

PLUS[®] VLh



The evolution of PLUS[®] VL with improved performance



PLUS[®] VLh is a clear water-based topcoat. It can be applied to GEOMET[®] 321 coating and has similar parameters to PLUS[®] VL. It has been developed to radically improve the friction performance for cases of difficult tightening (i.e. with aluminium or cataphoretic paint) and complies with new automotive industry expectations (i.e. VW 01131-1/2).



Characteristics and performance*

- Friction coefficient on GEOMET[®] 321 base-coat grade A (>24g/m²)
PLUS[®] VLh : $\mu_{\text{tot}} = 0,09 - 0,14$
- Salt Spray Test according to ISO 9227 / ASTM B117
GEOMET[®] 321 + PLUS[®] VLh > 720 hours without red rust
- Coating weight of PLUS VLh: 5 g/m² minimum
- Same IMDS as for PLUS[®] VL
- No induced hydrogen embrittlement
- Improvement of friction performance on and in aluminium (double tightening within elastic limit on aluminium according to VW 01131-1)
- Improvement of friction performance regarding multitightening (5x) onto cataphoretic paint while avoiding stick-slip problems for cases of difficult tightening
- Excellent behaviour in tests of loosening at high temperatures (VDA 235/203 ; VW 01131-2)
- Excellent resistance to solvents, fuels and brake fluids (VDA 621-412)

* Results may vary depending on substrate, geometry of parts and type of application processes
The tribological properties (COF, stick-slip...) are validated on a reference hex-headed M10x55 screw according to ISO 16047



**NOF METAL COATINGS
GROUP**



PLUS® VLh

Application process

These water-based inorganic products can be applied in one single thin coat by Dip-Spin or spray, using bulk or rack coating process.

Health and safety

- Aqueous dispersion
- Complies with REACH
- Complies with the 2011/65/EU and (EU) 2015/863 directives

Main worldwide specifications

- VW TL245 – OfI t647
- DAIMLER DBL 9440.40
- BMW (GS 90010)

International standards

ISO 10683 - Fasteners: non-electrolytic zinc flake coatings

EN 13858 - Non-electrolytic zinc flake coatings on iron and steel parts



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