Lead Dross, Bismuth Rich

Substance Name:	Substance Information Page:	tration-dossier/-/registered-dossie	r/14687	Logor d	Decisive substance	
ead, dross bismuth rich	nttps://ecna.europa.eu/regist	tration-dossier/-/registered-dossie	r/14687	Legend	Decisive substance sameness criterion	
					Indicative substance	
					sameness criterion	
Substance description:	EC description: A scum forme	d on the surface of molten lead du	iring the process	of removing	No substance samenes	
	bismuth by the addition of calcium and magnesium. It consists of lead containing calcium and				criterion	
	magnesium bismuthides.					
Original / SIEF description:		med when calcium and/or magne				
	Lead dross, bismuth rich consists of variable amounts of lead, zinc, silver, bismuth and other metals in either alloy form o					
	as compounds such as oxides.					
ubstance Identity	EC/list name:	Lead, dross, bismuth	SMIL	FS	not applicat	
substance welling	Ecylist hume.	rich	514112	.25.	not applicat	
	IUPAC name:		InCh	l:	not applicat	
	Other names		Туре	of substance:	UV	
	EC/List no.:	273-792-0	origi	n:	Inorgar	
	CAS no.:	69029-46-5				
	Molecular formula:	not applicable	Subs	tance listed		
ID parameters		Sameness criteria			Indication of variabilit	
ib parameters		Sameness citteria			(fixed, low or high	
					variation)	
ources (input materials)	The main starting material is I	ead, bullion (EC 308-011-5) typical	ly from the prima	ry sector but	Low	
· · ·	may include lead, bullion produced from non-battery scrap and other secondary sources. The					
		lead, bullion starting material has usually been desilverised via the Parkes Process and dezinced				
	by vacuum distillation, as required); calcium and/or magnesium are added to the molten lead					
	bullion bath.					
Process	The manfacture of 'lead, dros	s, bismuth rich' relies on the forma	ation of high melt	ing point	Fixed	
	intermetallic compounds which have lower density than lead via the Kroll-Betterton process in a					
	refining kettle. Process tempe	erature ranges from 300 - 500°C. Th	ne process is deta	iled in Chapter 5		
	of the NFM BREF.					
	Separation: Calcium-magnesium-bismuth intermetallic compounds formed as dross on the					
	separation calcian magnesi	um-bismuth intermetanic compou	nus tornicu as un	surface of the lead are removed by skimming.		
			nus formed as un			
			nus tormeu as un			
	surface of the lead are remove Post-treatment: The skimmed	ed by skimming. d dross is then oxidised using lead	chloride, chlorine	gas, or a		
	surface of the lead are remov Post-treatment: The skimmed mixture of caustic soda and so	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and	chloride, chlorine I magnesium oxid	gas, or a e is removed by		
	surface of the lead are remov Post-treatment: The skimmed mixture of caustic soda and so	ed by skimming. d dross is then oxidised using lead	chloride, chlorine I magnesium oxid	gas, or a e is removed by		
	surface of the lead are remov Post-treatment: The skimmed mixture of caustic soda and so	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and	chloride, chlorine I magnesium oxid	gas, or a e is removed by		
	surface of the lead are remov Post-treatment: The skimmed mixture of caustic soda and so	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and	chloride, chlorine I magnesium oxid	gas, or a e is removed by		
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt	chloride, chlorine I magnesium oxid her refining to pr	gas, or a e is removed by oduce bismuth.		
lemental composition	surface of the lead are remov Post-treatment: The skimmed mixture of caustic soda and so	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and	chloride, chlorine I magnesium oxid her refining to pr	gas, or a e is removed by oduce bismuth. cal (%w/w)	High	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v	chloride, chlorine I magnesium oxid her refining to pr	gas, or a e is removed by oduce bismuth. cal (%w/w) 87	High Medium	
emental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22%	chloride, chlorine I magnesium oxid her refining to proving the term of	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15	-	
emental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0	chloride, chlorine I magnesium oxid her refining to proving v/w) Typin 41	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9	Medium	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0	chloride, chlorine I magnesium oxid her refining to provide v/w) Typio 41 25	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6	Medium Medium	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typio 41 25 14 14 14 5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6	Medium Medium Low Low	
emental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium Sodium Antimony Zinc	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typio 41 25 14 14 14 5 2	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79	Medium Medium Low Low Low Low	
emental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typio 41 25 41 41 25 5 2 2 1	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54	Medium Medium Low Low Low Low Low	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Care Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Sillicon	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 25 41 25 14 14 5 2 1 1 2 1 1 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 87 15 9 6 13.5 2.75 2.75 1.79 0.54 0.54	Medium Medium Low Low Low Low Low Low	
emental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typio 41 25 14 25 14 14 5 2 1 1 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.5 0.5	Medium Medium Low Low Low Low Low Low Low Low	
