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|--------------------------------|---|
| <b>Grade name:</b>             | Slags, lead reverbratory smelting   |
| <b>Substance:</b>              | Slags, lead reverbratory smelting   |
| <b>EC Number:</b>              | 273-800-2   |
| <b>CAS Number:</b>             | 69029-58-9  |
| <b>Substance Type:</b>         | UVCB  |
| <b>Degree of purity:</b>       | 100 % (w/w)   |
| <b>Description of Product:</b> | Slags, lead reverbratory smelting are slags formed during primary or secondary lead smelting. The slags contain relatively high concentrations of lead, as well as impurity base metals, all of which are mainly present as oxides, silicates or sulphates. |

**Composition:**

| Constituents                 | Typical concentration | Concentration range   | Remarks  |
|------------------------------|-----------------------|-----------------------|--|
| Lead<br>EC no.: 231-100-4    | <= 63.7 % (w/w)       | >= 4 — <= 75 % (w/w)  | Refers to % element. Pb is generally present in the compound form such as sulphates (e.g. $K_2Pb(SO_4)_2$ , $PbFe_6(SO_4)_4(OH)_{12}$ ), silicates (e.g. $Pb_2SiO_4$ ), sulphides (e.g. $(Sn,Pb)_S$ ) and oxides (e.g. $PbO$ ).          |
| Copper<br>EC no.: 231-159-6  | <= 5.5 % (w/w)        | >= 0 — <= 14 % (w/w)  | Refers to % element. In general Cu is mainly present in the sulphide form (e.g. $CuS$ , $CuFeS_2$ , $Cu_5FeS_4$ ) and may also be present in the metallic form.  |
| Zinc<br>EC no.: 231-175-3    | <= 8.94 % (w/w)       | >= 0 — <= 14 % (w/w)  | Refers to % element. Zn is generally present in the form of compounds such as oxides (e.g. $FeZnNiO$ , $FeCrZnO$ ) or sulphates (e.g. $ZnSO_4 \cdot H_2O$ ).   |
| Cadmium<br>EC no.: 231-152-8 | <= 0.2 % (w/w)        | >= 0 — <= 0.3 % (w/w) | Refers to % element. Cd is assumed to be present in the sulphate form.   |
| Iron<br>EC no.: 231-096-4    | <= 21.1 % (w/w)       | >= 0 — <= 25 % (w/w)  | Refers to % element. Fe is generally present in the form of compounds such as oxides (e.g. $Fe_3O_4$ , $FeZnNiO$ , $FeCrZnO$ ) and/or sulphates (e.g. $PbFe_6(SO_4)_4(OH)_{12}$ ) and sulphides (e.g. $FeS$ , $CuFeS_2$ , $Cu_5FeS_4$ ). |
| Cobalt<br>EC no.: 231-158-0  | <= 0.4 % (w/w)        | >= 0 — <= 1 % (w/w)   | Refers to % element. Co is assumed to be present in the sulphate form.   |
| Nickel                       | <= 1.37 % (w/w)       | >= 0 — <= 10 % (w/w)  | Refers to % element. Ni is   |

| Constituents                    | Typical concentration | Concentration range   | Remarks  |
|---------------------------------|-----------------------|-----------------------|--|
| EC no.: 231-111-4               |                       |                       | generally present in the oxide form (e.g. FeZnNiO).  |
| Silver<br>EC no.: 231-131-3     | <= 0.4 % (w/w)        | >= 0 — <= 1 % (w/w)   | Refers to % element. Ag is assumed to be present in the sulphate form.   |
| Gold<br>EC no.: 231-165-9       | <= 0.5 % (w/w)        | >= 0 — <= 1 % (w/w)   | Refers to % element. Au is assumed to be present in the sulphate form.   |
| Antimony<br>EC no.: 231-146-5   | <= 2.1 % (w/w)        | >= 0 — <= 30 % (w/w)  | Refers to % element. Sb is assumed to be present in the sulphate form.   |
| Arsenic<br>EC no.: 231-148-6    | <= 1.7 % (w/w)        | >= 0 — <= 10 % (w/w)  | Refers to % element. As is assumed to be present in the sulphide form.   |
| Bismuth<br>EC no.: 231-177-4    | <= 0.09 % (w/w)       | >= 0 — <= 10 % (w/w)  | Refers to % element. Bi is assumed to be present in the sulphate form.   |
| Tin<br>EC no.: 231-141-8        | <= 0.22 % (w/w)       | >= 0 — <= 10 % (w/w)  | Refers to % element. Sn is generally present in the sulphide form (e.g. (Sn,Pb)S).   |
| Selenium<br>EC no.: 231-957-4   | <= 0.12 % (w/w)       | >= 0 — <= 0.2 % (w/w) | Refers to % element. Se is assumed to be present in the sulphate form.   |
| Tellurium<br>EC no.: 236-813-4  | <= 0.04 % (w/w)       | >= 0 — <= 0.2 % (w/w) | Refers to % element. Te is assumed to be present in the sulphate form.   |
| Aluminium<br>EC no.: 231-072-3  | <= 4.2 % (w/w)        | >= 0 — <= 8 % (w/w)   | Refers to % element. Al is generally present in the silicate form (e.g. KAlSiO <sub>4</sub> *H <sub>2</sub> O).  |
| Chromium<br>EC no.: 231-157-5   | <= 0.4 % (w/w)        | >= 0 — <= 1 % (w/w)   | Refers to % element. Cr is assumed to be present in the oxide form.  |
| Molybdenum<br>EC no.: 231-107-2 | <= 0.2 % (w/w)        | >= 0 — <= 1 % (w/w)   | Refers to % element. Mo is assumed to be present in the sulphate form.   |
| Manganese<br>EC no.: 231-105-1  | <= 1.03 % (w/w)       | >= 0 — <= 2 % (w/w)   | Refers to % element. Mn is assumed to be present in the sulphate form.   |
| Sodium<br>EC no.: 231-132-9     | <= 0.95 % (w/w)       | >= 0 — <= 11 % (w/w)  | Refers to % element. Na is assumed to be present in the sulphate form.   |
| Potassium<br>EC no.: 231-119-8  | <= 4.8 % (w/w)        | >= 0 — <= 18 % (w/w)  | Refers to % element. K is generally present in the sulphate form (e.g. K <sub>2</sub> Pb(SO <sub>4</sub> ) <sub>2</sub> ).   |
| Magnesium<br>EC no.: 231-104-6  | <= 1.1 % (w/w)        | >= 0 — <= 10 % (w/w)  | Refers to % element. Mg is generally present in the oxide form (e.g. MgO).   |
| Calcium<br>EC no.: 231-179-5    | <= 6.72 % (w/w)       | >= 0 — <= 12 % (w/w)  | Refers to % element. Ca is generally present in the form of compounds such as sulphates (e.g. CaSO <sub>4</sub> *H <sub>2</sub> O), carbonates (e.g. CaCO <sub>3</sub> ) and silicates (e.g. CaSiO). |
| Silicon                         | <= 18.4 % (w/w)       | >= 0 — <= 26 % (w/w)  | Refers to % element. Si is   |

