

Substance Name: <b>Lead antimonial dross</b>	Substance Information Page: <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
Substance description:	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.		Indicative substance sameness criterion
SIEF description:	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.		No substance sameness criterion

Substance Identity	EC/list name: IUPAC name: Other names EC/List no.: CAS no.: Molecular formula:	<b>Lead, antimonial, dross</b>   273-795-7 69029-51-2 not applicable	SMILES: InChI: Type of substance: origin:  Substance listed	   not applicable not applicable UVCB Inorganic
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SID parameters	Sameness criteria	Indication of variability (fixed, low or high variation)
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Sources (input materials)	Lead bullion, Sodium nitrate, Sodium hydroxide.	Low
Process	<p>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.</p> <p>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.</p> <p>Separation: Skimming</p>	Low     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	5	3.79	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	
	Sum=			0	
Mineralogical composition	Oxides of Sb and oxidic compounds of sodium.				
	Metallic / intermetallic lead				
	Sum=			0	
Physical characteristics	physical state (at 20°C, 1013 hPa)	Solid: Coarse grains.			
	colour	Ochre/orange/brown			

Conclusion	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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