

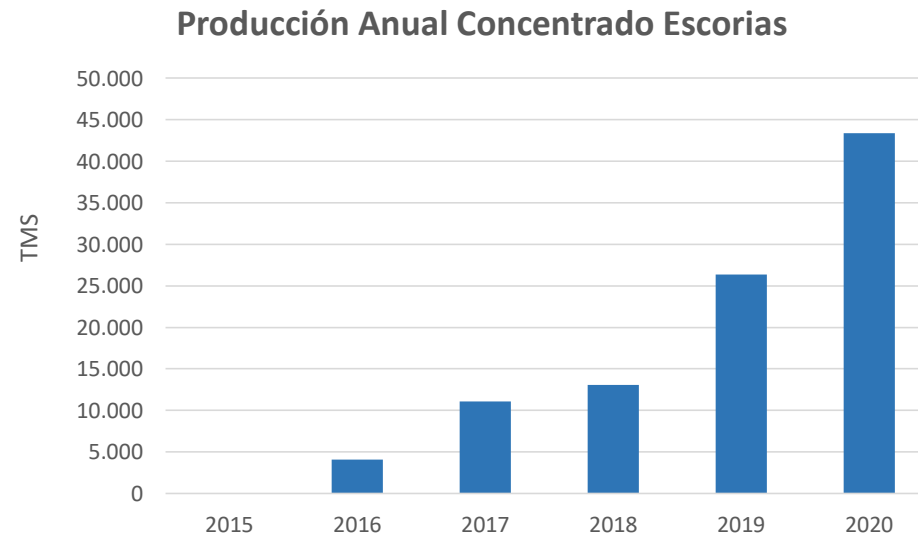
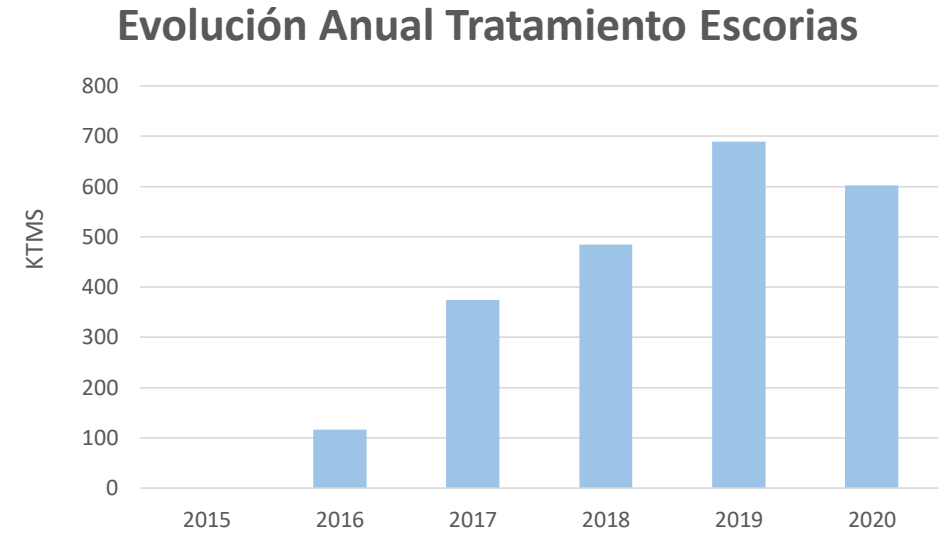
Recursos artificiales

