

## 19. ES 19: Use at industrial sites; Use of nickel metal in sputter deposition techniques

### 19.1. Title section

Product category: Metal surface treatment products (PC 14)

Sector of use: Manufacture of computer, electronic and optical products, electrical equipment (SU 16)

| Environment  |         |
|--|---------|
| 1: Use of nickel metal in sputter deposition techniques - only air | ERC 7   |
| Worker   |         |
| 2: Sputter deposition  | PROC 1  |
| 3: Cleaning/removal of dust  | PROC 28 |

### 19.2. Conditions of use affecting exposure

#### 19.2.1. Control of environmental exposure: Use of nickel metal in sputter deposition techniques - only air (ERC 7)

| Amount used, frequency and duration of use (or from service life)  |
|--|
| Daily amount per site $\leq 5E-4$ tonnes/day (All the amounts and concentrations are expressed as Ni as this is the driver for the environmental risk assessment.) |
| Annual amount per site $\leq 5E-4$ tonnes/year   |
| Emission days $\geq 1$ days/year   |
| Technical and organisational conditions and measures   |
| Electrostatic precipitator or wet electrostatic precipitator or cyclones or fabric/bag filter or ceramic/metal mesh filter or wet scrubber                         |
| The substance should not be released to water  |
| Conditions and measures related to external treatment of waste (including article waste)   |
| Dispose of waste product or used containers according to local regulations.  |

#### 19.2.2. Control of worker exposure: Sputter deposition (PROC 1)

| Amount used (or contained in articles), frequency and duration of use/exposure |
|--|
| Covering handling of very small quantities.                                    |
| Technical and organisational conditions and measures                           |
| Use in closed process  |

#### 19.2.3. Control of worker exposure: Cleaning/removal of dust (PROC 28)

| Product (article) characteristics  |
|--|
| Physical form of product: Residual dust.   |
| Amount used (or contained in articles), frequency and duration of use/exposure   |
| Covers daily exposures up to 8 hours   |
| Technical and organisational conditions and measures   |
| Cleaning is conducted using cleaning machines, in particular hovering is applied and the use of compressed air is omitted. |

**Conditions and measures related to personal protection, hygiene and health evaluation**

APF of RPE = 20 (95% respiratory protection). For further specification, refer to section 8 of the SDS.

**19.3. Exposure estimation and reference to its source****19.3.1. Environmental release and exposure: Use of nickel metal in sputter deposition techniques - only air (ERC 7)**

| Release route | Release rate  | Release estimation method |
|---------------|---------------|---------------------------|
| Water         | 0 kg/day      | Estimated release factor  |
| Air           | 1.5E-5 kg/day | Estimated release factor  |
| Soil          | 0 kg/day      | Estimated release factor  |

| Protection target | Exposure estimate           | RCR   |
|-------------------|-----------------------------|-------|
| Agricultural soil | 16.2 mg/kg dw (EUSES 2.1.2) | 0.542 |

**19.3.2. Worker exposure: Sputter deposition (PROC 1)**

| Route of exposure and type of effects | Exposure estimate                        | RCR    |
|---------------------------------------|--|--------|
| Inhalation, systemic, long term       | 6E-3 mg/m <sup>3</sup> (Measured data)   | 0.12   |
| Inhalation, local, long term          | 6E-3 mg/m <sup>3</sup> (Measured data)   | 0.12   |
| Inhalation, local, acute              | 0.017 mg/m <sup>3</sup> (Measured data)  | < 0.01 |
| Dermal, local, long term              | 0.076 µg/cm <sup>2</sup> (Measured data) | < 0.01 |
| Combined, systemic, long term         |  | 0.12   |

**19.3.3. Worker exposure: Cleaning/removal of dust (PROC 28)**

| Route of exposure and type of effects | Exposure estimate                       | RCR   |
|---------------------------------------|---|-------|
| Inhalation, systemic, long term       | 0.032 mg/m <sup>3</sup> (Measured data) | 0.64  |
| Inhalation, local, long term          | 0.032 mg/m <sup>3</sup> (Measured data) | 0.64  |
| Inhalation, local, acute              | 0.189 mg/m <sup>3</sup> (Measured data) | 0.016 |
| Dermal, local, long term              | 0.76 µg/cm <sup>2</sup> (Measured data) | 0.022 |
| Combined, systemic, long term         |   | 0.64  |

**19.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES**

Guidance: Please refer to Section 0.3 of this "ES for Communication".