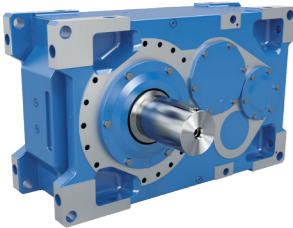


Surface and Corrosion Protection

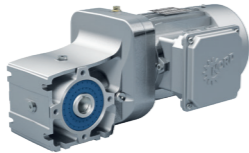
NXD⁺upH – the alternative to stainless steel



DRIVESYSTEMS
Our Solution. Your Success.



Industrial gear units



Geared motors



Frequency inverters and motor starters

- ▶ Headquarters and technology centre in Bargteheide near Hamburg.
- ▶ Innovative drive solutions for more than 100 branches of industry.
- ▶ 7 production locations with cutting edge technology produce gear units, motors and drive electronics for complete drive systems from a single source.
- ▶ NORD has 48 subsidiaries in 36 countries and further sales partners in more than 50 countries, providing local stocks, assembly centres, technical support and customer service.
- ▶ More than 4,800 employees throughout the world create customised solutions.



Headquarters in Bargteheide

Motor production

Production and assembly

Motor assembly

The first choice for food areas:
NXD tupH – exclusively on NORD products

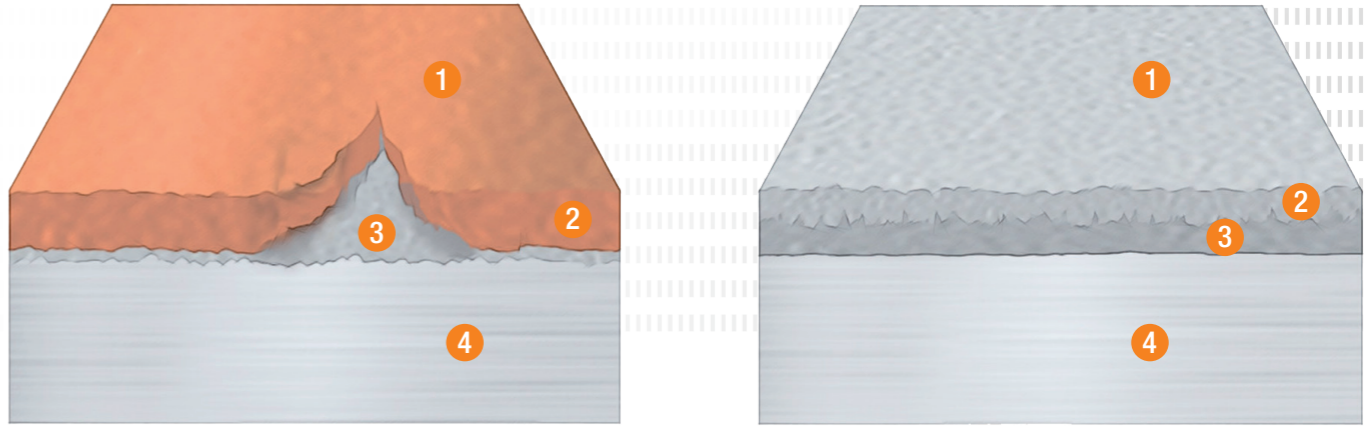
NXD tupH stands for "NORD eXtreme Duty" and tupH combines "tough" and the pH value. NXD tupH therefore stands for a protection package of exceptional resistance for your application. Technically, NXD tupH is a two-stage surface conversion process, which is an excellent alternative to stainless steel and multi-layer coatings. It is available for NORD aluminium products with smooth surfaces (flyer S3950).

Step 1: The ready-machined housing part undergoes a surface conversion process which creates a very hard, inert surface with good adhesion properties for the next layer.

Step 2: The surface converted parts are then coated and cured with a thin high-performance food-grade highly-adherent sealer.

Parts with the complete system applied are then assembled to a NORD drive system.

Compared to a conventional paint finish, NXD tupH is specially based on the material aluminium



- 01. Paint surface
- 02. Paint
- 03. Aluminium Surface
- 04. Aluminium Alloy

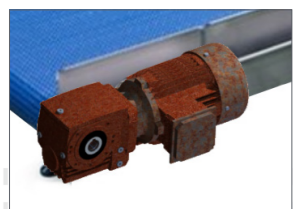
Paint is only applied superficially and may even cover porous areas. Because paint does not form a permanent bond with the material it can flake off, even at low mechanical stress levels.

- 01. Sealer Surface
- 02. Sealer Layer
- 03. Conversion Layer
- 04. Aluminium Alloy

The NXD tupH finish consists of a base layer formed by a surface conversion process of the aluminium as the basis for corrosion protection. An extreme resistance with better hardness compared to an untreated aluminium alloy is reached in combination with the sealer.