Aplicación industrial y desarrollos en el Complejo Metalúrgico de Paipote

FHVL - PLANTA MATTA



Evolución tratamiento de escorias de botadero



Escorial FHVL



Escorial FHVL



Tranque Relave N°3 PMAM



Dimensionamiento Tranque Relave N°3

AÑO	RELAVE (TMS)		DISTRIB. ARENAS		DISTRIB. LAMAS	
	PARCIAL	ACUM.	PARCIAL	ACUM.	PARCIAL	ACUM.
1988	514.741	514.741	221.339	221.339	293.402	293.402
1989	688.781	1.203.522	282.400	503.739	406.381	699.783
1990	863.333	2.066.855	205.896	709.635	657.437	1.357.220
1991	874.400	2.941.255	332.272	1.041.907	542.128	1.899.348
1992	778.153	3.719.408	303.480	1.345.387	474.673	2.374.021
1993	747.451	4.466.859	276.557	1.621.944	470.894	2.844.915
1994	799.761	5.266.620	327.902	1.949.846	471.859	3.316.774
1995	681.297	5.947.917	272.519	2.222.365	408.778	3.725.552
1996	930.171	6.878.088	312.980	2.535.345	617.191	4.342.743
1997	1.200.897	8.078.985	360.001	2.895.346	840.896	5.183.639
1998	1.037.193	9.116.178	370.609	3.265.955	666.584	5.850.223
1999	704.706	9.820.884	214.089	3.480.044	490.617	6.340.840
2000	646.623	10.467.507	179.432	3.659.476	467.191	6.808.031
2001	850.168	11.317.675	319.570	3.979.046	530.598	7.338.629
2002	704.015	12.021.690	254.392	4.233.438	449.623	7.788.252
2003	813.642	12.835.332	293.262	4.526.700	520.380	8.308.632
2004	1.055.782	13.891.114	379.821	4.906.521	675.961	8.984.593
2005	974.651	14.865.765	420.356	5.326.877	554.295	9.538.888
2006	841.618	15.707.383	302.734	5.629.611	538.884	10.077.772
2007	938.271	16.645.654	337.188	5.966.799	601.083	10.678.855
2008	1.228.883	17.874.537	439.387	6.406.186	789.496	11.468.351
2009	914.795	18.789.332	326.402	6.732.588	588.393	12.056.744
2010	1.044.775	19.834.107	371.541	7.104.129	673.234	12.729.978
2011	1.119.813	20.953.920	400.575	7.504.704	719.238	13.449.216
2012	1.133.930	22.087.850	404.906	7.909.610	689.854	14.139.070
2013	1.128.782	23.216.632	403.349	8.312.959	725.433	14.864.503
2014	1.041.952	24.258.584	372.066	8.685.025	669.886	15.534.389
2015	854.453	25.113.037	304.544	8.989.569	548.909	16.083.298
2016	558.838	25.671.875	200.575	9.190.144	358.263	16.441.561
2017	601.825	26.273.700	213.964	9.404.108	387.861	16.829.422
2018	671.076	26.944.776	240.377	9.644.485	430.699	17.260.121
2019	877.085	27.821.861	310.220	9.954.705	566.865	17.826.986
2020	719.743	28.541.604	56.426	10.011.131	663.317	18.490.303
2021	168.864	28.710.468	49.876	10.061.007	118.988	18.609.291

AÑO	RELAVE (TMS)		DISTRIB. ARENAS		DISTRIB. LAMAS	
	PARCIAL	ACUM.	PARCIAL	ACUM.	PARCIAL	ACUM.
2016	558.838	25.671.875	200.575	9.190.144	358.263	16.441.561
2017	601.825	26.273.700	213.964	9.404.108	387.861	16.829.422
2018	671.076	26.944.776	240.377	9.644.485	430.699	17.260.121
2019	877.085	27.821.861	310.220	9.954.705	566.865	17.826.986
2020	719.743	28.541.604	56.426	10.011.131	663.317	18.490.303
2021	168.864	28.710.468	49.876	10.061.007	118.988	18.609.291

Resultados Ensayos de Tranques de relave PMAM

Tabla 5-1: Resultados de Distribución granulométrica muestras relaves ENAMI

ID	P80, [μm]	P50, [μm]
Relave Tranque N°1	273	170
Relave Tranque N°2	169	105
Relave Tranque N°3	148	98
Relave Escoria	84	42
Relave Mixto	93	57

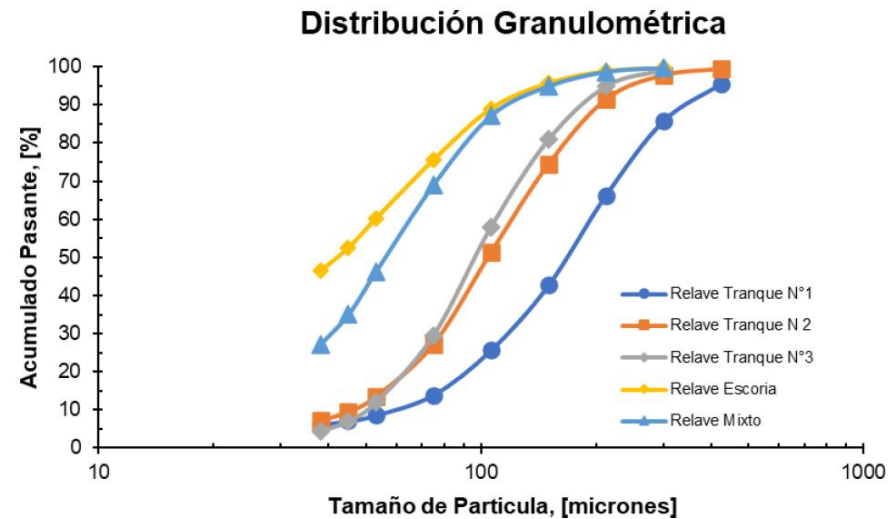


Figura 5-1: Distribución granulométrica muestras relaves ENAMI

Resultados Ensayos de Tranques de relave PMAM

Tabla 5-2: Resultados Picnometrías

ID	Gravedad específica
Relave Tranque N°1	2.25
Relave Tranque N°2	3.40
Relave Tranque N°3	3.89
Relave Escoria	3.37
Relave Mixto	3.48

