

# TOTAL ALTIS®

The reference for high temperature  
long life greases



**TOTAL**

## The ALTIS range meets the most stringent industrial grease lubrication needs :

- **Extreme temperatures**
- **High speeds**
- **“Low noise”**
- **Long life and/or life time lubrication**

## Choose the best performance TOTAL ALTIS® Polyurea Thickener Technology for the future.

### The TOTAL ALTIS® range, the high temperature greases with exceptional life time :

Requirements for high tech greases in automotive and industrial applications have evolved beyond the limits of 'conventional' complex greases.

Therefore industry is constantly looking for greases offering the highest lubricating performance : better mechanical stability, better resistance to shear and speed, better protection against corrosion and consistent performance at both very high and low temperatures.

By taking full advantage of the properties of urea thickeners (Polyurea's), TOTAL can make available to you a range of TOTAL ALTIS® industrial greases with exceptional performance in all these area's. Furthermore during years of world-wide experience the various qualities of TOTAL ALTIS® were duly acknowledged by our numerous clients in industries all over the world.

### Technology for the future, making for a completely new class of lubricating greases.

The properties of urea's have been know for a long time. But it is still considered difficult to manufacture satisfactory lubricating greases based on this chemistry.

TOTAL has successfully developed a super complexing process, modifying the properties of the base materials used in urea greases to allow the production of a grease range with exceptional properties. Thus a truly remarkable technological breakthrough was made, which shows that an extension of life time at higher temperatures of up to 50% versus 'classical' complex greases can be achieved.

TOTAL selects and chemically/physically modifies the base components used in urea greases using its super complexing thickener technology system.

Which results in the ability to define a range of greases with the exact properties you need.

### TOTAL ALTIS® : a true high temperature 'long life' multipurpose range

TOTAL ALTIS® based on complex urea's, are state-of-the-art greases which are highly resistant to mechanical fatigue, heat, corrosion and do not harden prematurely.

This makes them ideal greases for :

- diversified 'industrial' applications : in general industry and manufacturing and specifically automotive industry, steel and paper industry,
- electrical motor bearings,
- plain bearings,
- filled for life applications.

All kind of bearings : ball, roller etc.



Under pressure, TOTAL ALTIS® becomes smoother and spreads regularly between the 2 surfaces.



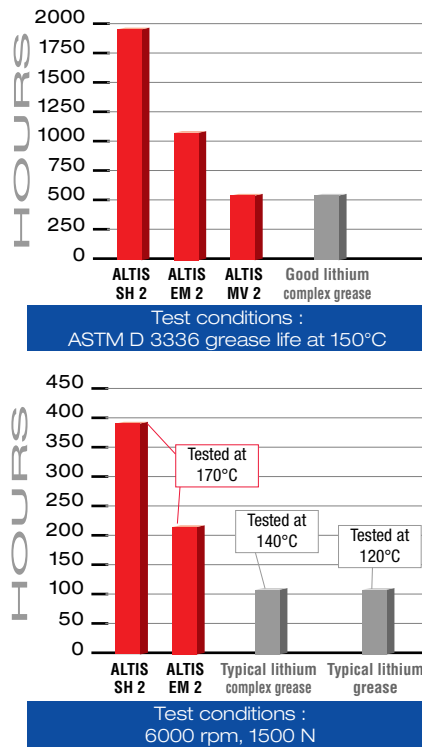
When pressure releases, TOTAL ALTIS® recovers its original structure.

# OUTSTANDING PROPERTIES

## Life time : TOTAL ALTIS® stands up to high temperatures for long periods

In three accepted standard thermal stability tests (Dropping point, leakage and lubrication life) TOTAL ALTIS® does not liquefy until a temperature of over 260°C is reached, which represents a remarkable performance. Furthermore, on reverting to room temperature, it integrally recovers its structure, unlike other complex greases which are also considered to be high-grade speciality lubricants.

The ultimate test for the life time expectancy of a grease is found in the FAG FE-9 results. The grease is subjected to run at 170°C and 6000 rpm (DIN 51 821), TOTAL ALTIS® shows an excellent life span at high temperatures.



Even when subjected to severe bearing tests :

6 hours at 160°C and 660 rpm (ASTM D1263), TOTAL ALTIS® does not leak or harden, which shows an excellent life span in long duration heavy duty service at high temperatures.

## Mechanical stability and high shear resistance : TOTAL ALTIS® withstands the harshest treatment.

TOTAL ALTIS® range exhibits excellent mechanical shear stability. Tests show that after working for more than 100.000 strokes (ASTM D217) typical polyurea greases can soften by 2 or 3 NLGI grades.

Under the same conditions, TOTAL ALTIS® greases, formulated with shear-stable thickener technology, softens much less than 'conventional' urea greases.

**Even more remarkable** is that due to the Molecular alignment the structure of TOTAL ALTIS® grease is more stable than metallic soap greases. Which means that "energy" can be absorbed without destruction of the structure of the thickener.