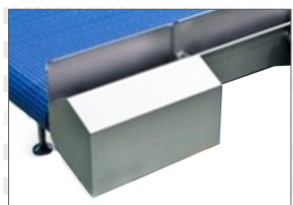
NXD tupH is used where conventional solutions do not prove effective

Disadvantages of conventional solutions



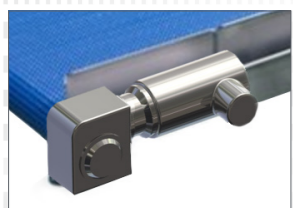
Painted Drive Unit

- ▶ Not hygienic
- ▶ Not suitable for use with food in many cases
- ▶ Corrosion and propagation can flake off paint



Covered Painted Drive Unit

- ▶ Additional parts and cost (cover)
- ▶ Dirt and bacteria build up under the cover
- ▶ Limited ventilation of the drive unit and thus unfavourable thermal limit operation
- ▶ Time-consuming installation and maintenance



Stainless Steel Drive Unit

- ▶ Cost-intensive
- ▶ Heavy
- ▶ Thermally loaded

What makes NXD tupH unique?

- ▶ Food compliance worldwide: NXD tupH meets global approvals like FDA, EU 1935/2004, Switzerland and MERCOSUR
- ▶ Durable integrity: No flaking and no corrosive propagation - even with small mechanical damage, the protective effect remains intact
- ▶ Easy to clean: The smooth, pore-free surface is easy to keep hygienic – perfect for demanding industries such as food and pharmaceutical production
- ▶ Very high chemical resistance: NXD tupH withstands strong acids and alkalis
- ▶ Optimized efficiency: Thanks to the high thermal conductivity of the housing, you benefit from higher power density and lower peak surface temperatures
- ▶ Environmentally friendly: low weight for easier handling and installation, surfaces free of chromates, PFAS-free, durable, highly recyclable

More performance for less cost

With NXD tupH you not only get the highest quality, but you also save money: Our drives are cheaper to purchase than drives of comparable quality made of stainless steel. Thanks to the use of mass-produced parts from the NORD modular system and intelligent warehousing, delivery times are remarkably short.

Proven technology – now even better!

A market leader for over a decade – now with improved top performance

Our surface finishing for the food sector has established itself as a leading solution for demanding applications since 2012. It is valued by customers worldwide for its reliability, durability and efficiency. Now we have taken it to the next level - with a new sealer that improves the proven technology and sets new standards - and we call it NXD tupH.

Why develop something new when you can perfect what already exists?

The core structure of our surface conversion system remains unchanged – and with it the outstanding properties that our customers have relied on for years:

- ▶ Long-term durability and reliability in demanding environments
- ▶ Proven chemical resistance and corrosion resistance
- ▶ Proven performance in the food industry
- ▶ Added to improvements in performance and environmental friendliness

What does the new sealer do?

The new top layer combines the strength of the proven base with a number of additional advantages:

- ▶ Fulfilment of additional food compliances: Highest standards – worldwide
- ▶ Even higher adhesion values: Improved stability and resilience even under extreme conditions
- ▶ Smooth and easy-to-clean surface: Even smoother, for easy cleaning and maximum hygiene
- ▶ Optimized chemical resistance: Now even better protection against aggressive chemicals
- ▶ PFAS-free housing surfaces: A future-proof step towards sustainability

Proven trust – with even more potential

With our optimized surface finishing, you can be sure that the technological fundamentals have been tried and tested, while the improvements offer you new advantages. Benefit from proven long-term quality and innovation – combined in one product.

Surface conformity

USA: Code of Federal Regulations, Food and Drugs (FDA), 21 CFR § 175.300

EU: Regulation (EC) No 1935/2004

In compliance with applicable limit values of the Commission Regulation (EU) No 10/2011

Switzerland: Regulation 817.023.21 of the EDI on Foodstuffs

MERCOSUR: Mercosur/GMC/Res. n°. 56/92 - General Provisions for Food Contact Plastics

With their coated surfaces, these with the exception of pure ethyl alcohol may stand in direct contact with all types of food at temperatures of up to 120°C for up to 30 minutes as far as the coating system mentioned above is concerned. The compliance has been determined for a ration of the food contact surface to the food mass of up to 6 dm² per 1kg food.