| Constituents                 | Typical concentration | Concentration range          | Remarks   |
|------------------------------|-----------------------|------------------------------|---|
| EC no.: 231-130-8            |                       |                              | generally present in the silicate form (e.g. $KAlSiO_4 \cdot H_2O$ , $Pb_2SiO_4$ , $CaSiO$ ).   |
| Sulphur<br>EC no.: 231-722-6 | $\leq 13.1\%$ (w/w)   | $\geq 0$ — $\leq 14\%$ (w/w) | Refers to % element. S is generally present in the form of sulphides (e.g. $CuS$ , $(Sn,Pb)_2S$ , $FeS$ , $CuFeS_2$ ) and/or sulphates (e.g. $PbFe_6(SO_4)_4(OH)_{12}$ , $ZnSO_4 \cdot H_2O$ , $KAlSiO_4 \cdot H_2O$ , $K_2Pb(SO_4)_2$ , $CaSO_4 \cdot H_2O$ ). |

**Classification:**

**Dangerous Substances Directive 67/548/EEC** - Not classified as hazardous.

**Classification Labelling and Packaging Regulation EC 1272/2008** - Not classified as hazardous.

**Industry classification proposals** - Industry proposes to classify slags, lead reverbratory smelting to bring it into line with the latest scientific data and knowledge. The proposed classification will be:

**DSD**

Xn; R20/22 Harmful by inhalation and if swallowed.

Xn; R48/20/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.

Xi; R41: Irritant; Risk of serious damage to eyes.

R42/43: May cause sensitisation by inhalation and skin contact.

Muta. Cat. 2; R46: May cause heritable genetic damage.

Carc. Cat. 1; R45: May cause cancer.

Repr. Cat. 1; R60: May impair fertility.

Repr. Cat. 1; R61: May cause harm to the unborn child.

N; R50/53: Dangerous for the environment; Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**CLP**

Acute Tox. 4; H302: Harmful if swallowed.

Acute Tox. 4; H332: Harmful if inhaled.

Eye Damage 1; H318: Causes serious eye damage.

Resp. Sens. 1; H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Skin Sens. 1; H317: May cause an allergic skin reaction.

Repr. 1A; H360FD: May damage fertility. May damage the unborn child.

Carc. 1A; H350: May cause cancer.

Muta. 1B; H340: May cause genetic defects.

STOT Rep. Exp. 1; H372: Causes damage to organs through prolonged or repeated exposure

Aquatic Chronic 1; H410: Very toxic to aquatic life with long lasting effects.

Aquatic Acute 1; H400: Very toxic to aquatic life.

**Labelling:**

Signal word: Danger

Hazard pictograms:

GHS05: Corrosion



GHS07: exclamation mark



GHS08: health hazard



GHS09: environment



Hazard statements:

|        |   |
|--------|---|
| H302   | Harmful if swallowed.   |
| H332   | Harmful if inhaled.   |
| H318   | Causes serious eye damage.  |
| H334   | May cause allergy or asthma symptoms or breathing difficulties if inhaled.  |
| H317   | May cause an allergic skin reaction.  |
| H360FD | May damage fertility. May damage the unborn child.  |
| H340   | May cause genetic defects.  |
| H350   | May cause cancer.   |
| H372   | Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure by inhalation or ingestion. |
| H410   | Very toxic to aquatic life with long lasting effects.   |

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