## Thixotropy An extremely attractive property for the bearing application

Under the effect of centrifugal force, part of the grease is expelled to the sides of the bearing where it is no longer exposed to mechanical actions. The grease retains its consistency and can be thus an effective sealing.

The other part of the greases continues to play its role as lubricant for the rotating components.

The temporary loss of consistency of PU greases reduces the operating torque and thus save energy.

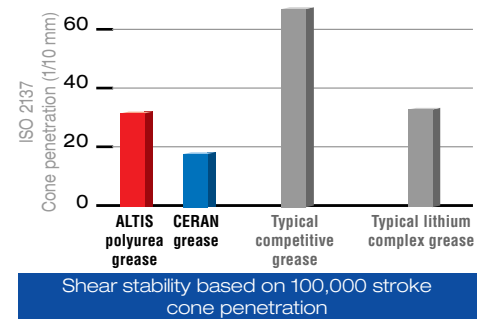


## Acoustic properties

Polyurea Greases are listed as “low noise” greases.

This characteristic is due to the structure of PU Greases, Molecular alignment dominated by H-bonding and the capacity of Intramolecular H-bridge to regenerate themselves (thixotropic effect).

Because of this fact, TOTAL ALTIS® Greases also show superior characteristics at oscillating movements or when vibrations occur. This results in increased life time of high speed bearings.



## Oxidation resistance : safer running with TOTAL ALTIS® !

A grease which oxidises too rapidly may suddenly lose its lubricating properties. Tests show the superior oxidation resistance of TOTAL ALTIS®.

When grease is placed in a sealed container, in the presence of oxygen under pressure at 100°C, a pressure drop of 0.3bar after 100 hours corresponds to 2 years of normal storage life. With TOTAL ALTIS® such a pressure drop is only recorded after 500 hours.

In another test, a TOTAL ALTIS® grease film is heated in an oven for 100 hours at 150°C and still retains its normal texture, whereas other greases bake or are transformed into a brownish resin on the applied surface. **Safety guaranteed.**



## Low temperature performance : TOTAL ALTIS® remains easily pumpable

A truly multipurpose grease must not only resist to high temperatures but also continue to operate satisfactorily at low temperatures. The starting resistance measured in a ball bearing running at 1rpm at -20°C (ASTM D1478) and lubricated by TOTAL ALTIS® is extremely low. Some TOTAL ALTIS® grades comply even at -40°C.

Therefore for all practical purposes the serviceability range, covers a wide temperature span.

## Hardening during use : no problem for TOTAL ALTIS® in centralised lubrication systems.

Conventional polyurea greases have a tendency to harden too quickly in centralised lubrication systems. This is not a problem with the TOTAL ALTIS® technology. As shown in tests, it maintains excellent pumpability in the course of time, whatever the temperature variations.

## Oil bleeding : no leaching out or softening of TOTAL ALTIS®

In filled for life applications, lubricating greases have to have a controlled oil bleeding to ensure service life during prolonged life time. The greases oil bleeding must not be influenced by mechanical action, or by temperature and speed influences.

Thanks to TOTAL's super complexing thickener technology system.

We have the ability to define a very narrow oil bleeding range for the TOTAL ALTIS® range, giving it the exact oil bleeding properties required for your application.

# ADVANTAGES

## TOTAL ALTIS® : a true high temperature 'long life' multipurpose range

### Leading to economical advantages

- Far less machine downtime for maintenance and lubrication
- Less stocks and simplified maintenance schedules through rationalisation, as TOTAL ALTIS® can replace many other greases due to its wide temperature application range
- Life time increase of up to 50% is possible vs 'classical' complex greases.

### Leading to risk reduction

- Less risk of costly failures and breakdowns
- Less risk of wrong product application due to simplified maintenance
- Increased safety of the work place due to reduced losses and leakages

### And environmental advantages as well

- TOTAL ALTIS® does not contain any heavy metals or components considered harmful to human health and the environment
- Minimal pollution thanks to reduced losses and leakage.

## A very comprehensive range

TOTAL ALTIS® range, while the chemistry of the thickener remains virtually unchanged, the formulations have been developed for specific applications. The most typical variation from formula to formula is the change in the base oils (type and viscosity)

**TOTAL ALTIS EM 2** is a di-urea grease specifically designed for use in bearings running at elevated speeds and higher temperatures, as found in electrical motors working in severe circumstances in all type of industries.

**TOTAL ALTIS MV 2** is an di-urea heavy duty grease based on a highly refined mineral base oil and extreme pressure additives ; TOTAL ALTIS® MV 2 can be used in bearings and other applications running at high temperatures used in steel industries, paper industries and other "heavy" industry applications.

**TOTAL ALTIS SH 2** is an di-urea 'low noise' grease based on a full synthetic ester base oil. TOTAL ALTIS® SH 2 is pre eminently designed for life time filling of bearings and other applications running at high temperatures and high speeds.



**TOTAL**

**TOTAL LUBRIFIANTS**

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