Salt spray tests acc. to DIN EN ISO 9227:2023-03

Duration 720 hours

Delamination around a scribe acc. to 4628-8:2013-03

Degree of blistering acc. to 4628-2:2016-07

Degree of rusting acc. to DIN EN ISO 4628-3:2016-07

Pull-off test for adhesion acc. to DIN EN ISO 4624:2023-09

Cross-cut test acc. to DIN EN ISO 2409:2020-12



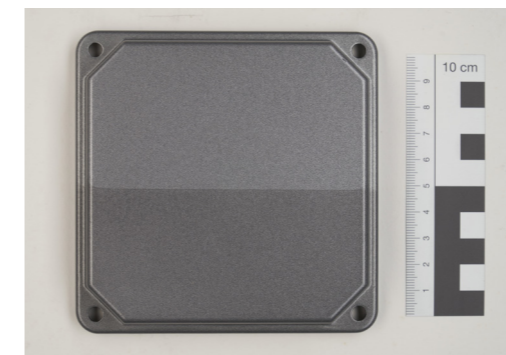
Picture after Salt spray test of 720 h, scribe made before beginning, pull-of test performed after test completion

Chemical Resistance acc. to DIN EN ISO 2812-1:2018-03

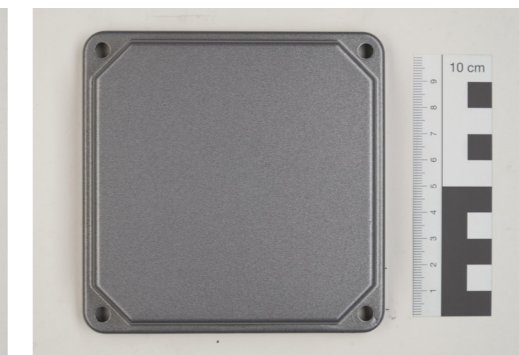
Method A – Single-phase liquid

Duration: 7 days, Immersion depth: Half the sample height, Temperature: 23°C, dilution 5%

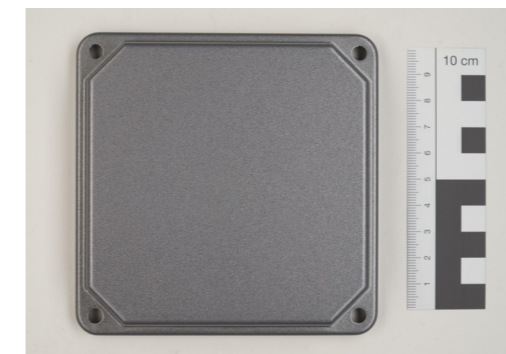
Designation	Type	Main Components
Ecolab Topactive 200	alkaline	Ethanol; Sodium Hydroxide; Potassium Hydroxide
Ecolab Topactive 500	acidic	Phosphoric acid; 2-(2-butoxyethoxy)ethanol; Amines
Ecolab P3-topax 990	neutral	N-(3-aminopropyl)-ndodecylpropane-1,3-Diamine; Amines; Acetic acid; Alcohols
Ecolab P3-topax 66	alkaline	Sodium Hypochlorite; Sodium Hydroxide; Amines
Ecolab Topactive OKTO	acidic	Acetic Acid; Hydrogen Peroxide; Linear(C12-14)alkanol, ethoxylated, sulfated, Sodium Salt



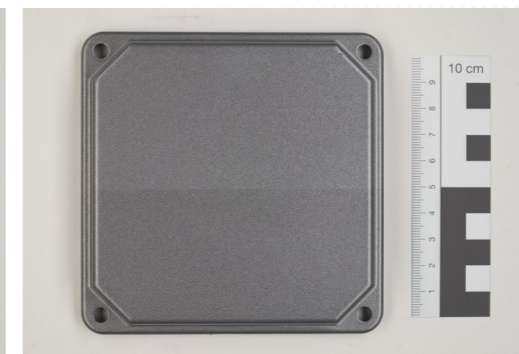
Ecolab Topactive 200



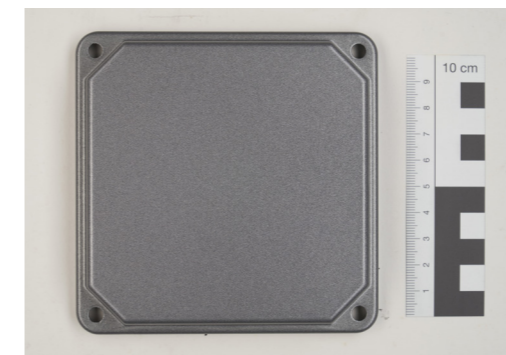
Ecolab Topactive 500



Ecolab P3-topax 990



Ecolab P3-topax 66



Ecolab Topactive OKTO

EN

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