

ENERGY

	ARGOS	GCCA	GRI	SASB	DJSI	2018	2019	2020	2021
ENERGY CONSUMPTION WITHIN THE ORGANIZATION									
CEMENT									
Primary energy from non renewable sources									
Coal Consumption (GJ)						21.510.600	22.612.479	21.435.283	25.403.542
Consumption of natural gas (GJ)						9.582.560	8.944.215	5.049.408	6.000.818
Pet coke (GJ)			302-1			1.630.508	2.303.126	2.749.205	2.755.204
Other fuels (specify the type of fuels included in this category in the comments box) (GJ)						664.123	821.199	759.414	816.080
Primary energy from non-renewable sources (GJ)						33.387.790	34.681.019	29.993.310	34.975.644
Primary energy from renewable sources									
Biomass (GJ)						65	273.024	557.090	612.734
Other renewable fuels (GJ)			302-1			-	-	-	-
Primary energy from renewable sources (GJ)						65	273.024	557.090	612.734
Primary energy from alternative sources									
Tires (GJ)						280.445	341.537	280.140	380.617
Refuse-derived fuel - RDF including plastic material (GJ)			302-1			432.289	644.599	440.610	750.068
Other fuels (specify the type of fuels included in this category in the comments box) (GJ)						1.013.586	724.417	659.063	555.426
Primary energy of alternative sources (GJ)						1.726.320	1.710.553	1.379.813	1.686.110
Electricity consumed from self-generation power plants									
Energy consumed from self-generated Hydroelectric power (GJ)						151.424	-	-	-
Energy consumed from self-generated Thermoelectric power (GJ)			302-1			1.282.573	1.355.008	1.361.580	1.446.357
Electricity consumed from self-generation power plants (GJ)						1.433.997	1.355.008	1.361.580	1.446.357

Electricity from the network						
Consumption of electricity purchased from the network (GJ)			4.027.972	4.259.866	3.767.077	4.212.449
Consumption of electricity transferred by other plants (GJ)	302-1		40.613	-	-	-
Electricity from the network (GJ)			4.068.585	4.259.866	3.767.077	4.212.449
Total energy consumption						
Total thermal energy (GJ)			35.114.176	36.664.595	31.930.213	37.274.489
Total electrical energy (GJ)	302-1		5.502.582	5.614.874	5.128.657	5.658.806
Cement total energy consumption (GJ)			40.616.758	42.279.469	37.058.870	42.933.295

STARDARDS, METHODOLOGIES AND ASSUMPTIONS IN THE CALCULATIONS: For the CCA region, consumption and LCVs (Lower Calorific Values) of fossil fuels and other fuels used in the plants and mines, as well as the consumption of electric power, were supplied by the facilities.

For the Colombia region, fuel consumptions for the process inside the kiln were extracted from SAP, as well as electric power consumption. Quarry and third-party diesel consumptions were supplied by the facilities.

For the USA region, all fossil and alternative fuel consumption and LCVs (lower caloric values) used in the process of the kiln were supplied by the plants, as well as the electric power consumption.

CONCRETE						
Primary energy from non renewable sourcer						
Diesel oil consumption (GJ)			1.551.199	1.711.147	972.006	1.047.704
Other fuels (specify the type of fuels included in this category in the comments box) (GJ)	302-1		409	-	-	2,07
Primary energy from non-renewable sources (GJ)			1.551.608	1.711.147	972.006	1.047.706
Electricity purchased						
Consumption of electricity purchased (GJ)	302-1		145.150	125.364	130.258	115.484
Electricity purchased (GJ)			145.150	125.364	130.258	115.484
Total energy consumption						
Total thermal energy (GJ)			1.551.608	1.711.147	972.006	1.047.706
Total electrical energy (GJ)	302-1		145.150	125.364	130.258	115.484
Concrete total energy consumption (GJ)			1.696.758	1.836.511	1.102.264	1.163.190

STARDARDS, METHODOLOGIES AND ASSUMPTIONS IN THE CALCULATIONS: Lower Calorific Value (LCV) for diesel and gasoline found in: Units & Conversion Fact Sheet (MIT)

