Supplementary Information for:

"Production and characterization of KOH-activated carbons, from carbons produced in the pyrolysis of waste tires"

Camila Aguilar-Ccuno [1], Jonathan Almirón [1], Rossibel Churata [2,] and Kattia Glenny Martínez-Rivera[3]*

[1]Escuela Profesional de Ingeniería Ambiental, Universidad Nacional de San Agustín de Arequipa, Calle Santa Catalina N◦117 Cercado, Arequipa 04001, Perú; caguilarcc@unsa.edu.pe (C.A.C.); jalmi-ron@unsa.edu.pe (J.A.B.)

[2] Escuela Profesional de Ingeniería de Materiales, Facultad de Ingeniería de Procesos, Universidad Na-cional de San Agustín de Arequipa, Calle Santa Catalina Nro. 117 Cercado, Arequipa 04001, Peru; rchurataa@unsa.edu.pe (R.C.A.)

[3]Escuela Profesional de Química, Facultad de Ciencias Naturales y Formales, Universidad Nacional de San Agustín de Arequipa, Calle Santa Catalina Nro. 117 Cercado, Arequipa 04001, Perú; rchura-taa@unsa.edu.pe (R.C.A.)

*Correspondence rchurataa@unsa.edu.pe

Number of Pages: 5

SI Tables: 3

Table of Contents

1. SI Section 2. Summary of the performance of by-products from pyrolysis of waste tires in the laboratory
    - Table S1. Weights resulting from pyrolysis to obtain WTC
    - Table S2. Summary of the performance of by-products from pyrolysis of waste tires in the laboratory
2. SI Section 3. Activation process data for calculating burn-off
    - Table S3. Activation process data for calculating burn-off

SI Section 2. Summary of the performance of by-products from pyrolysis of waste tires in the laboratory

An analysis was carried out of the quantity of by-product obtained for each condition initially proposed for obtaining WTC, in which the liquid and solid parts were weighed, and the gaseous part was calculated.

After obtaining the required data (Table S2), Table S3 was prepared in which the Performance of these tests was summarized, which were three for each type of WTC generated.

Table S1. Weights resulting from pyrolysis to obtain WTC

Code	Initial tire weight (g)	Initial catalyst weight (g)	Pyrolytic oil (g)	WTC (g)	n-c gas (g)
1-TER-T1	10,0004	-	5,1892	3,6113	1,1999
2-TER-T1	10,0010	-	5,4772	3,6044	0,9194
3-TER-T1	10,0003	-	4,9202	3,6105	1,4696
1-TER-T2	10,0004	-	3,7243	3,5462	2,7299
2-TER-T2	10,0003	-	3,4214	3,5560	3,0229
3-TER-T2	10,0004	-	3,1160	3,5704	3,3140
1-ZM5-T1	10,0000	0,5001	5,2560	3,7080	1,0360
2-ZM5-T1	10,0005	0,5002	4,8900	4,0429	1,0676
3-ZM5-T1	10,0002	0,5005	4,8254	3,7445	1,4303
1-ZM5-T2	10,0004	0,5003	4,4214	3,5823	1,9967
2-ZM5-T2	10,0000	0,5007	3,6933	3,5622	2,7445
3-ZM5-T2	10,0001	0,5001	4,5546	3,5488	1,8967
1-PZ2-T1	10,0003	0,5002	4,2866	3,8202	1,8935
2-PZ2-T1	10,0000	0,5001	4,4358	3,7919	1,7723
3-PZ2-T1	10,0003	0,5005	4,9728	4,0794	0,9481
1-PZ2-T2	10,0000	0,5003	4,1762	3,5640	2,2598
2-PZ2-T2	10,0002	0,5001	4,0223	3,6108	2,3671
3-PZ2-T2	10,0004	0,5002	4,2334	4,1093	1,6577

Note: n-c gas refers to non-condensable gas

The values in Table 5 (which can be found in the article) were created from Table S1.

Table S2. Summary of the yield of by-products from pyrolysis of waste tires in the laboratory

Code	Temperature (°C)	Catalyst	By-product yield (%)		
			WTC	*Oil*	*Gas*
TER-T1	450	-	36,1116	51,8899	11,9985
			36,0404	54,7665	9,1931
			36,1039	49,2005	14,6956
TER-T2	575		35,4606	37,2415	27,2979
			35,5589	34,2130	30,2281
			35,7026	31,1588	33,1387
ZM5-T1	450	ZMS-5 (Commercial zeolite)	37,0800	52,5600	10,3600
			40,4270	48,8976	10,6754
			37,4443	48,2530	14,3027
ZM5-T2	575		35,8216	44,2122	19,9662
			35,6220	36,9330	27,4450
			35,4876	45,5455	18,9669
PZ2-T1	450	PZ2 (Synthesized zeolite)	38,2009	42,8647	18,9344
			37,9190	44,3580	17,7230
			40,7928	49,7265	9,4807
PZ2-T2	575		35,6400	41,7620	22,5980
			36,1073	40,2222	23,6705
			41,0914	42,3323	16,5763

SI Section 3. Activation process data for calculating burn-off

Table S3 below presents the data on the initial and final weights of the activation process of the six WTCs obtained previously, together with the calculation of their respective burn-off values. This information was used to prepare Table 5 in the article.

Table S3. Activation process data for calculating burn-off

Code	*w_1 (g)*	*w_2 (g)*	*Burn-off (%)*	*Average b-off*
TER-T1-AK	21,0019	8,7926	58,1344	57,2296
	21,0017	8,1615	61,1390	
	21,0029	9,9942	52,4153	
TER-T2-AK	21,0022	10,6284	49,3937	53,9428
	21,0051	8,4414	59,81274	
	21,0031	9,9509	52,62187	
ZM5-T1-AK	21,0064	6,6281	68,44741	60,0561
	21,0114	6,1464	70,74749	
	21,0086	12,4007	40,97346	
ZM5-T2-AK	21,0016	8,4817	59,61403	64,4499
	21,0035	8,8531	57,84941	
	21,0042	5,0649	75,88625	
PZ2-T1-AK	10,5086	5,5819	46,8826	45,4804
	10,5062	5,7265	45,4941	
	10,5028	5,8748	44,0644	
PZ2-T2-AK	10,5032	5,8767	44,0485	43,6789
	10,5034	5,7404	45,3472	
	10,5024	6,1291	41,6410	