emental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Causer Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.2 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pri- v/w) Typio 41 25 14 25 14 14 5 2 1 1 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.54 0.5 0.38	Medium Medium Low Low Low Low Low Low Low Low	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Silicon Silicon Arsenic Copper	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typio 41 25 41 41 4 14 5 25 14 14 14 5 2 1 1 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 87 9 9 6 13.5 2.75 1.79 0.54 0.55 0.5 0.38 0.22	Medium Medium Low Low Low Low Low Low Low Low Low	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Sulphur Arsenic Copper Potassium	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typio 41 25 41 41 25 2 14 3 5 2 1 1 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.38 0.22 0.127	Medium Medium Low Low Low Low Low Low Low Low Low Low	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 41 25 2 14 3 5 2 1 1 3 5 5 2 1 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 2.75 2.75 1.79 0.54 0.54 0.5 0.58 0.58 0.22 0.127 0.127	Medium Medium Low Low Low Low Low Low Low Low Low Low	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 41 25 41 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 87 15 9 6 13.5 2.75 2.75 1.79 0.54 0.55 0.38 0.22 0.127 0.11 0.021	Medium Medium Low Low Low Low Low Low Low Low Low Low	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.58 0.22 0.127 0.11 0.021 0.011	Medium Medium Low Low Low Low Low Low Low Low Low Low	
lemental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Causer Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Siliver Tin	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 41 25 41 4 4 4 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.38 0.22 0.127 0.11 0.021 0.011	Medium Medium Low Low Low Low Low Low Low Low Low Low	
emental composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Sulphur Antimony Zinc Iron Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.38 0.22 0.127 0.11 0.021 0.011	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sum Lead-Calcium-magnesium-	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sum Lead-Calcium-magnesium- Bismuth-intermetallic	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Lead-Calcium-magnesium- Bismuth-intermetallic compounds	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sum Lead-Calcium-magnesium- Bismuth-intermetallic	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Lead-Calcium-magnesium- Bismuth-intermetallic compounds	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Lead-Calcium-magnesium- Bismuth-intermetallic compounds	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Lead-Calcium-magnesium- Bismuth-intermetallic compounds	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Compounds Metal oxides	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and opy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typi 41 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.54 0.54 0.55 0.38 0.22 0.127 0.11 0.021 0.011 0.008 <0.1% each 137.447	Medium Medium Low Low Low Low Low Low Low Low Low Low	
ineralogical composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Liron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Lead-Calcium-magnesium- Bismuth-intermetallic compounds Metal oxides	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oby is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.55 0.55 0.55 0.55 0.54 0.52 0.127 0.127 0.127 0.127 0.021 0.021 0.022 0.127 0.021 0.028	Medium Medium Low Low Low Low Low Low Low Low Low Low	
lemental composition Aineralogical composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Lead-Calcium-magnesium- Bismuth-intermetallic compounds Metal oxides Sur physical state (at 20°C, 1013	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and opy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.54 0.54 0.55 0.38 0.22 0.127 0.11 0.021 0.011 0.008 <0.1% each 137.447	Medium Medium Low Low Low Low Low Low Low Low Low Low	
fineralogical composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sum Lead-Calcium-magnesium- Bismuth-intermetallic compounds Metal oxides Sum physical state (at 20°C, 1013 hPa)	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oby is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.54 0.54 0.55 0.38 0.22 0.127 0.11 0.021 0.011 0.008 <0.1% each 137.447	Medium Medium Low Low Low Low Low Low Low Low Low Low	
ineralogical composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Lead-Calcium-magnesium- Bismuth-intermetallic compounds Metal oxides Sur physical state (at 20°C, 1013	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oby is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.54 0.54 0.55 0.38 0.22 0.127 0.11 0.021 0.011 0.008 <0.1% each 137.447	Medium Medium Low Low Low Low Low Low Low Low Low Low	
ineralogical composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sum Lead-Calcium-magnesium- Bismuth-intermetallic compounds Metal oxides Sum physical state (at 20°C, 1013 hPa)	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oby is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 25 14 14 5 2 1 1 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.54 0.54 0.55 0.38 0.22 0.127 0.11 0.021 0.011 0.008 <0.1% each 137.447	Medium Medium Low Low Low Low Low Low Low Low Low Low	
ineralogical composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo Core Lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sur Eead-Calcium-magnesium- Bismuth-intermetallic compounds Metal oxides Sur physical state (at 20°C, 1013 hPa) colour	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and opy is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	chloride, chlorine I magnesium oxid her refining to pro- v/w) Typia 41 25 41 4 14 3 5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 9 6 13.5 2.75 1.79 0.54 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.127 0.021 0.020	Medium Medium Low Low Low Low Low Low Low Low Low Low	
lineralogical composition	surface of the lead are remov Post-treatment: The skimmer mixture of caustic soda and so skimming. A bismuth-lead allo lead Bismuth Magnesium Calcium Sodium Antimony Zinc Iron Silicon Sulphur Antimony Zinc Iron Silicon Sulphur Arsenic Copper Potassium Aluminium Tellurium Silver Tin Other constituents Sum Lead-Calcium-magnesium- Bismuth-intermetallic compounds Metal oxides Sum physical state (at 20°C, 1013 hPa) colour	ed by skimming. d dross is then oxidised using lead odium nitrate, and the calcium and oby is recovered and undergoes furt min (% w/w) max (% v Minimum 22% 0.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	chloride, chlorine I magnesium oxid her refining to pro- 41 25 41 41 25 2 14 4 3 5 2 2 14 3 5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0	gas, or a e is removed by oduce bismuth. cal (%w/w) 87 15 9 6 13.5 2.75 1.79 0.54 0.54 0.58 0.22 0.127 0.11 0.021	Medium Medium Low Low Low Low Low Low Low Low Low Low	