

## Lead, antimonial, dross - Grade 2

<b>Substance Name:</b> <b>Lead antimonial dross</b>	<b>Substance Information Page:</b> <a href="https://echa.europa.eu/registration-dossier/-/registered-dossier/14979">https://echa.europa.eu/registration-dossier/-/registered-dossier/14979</a>	<b>Legend</b> Decisive substance sameness criterion Indicative substance sameness criterion No substance sameness criterion
<b>Substance description:</b>	A scum formed on the surface of antimonial lead. Consists primarily of sodium arsenate and sodium antimonate with some lead oxide and free caustic soda.	
<b>SIEF description:</b>	Lead, antimonial, dross is formed when sodium hydroxide (caustic soda) is added to molten lead bullion to remove antimony, tin or arsenic. Lead, antimonial, dross refining consists of variable amounts of lead, antimony and other metals in either alloy form or as compounds such as oxides, sulphides and sulphates.	

<b>Substance Identity</b>	EC/list name:	Lead, antimonial, dross	- Grade 2	SMILES:	not applicable
	IUPAC name:			InChI:	not applicable
	Other names:			Type of substance:	UVCB
	EC/List no.:	273-795-7		origin:	Inorganic
	CAS no.:	69029-51-2		Substance listed	
	Molecular formula:	not applicable			

SID parameters	Sameness criteria	Indication of variability (fixed, low or high variation)
<b>Sources (input materials)</b>	Lead bullion, Sodium nitrate, Sodium hydroxide.	Low
<b>Process</b>	Production: molten feed is agitated (stirred) in kettles and cooled between 400°C to 600°C under oxidising conditions for a long residence time. A molten mixture of sodium nitrate and sodium hydroxide (caustic soda) is added to molten lead bullion to preferentially oxidise and precipitate sodium arsenite and/or sodium antimonite and/or sodium stannate in excess sodium hydroxide. This is known as the Harris Process and is often referred to as 'lead softening'. The process is detailed in Chapter 5 of the NFM BREF.  The Harris Process can in either one or two stages; if in two stages, arsenic and tin are separated from the lead bullion in the first stage, and the antimony in the second stage with excess reagent.	Low
	Separation: Skimming	Fixed

Elemental composition	Core	min (% w/w)	max (% w/w)	Typical (%w/w)	
	Lead	Minimum 1 %		50	Medium
	Sodium	Minimum 0.5%		15.28	low
	Antimony	Minimum 0.1%		25	low
	Tin	0	28	27.48	Medium
	Selenium	0	10	5	low
	Tellurium	0	10	0.01	low
	Arsenic	0	<3.79	2.25	low
	Potassium	0	25	10	low
	Zinc	0	10	5	low
	Copper	0	10	6.86	low
	Cadmium	0	10	0.25	low
	Silver	0	10	5	low
	Chlorine	0	10	5	low
	Silicon	0	5	4.23	low
	Bismuth	0	4	0.03	low
	Carbon	0	3	3	low
	Iron	0	1.5	1.34	low
	Indium	0	0.5	0.5	low
	Nickel	0	0.5	0.32	low
	Aluminium	0	0.2	0.05	low
	Sulphur	0	0.05	0.05	low
	Other constituents	0	0.1	<0.1	
	<b>Sum=</b>			<b>0</b>	

Mineralogical composition	Oxides of Sb and oxidic compounds of sodium.	Metallic / intermetallic lead		
	<b>Sum=</b>			<b>0</b>

<b>Physical characteristics</b>	<b>physical state (at 20°C, 1013 hPa)</b> Solid: Coarse grains.  <b>colour</b> Ochre/orange/brown
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<b>Conclusion</b>	Lead Antimonial dross is a <b>solid with coarse grains</b> at 20°C, 1013 hPa. It is produced via the Harris process, i.e. by chemical reactions during the <b>cooling</b> of molten lead bullion under oxidising conditions in kettles with a mixture of sodium nitrate and sodium hydroxide. The resultant precipitate is <b>skimmed</b> from the surface layer. 'Lead Antimonial dross' is composed generally of lead oxides, and oxidic compounds of sodium and antimony.
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