Tabla 5-5: Resultados Ensayos tubo Davis

Muestra	Masas, (g)		Cabeza				Concentrado Magnético				Relave No Magnético				Fe Mag (%)
	Concentrado	Relave	Fe-T (%)	S (%)	Al (%)	P (%)	Fe-T (%)	S (%)	Al (%)	P (%)	Fe-T (%)	S (%)	Al (%)	P (%)	
Relave Tranque N°1	0.39	19.91	9.67	1.95	5.23	0.101	35.00	23.21	1.00	0.020	9.18	1.54	5.31	0.102	0.67
Relave Tranque N°2	4.71	15.50	28.27	1.22	3.08	0.081	50.40	0.50	1.83	0.056	21.57	1.44	3.46	0.089	11.73
Relave Tranque N°3	5.89	14.08	39.28	0.97	2.12	0.071	50.18	0.52	1.96	0.055	34.85	1.16	2.20	0.078	14.71
Relave Escoria	5.49	15.27	32.62	0.39	3.04	0.091	56.53	0.27	1.61	0.036	24.42	0.43	3.55	0.110	14.66
Relave Mixto	4.87	15.44	33.56	0.33	2.95	0.079	48.69	0.46	2.02	0.052	28.90	0.28	3.24	0.088	11.59

Resultados Análisis Químicos de Relaves PMAM

Análisis químico - Tierras Raras

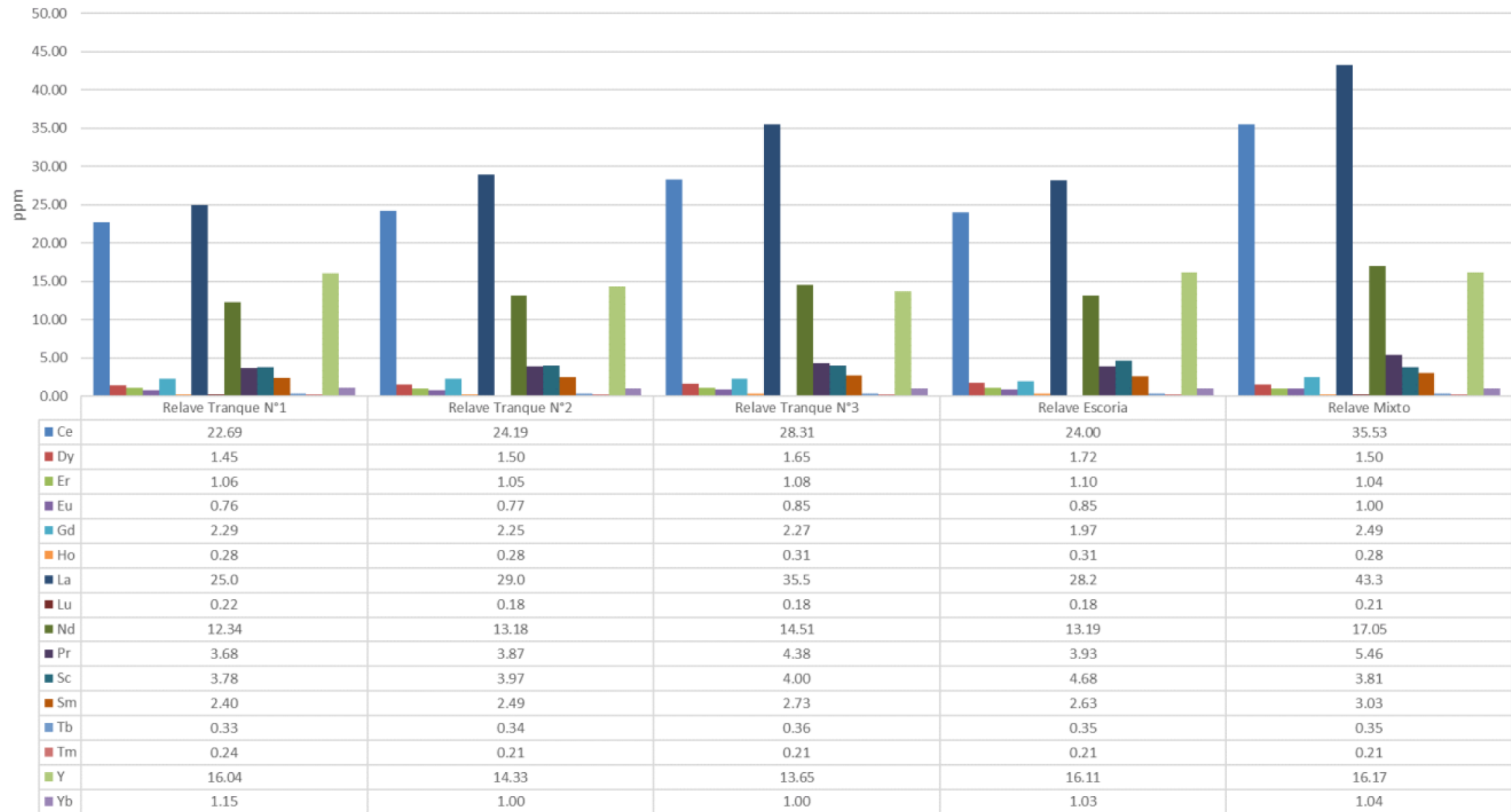


Figura 5-2: Resultados de análisis químicos Tierras raras – Relaves ENAMI