# REPORT

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2024-09-12

Reference
0100785-1272740-01



Beslagsgrossisten i Linköping AB
Låsbomsgatan 25
589 41 LINKÖPING

# Determination of Nickel release

## Product type

Twentyone  samples (triplicates), delivered by the customer.

Sample identification:

| | | |
|---|---|---|
| 1. | 10137113501 | Cylinderring 370  rundcylinder 13mm  krom |
| 2. | 1013718501 | Cylinderring 370 rundcylinder 8mm  krom |
| 3. | 10137118501 | Cylinderring 371 u/gängor rundcylinder 18mm zn.krom |
| 4. | 101568R501 | Distansring, endast lös ring, 568R- 6,6mm krom |
| 5. | 101568MS501 | Cylinderring  flexiring 567mm  zn.fkr |
| 6. | 12136696M5501 | Trycke 36696 returfjäder M5 skruv dt. 36-85mm zn.krom |
| 7. | 1012068U101 | Cylinderhus 2068U m/hylsa, krom |
| 8. | 1012068I101 | Cylinderhus 2068I utan ring m/täcklock krom |
| 9. | 1012068I116 | Cylinderhus 2068I utan ring m/täcklock |
| 10. | 1012068U116 | Cylinderhus 2068U m/hylsa mässing |
| 11. | 857270121101 | 2701 Dörrspärr  utåtgående |
| 12. | 10137118524 | Cylinderring 371 u/gängor rundcylinder 18mm |
| 13. | 1013718524 | Cylinderring 371 u/gängor rundcylinder 8mm |
| 14. | 10137113524 | Cylinderring 371 u/gängor rundcylinder 13mm zn. |
| 15. | 100519U36206 | Trycke 519U 19mm utan skylt dt. 36-70mm rostfri matt |
| 16. | 1015566101 | Blindskylt 5566-6mm m/m5x90 mm kappskruv |
| 17. | 10156913208 | Cylinderskylt 569-13mm rokoko rostfri polerad |
| 18. | 1015698208 | Cylinderskylt 569-8mm rokoko rostfri polerad |
| 19. | 100566U308 | Täckskylt 566U utsida 6mm rostfritt.högblank |
| 20. | 10156716208 | Cylinder skylt 567-13 mm innv. Pvd ms matt |
| 21. | 10156716208 | Cylinder skylt 567-16 mm utv rst. Pol. |

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Date of arrival: 2024-06-20, 2024-07-15
Date of testing: Week 25-27, week 29-30 2024
Place of testing: Chemistry and Applied Mechanics, Brinellgatan 4, Borås

## Assignment

Determination of Nickel release according to SS-EN 1811:2023.

## Method

Samples with a coating layer: number: 1-16 and 22, according to the standard a pre-screening shall be performed.
The pre-screening is performed by a survey of the elemental composition using X-Ray Fluorescence (XRF) analysis using *Thermo Niton XL3t Gold*.
The method is a semiquantitative analysis of the surface layer.
Nickel was found in all samples. According to Annex B, SS-EN1811:2023, articles with nickel containing surface coatings shall be tested directly with this standard without any simulation of wear.

The samples were tested according to SS-EN 1811:2023 (Reference test method for release of nickel from all post assemblies which are inserted into pierced parts of the human body and articles intended to come into direct and prolonged contact with the skin).

## Results

Articles intended to come into direct and prolonged contact with the skin have a migration limit of 0.5 $\mu g \cdot cm^{-2} \cdot week^{-1}$.
The demands for compliance are shown in Table 1. The results from the determination of nickel release are shown in Table 2 and the Expanded measurement uncertainty in Table 3.

**Table 1: Compliance demands according to SS-EN 1811:2023**

| | **Results,** $\mu g \cdot cm^{-2} \cdot week^{-1}$ | **Compliance** |
|---|---|---|
| Compliance demands | ≥ 0.88 | No |
| | < 0.88 | Yes |

**Table 2: Nickel release**

| Sample identification | | Measured value, $\mu g \cdot cm^{-2} \cdot week^{-1}$ | | | Compliance |
|---|---|---|---|---|---|
| | | **A** | **B** | **C** | |
| 1 | 10137113501 | <0.01 | <0.01 | <0.01 | Yes |
| 2 | 1013718501 | <0.01 | <0.01 | <0.01 | Yes |
| 3 | 10137118501 | <0.01 | <0.01 | <0.01 | Yes |
| 4 | 101568R501 | <0.01 | <0.01 | <0.01 | Yes |
| 5 | 101568MS501 | <0.01 | <0.01 | <0.01 | Yes |
| 6 | 12136696M5501 | 0.06 | 0.02 | 0.01 | Yes |
| 7 | 1012068U101 | 0.02 | 0.01 | 0.02 | Yes |
| 8 | 1012068I101 | 0.04 | 0.05 | 0.05 | Yes |
| 9 | 1012068I116 | 0.03 | 0.03 | 0.03 | Yes |
| 10 | 1012068U116 | 0.01 | <0.01 | <0.01 | Yes |
| 11 | 857270121101 | <0.01 | <0.01 | <0.01 | Yes |
| 12 | 10137118524 | <0.01 | <0.01 | <0.01 | Yes |
| 13 | 1013718524 | <0.01 | <0.01 | <0.01 | Yes |
| 14 | 10137113524 | <0.01 | <0.01 | <0.01 | Yes |
| 15 | 100519U36206 | 0.01 | 0.07 | <0.01 | Yes |
| 16 | 1015566101 | <0.01 | <0.01 | <0.01 | Yes |
| 17 | 10156913208 | <0.01 | <0.01 | 0.01 | Yes |
| 18 | 1015698208 | <0.01 | <0.01 | <0.01 | Yes |
| 19 | 100566U308 | <0.01 | <0.01 | <0.01 | Yes |
| 20 | 10156713507 | 0.02 | 0.04 | 0.03 | Yes |
| 21 | 10156716208 | 0.01 | 0.05 | <0.01 | Yes |

**Table 3: Measurement uncertainty for Determination of nickel release according to SS-EN 1811**

| Source | Relative Expanded Uncertainty ($k=2$, 95 %) |
|---|---|
| Annex A SS-EN 1811:2023 | 90 % (rel) |

The results relate only to the items tested.

**RISE Research Institutes of Sweden AB**
**Chemistry and Applied Mechanics - Chemical Product Control**

| Performed by | Examined by |
|---|---|
| Sezen Yildirim | Eskil Sahlin |

# Verification

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## Document

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## Signatories

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