AGGREGATES						
Primary energy from non renewable sources						
Diesel oil consumption (GJ)			71.165	54.099	37.862	57.644
Other fuels (specify the type of fuels included in this category in the comments box) (GJ)	302-1		-	-	-	48
Primary energy from non-renewable sources (GJ)			71.165	54.099	37.862	57.693
Electricity purchased						
Consumption of electricity purchased (GJ)	302-1		21.565	17.687	12.673	11.608
Electricity purchased (GJ)			21.565	17.687	12.673	11.608
Total energy consumption						
Total thermal energy (GJ)			71.165	54.099	37.862	57.693
Total electrical energy (GJ)	302-1		21.565	17.687	12.673	11.608
Aggregates total energy consumption (GJ)			92.730	71.786	50.535	69.301
STARDARDS, METHODOLOGIES AND ASSUMPTIONS IN THE CALCULATIONS: Lower Calorific Value (LCV) for diesel and gasoline found in: Units & Conversion Fact Sheet (MIT).						
POWER GENERATION						
Primary energy from non renewable sources						
Coal Consumption (GJ)			3.182.272	2.770.590	2.431.087	3.031.866
Consumption of natural gas (GJ)	302-1		1.197.425	2.024.470	1.962.198	1.985.163
Other fuels (specify the type of fuels included in this category in the comments box) (GJ)			239.624	219.319	221.021	173.609
Primary energy from non-renewable sources (GJ)			4.619.321	5.014.380	4.614.307	5.190.638
TOTAL ENERGY CONSUMPTION						
Total energy consumption in power generation (GJ)	302-1		4.619.321	5.014.380	4.614.307	5.190.638
STARDARDS, METHODOLOGIES AND ASSUMPTIONS IN THE CALCULATIONS: The LCV (lower calorific value) of coal and natural gas were supplied by the plants. Diesel and Gasoline: Units & Conversion Fact Sheet (MIT)						

COMPANY						
Energy consumption within the organization						
Energy sold (Electricity) (GJ)	302-1	EM-CM-130a.1	-	161.688	211.309	41.602
TOTAL energy consumption within the organization (GJ)			45.742.995	47.685.449	41.253.086	47.868.464
Energy sources						
Percentage alternative %						0,035
Percentage grid electricity %		EM-CM-130a.1				0,091
Percentage renewable %						0,007
Total Energy Consumption						
Total renewable Energy consumption (MWh)		2.3.3	521.614	550.993	538.029	734.784
Total non-renewable Energy consumption (MWh)			12.184.775	12.694.966	10.921.163	12.562.012

Reduction of energy consumption		GRI 302-4							
Initiative	Baseline year to calculate the reduction	Reduction in the consumption of energy in MJ by 2021	Indicate whether this is fuel or energy consumption	investments (COP)	investments (USD)	Savings (COP)	Savings (USD)	Description of the initiative	
RCCA - HN: Desvío de polvo de horno CKD directamente al producto terminado	2.020	423.104	energy consumption		13,000		15.279	Se implementa el envío de polvos directamente de las básculas a los aeros de producto final en el molino de cemento 1. Se logra aumentar producción entre 1-2 ton/h en el molino de cemento 1, logrando una reducción en consumo eléctrico de 0,5 kWh durante los meses de noviembre y diciembre.	
RCCA - HN: Disminución de consumo calórico vía menor variabilidad de crudo y ajuste de variables operativas en el horno.	2.020	5.287.020	fuel		400,000		21.518	Se implementan diversas iniciativas que llevan a mejorar la productividad y a reducir el consumo calórico en el horno. Entre estas iniciativas se encuentran una menor variabilidad del crudo gracias al uso del analizador en línea, ajuste de oxígeno en la culata del horno (< 5.0 %) y finura en el combustible, la confiabilidad del horno y sus sistemas auxiliares.	
RCCA - RDOM: Operación continua del sistema Digital Twin para incremento de productividad en el molino de cemento	2.020	2.290.389	energy consumption				63.622	Operación continua del sistema Digital Twin en el molino de cemento, lo que permitió alcanzar un ahorro en consumo eléctrico de 1 kWh/ton y un incremento en productividad de aproximadamente 3 ton/h.	
COL: Incremento en uso de Puzolana Artificial	2.020	35.088.092	power	-	2.000.000	2.737.876.342		El mayor uso de arcillas y la consecuente reducción de clínker, ha permitido impactar amigablemente el índice de energía hasta cemento en silos.	
COL: Uso de cenizas en arcillas activadas térmicamente en Rioclaro.	2.020	73.242.958	Fuel	-		778.015.304		Incremento en la dosificación de ceniza como agente reductor en H3, que a su vez aporta masa y evita la necesidad de dar disposición del material en botaderos. En el 2021 se consumieron 15919 toneladas de cenizas, provenientes de la planta de termoeléctrica de Autogeneración, proporcionando una reducción en consumo de 3073 ton de carbón equivalente.	
COL: Incremento en el uso de combustibles alternativos	2.020	137.893.123	Fuel	-		911.185.057		Sustitución de combustibles fósiles por combustibles alternativos. Incremento en el uso de combustibles alternativos en Planta Cartagena. El ahorro por sustitución térmica fue de 2.4787'793.838 COP. Los 911 MCOP que se reportan corresponden al ahorro adicional con respecto a 2020.	
Total		254.224.686							