreement, Environmental challenges and IMO 2020.

Hear from

Chevron Base Oils// Engen Petroleum// Pacegate// Hi Tech Oils & Grease// Puma Lubricants// ROSE Foundation// Siddharth Grease and Lubes

Looking at Grease demand in Africa?

New for this year, the pre-conference seminar will focus on grease demand in Africa. With topics focusing on wind turbines and the mining industry, the seminar will give specific time to discuss strategies in grease.

Meet across the market

The agenda includes 7+ Hours of networking time, including a drinks reception on Day 1. With both international attendance and representation from across Africa.

The agenda for 2019 can be found [here](#)

How to register

If you are looking to attend, you can register by:

- 1) Email – Please return the attached registration form to lauren.waugh@icis.com
- 2) Phone – Please get in touch on +44 207 911 1310 and I can register your place by phone
- 3) Online – Register online [here](#).

Contamination Corner:

It's All About The Humble Grease Nipple



[A Grease Nipple on the Driver's Door of a 1956 VW Beetle](#)

How does it work? The pressure supplied by a grease gun forces a small captive bearing ball in the grease nipple to move back against the force of its retaining spring. The arrangement is thus essentially a valve that opens under pressure to allow grease to pass through a channel and be forced into the voids of the bearing. When the pressure ceases, the ball returns to its closed position. The ball excludes dirt and functions as a check valve to prevent grease escaping back out of the fitting. ***The ball is almost flush with the surface of the fitting so that it can be wiped clean to reduce the amount of debris carried with the grease into the bearing.***

[Wikipedia article on Grease Fitting](#)

Therein lies the problem – relying on human reliability to ensure that a grease nipple is clean before grease gun pressure is applied. Here are a few practical solutions for Africa:

- Install plastic dust caps, available in a variety of colours and shapes, on the fittings. This allows them to be employed for multiple purposes. Not only can they be used to help prevent particle ingress, but different colours can identify which grease to apply or indicate frequency for how often a grease point should be re-lubricated
- Cover the nipple with a small smudge of grease after each re-lubrication event to serve as a barrier between the outside environment and the inner workings of the bearing. Ensure that the grease smudge is wiped off before re-greasing the bearing. Failure to do so will push all the contaminants that have collected on the dollop into the bearing.
- Any compromised grease nipple must be replaced ASAP – from [Noria Corporation](#)

Friction rules at NASCAR

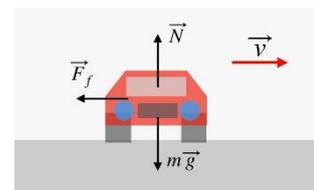


[NASCAR Pile-Up and Importance of Friction](#)

A 21-car pile-up at the 2019 Daytona NASCAR car race created an example of the effect of friction in our life. An article in Tribonet is based on a story by Rhett Allain: [“Estimate the Friction Coefficient in That Massive NASCAR Pile-Up”](#)

The article provides a perfect opportunity for a tribology lesson, relating to frictional forces, velocity, and acceleration. As the cars slide sideways across the racetrack, they experience frictional force, which occurs whenever two different objects slide against one another. In this case, it is the contact between the cars’ tyres and the racetrack surface creating the frictional force. As the tyres slide sideways, the friction converts kinetic energy (energy of motion) into thermal energy (energy of heat). This frictional force causes the car to slow down.

Diagram by Rhett Allain, author of [‘Estimate the Friction Coefficient in That Massive Nascar Pile-Up’](#)



The Tribonet Article, [NASCAR Pile Up and Importance of Friction](#), provides excellent diagrams and equations. Here is a lesson from the equation linking the distance and the acceleration: **No matter**

how large the friction coefficient is the increase of the speed by 2 times leads to an increase of the stopping distance by 4 times. Driving in rainy conditions increases the stopping distance as well, since the friction decreases. Bear that in mind! Especially as we enter our summer rainy season.

PARTING SHOT

Did You Know?

The base oil viscosity is critically important with regards to the performance of the grease in an application. It is the base oil & additives that is being used to lubricate and not solely the *NLGI consistency that is important. Ensure that you are using the correct base oil viscosity for your application.

*[National Lubricating Grease Institute](#): 'The **NLGI** was incorporated by a small number of U.S. companies in 1933 to create a code for the [National Recovery Act](#). The original name of the organization was the National Association of Lubricating Grease Manufacturers, Inc. The name was changed in 1937 as the industry recognized the need for a joint development and standards association and membership grew.

'The NLGI is a not-for-profit corporation whose membership includes grease manufacturers and sales organizations, associated equipment manufacturers, industry suppliers, service organizations, research and educational groups. Membership is open to corporations and individuals.

'According to information posted by the NLGI in 2004, the institute has member organizations in 26 countries, while subscriptions to its journal, the NLGI Spokesman, represent 50 countries.'

The [NLGI consistency number](#) (sometimes called "NLGI grade") expresses a measure of the relative hardness of a [grease](#) used for lubrication, as specified by the standard classification of lubricating grease established by the [National Lubricating Grease Institute](#) (NLGI). Reproduced in standards [ASTM D4950](#) ("standard classification and specification of automotive service greases") and [SAE J310](#) ("automotive lubricating greases"), NLGI's classification is widely used. The NLGI consistency number is also a component of the code specified in standard [ISO 6743-9](#) "lubricants, industrial oils and related products (class L) — classification — part 9: family X (greases)".^[1]

The NLGI consistency number alone is not sufficient for specifying the grease required by a particular application. However, it complements other classifications (such as ASTM D4950 and ISO 6743-9). Besides consistency, other properties (such as structural and mechanical stability, apparent viscosity, resistance to oxidation, etc.) can be tested to determine the suitability of a grease to a specific application.

Let's all share and educate end consumers regarding tribology and the cost for lubrication, not the price of lubricant.

We Want to Hear from YOU!

1. Please let us know what topics are of interest to you, or submit interesting articles that we can share with the SAIT community. This will assist in disseminating information to all involved in Tribology. Please send your thoughts to admin@sait.org.za for forwarding to The Editor.
2. Please also let us know what would interest you for technical sessions / webinars – or any interesting presenters from whom you would like to hear.

We look forward to hearing from you!

Please Like The South African Institute of Tribology - SAIT - on [Facebook](#)
and regularly check our [Website](#) for updates.
