DELA stabilisation technology for metallic mercury

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\text{Hg}^{2+} + \text{S}^{2-} \rightarrow \text{HgS (red)}
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- Mercury and sulphur reacts to mercury sulphide
- Very toxic Hg is transformed into non toxic HgS

Properties of generated mercury sulphide, HgS

- The most stable mercury compound
- The natural mineral form known as cinnabar
- Crystalline structure – 100% red HgS (the most stable form of HgS)
- Good values for leaching behaviour < 0.002 mg Hg/kg (EC limit for inert landfill < 0.01 mg Hg/kg)
- Final product free of Hg emissions and no remaining sulphur – total conversion to HgS
Stabilisation plant

• Technology used for stabilisation of metallic mercury is a vacuum mixer, adapted for the stabilisation – a well proven technology for treatment of mercury containing waste

• 800 kg/batch - total capacity for stabilisation 1,000 t/a

• Additional capacity for 3,000 t/a if necessary

• Appr. 220 tons stabilised up to now - from battery recycling, chlorine alkali industry and non ferrous mining

• Patent registered by DELA GmbH

• Plant approved by the competent authority

• Up-scaling of the technology was supported by the German Ministry of Economics and Technology

DELA is the only company world wide offering a large scale solution for stabilisation of metallic mercury
From mercury holder to final retirement
Handling chain - metallic mercury for stabilisation

1. Mercury cells
   - Hg purity 99.9%
   - Distillation of Hg
   - Hg purity < 99.9%

2. Packaging metallic Hg
   - UN approved & certified flasks/containers

3. TFS Notification
   - EWC 060404*

4. Transport metallic Hg
   - According to IMDG/ADR
   - Photo: DELA GmbH

5. Reception DELA
   - Risk and title to material transferred to DELA
   - UN 2809
   - Photo: DELA GmbH

6. Hg stabilisation
   - Photo: DELA GmbH

7. Packaging HgS
   - Steel drums, Big-bags
   - Photo: DELA GmbH

8. Transport HgS
   - EWC 190305
   - No Dangerous Goods
   - Photo: DELA GmbH

9. Final retirement
   - (Stowing mine)
   - Risk and title to material transferred to salt mine
   - Photo: NDH-E, Beleicherode

GHS / (EC)1272/2008
67/584/EE
GHS06
GHS08
GHS09
T+N
UN 2809

Hg + S → HgS

Photo: DELA GmbH

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