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Hydrogenation and L.T. Carbonization
Properties of Ruhr Coals
By Giesg, Ludwigshafen, 12 March 1942

The mining of coal in the Ruhr district amounted in 1938 to:

26.58	Mill. t	containing	(35-40% volatiles/pure coal)			
			(30-35%			
86.28	"	"	19-30%	"	/	" "
8.00	"	"	13-19%	"	/	" "
6.42	"	"	7-12%	"	/	" "
127.28	Mill. tons	total production.				

Coals containing over 35% volatiles and less than 85% C in the pure coal are considered having good hydrogenation properties.

Low temperature carbonization properties are based solely on the tar yield, without consideration of assortment, constitution and quality of the coke, type of oven and economy. A coal with a minimum tar yield of 10% by Fischer-Schrader is considered carbonizable.

The attached table evaluates the Ruhr coals received and analyzed by us for hydrogenation experiments.

It shows that of 42 coals considered having good to fair hydrogenation properties, 41 coals, or 98%, are carbonizable with respect to the tar yield.

On the other hand, of 45 carbonizable coals, 41 coals, or 91%, may be considered suitable for hydrogenation.

It is apparent, therefore, that all carbonizable coals containing over 35% volatiles are also suitable for hydrogenation. As to the coals containing over 85% C and 30-35% volatiles, there are carbonizable coals in this group, which are not suitable for hydrogenation or only moderately so.

The Krupp L.T.C. coal K-1130, with 86.7% C and 8.2% tar yield is obviously classified as an L.T.C. coal because of the good quality of its L.T.C. coke.

The last 3 coals in the table from the Gelsenkirchen Mining Co. and Matthias Stinnes represent a special group, which do not permit an L.T.C. analysis because of their tendency to swell.

Name	No.	Analyses of the Pure Coal					Hydr' able	Carbon- izable
		% C	L H	% Volat.	H avail.	% Tar		
Augusto Victoria, Seam Zollverein 5	1002	85.48	5.38	34.0	4.86	11.4	Fair	+
" " Mine Leopold	1012	80.8	5.35	41.9	4.63	13.6	"	+
" " Shaft 4, Nut 3	1058	85.4	5.31	34.09	4.76	12.5	Fair	+
" " Gas flame coal Nut 4	1247	85.07	5.43	33.34	4.90	12.1	Fair	+
Hibernia, Mine General Blumenthal 1/2	1009	84.2	5.5	36.88	4.95	11.96	"	+
" " Seam Bismarck								
" Mine Zweckel	1020	82.6	5.46	39.8	4.88	15.4	"	+
" Seam Siegfried	1023	81.9	5.3	39.4	4.5	12.8	"	+
" Mine General Blumenthal	1035	83.1	5.4	36.0	4.7	13.7	"	+
" Mine Shamrock Nut coal	1038a	83.3	5.4	36.4	4.9	13.97	"	+
" Mine Shamrock, Fine coal	1038b	84.46	5.5	35.6	5.0	13.0	"	+
" Mine Gen. Blumenthal, Fine coal	1039	82.85	5.23	34.69	4.4	10.6	"	fair
" Seam Siegfried, Fine coal	1040	81.45	5.20	38.10	4.3	12.1	"	+
" Mine Zweckel, Seam 19	1041	82.68	5.20	38.23	4.5	13.8	"	+
" " " Seam 24	1042	82.66	5.39	38.01	4.6	14.3	"	+
" " " Seam 31	1043	82.98	5.31	37.07	4.54	13.5	"	+
" " " Seam 16-26	1216	82.1	5.4	39.1	4.68	14.7	"	+
" (Hydr. coal Gladbeck)								
" Hydr. coal Scholven	1101	82.0	5.3	37.9	4.68	14.1	"	+
" Herne Nut coal	1044	82.76	5.24	37.10	4.40	13.4	"	+
" Seam Roof Fine coal	1047	81.90	5.26	38.52	4.36	14.35	"	+
" Seam August Fine coal	1048	80.90	5.51	37.6	4.63	10.5	"	fair
" Mine Schlagel & Eisen, Seam Bismarck	1053	83.9	5.3	35.9	4.6	13.6	"	+
" dto. Seam P. Ruhrbank	1056	85.19	5.39	35.72	4.86	12.1	Fair	+
" dto. Seam August Oberbank	1057	80.3	4.81	36.24	4.58	8.4	"	+
" dto. Seam Unverhofft	1072	83.38	5.47	37.82	4.76	14.0	"	+
" dto. Seam R	1078	84.2	5.3	36.08	4.	13.8	"	+
" dto. Seam O	1079	85.15	5.4	34.1	4.78	13.49	Fair	+
" Mine General Blumenthal	1064	81.74	5.57	37.36	4.50	13.6	"	+
" Seam Menzel Oberbank								
" dto.	1073	83.2	5.38	40.5	4.59	16.6	"	+
Vereinigte Stahlwerke, Shaft Lohberg	1003	84.19	5.53	36.10	4.97	12.5	"	+
" " Shaft Thyssen 2/5	1004	82.48	5.67	38.36	4.99	13.64	"	+
" " Mine Hardenberg	1011	86.76	5.35	31.36	4.92	10.27	"	fair
" " Shaft Lohberg	1021	84.2	5.4	36.8	4.8	13.6	"	+
Gelsenkirchener Bergwerks AG								
" Mine Zollverein 3/10, Seam								
" Zollverein 6	1084	86.1	5.3	33.7	4.8	13.9	"	+
" Mine Nordstern 1/2, Seam I	1085	85.5	5.1	31.3	4.59	10.12	"	fair
" " " 3/4, " Donar II	1090	83.1	5.53	38.3	4.93	15.0	"	+
" " " " " III	1198	83.9	5.79	39.22	5.2	13.0	"	+
" " " " " Baldur	1092	83.25	5.49	39.4	4.7	15.9	"	+
" " " " " Kriemh. II	1096	83.09	5.52	38.55	4.62	10.96	"	+
" Mine Graf Holtke 1/2, Seam U	1091	84.2	5.48	36.77	4.85	12.9	"	+
" Mine Lohberg	1149	84.6	5.4	36.3	4.73	13.5	"	+
Bergwerks AG Rocklinghausen Sh. Zweckel	1036	84.5	5.4	35.6	4.8	14.1	"	+
Krupp Shaft Amalie	1000	89.1	4.96	24.73	4.62	5.25	"	+
Krupp L.T.C. coal	1130	88.7	4.9	25.7	4.6	8.22	"	+
" " "	1148	85.5	5.5	32.6	5.12	12.0	"	+
Rhein. Stahlwerke, Brassert VII	1008	81.08	5.58	40.15	4.73	12.14	"	+
" " Brassert	1013	82.0	5.3	39.0	4.6	12.3	"	+
Gelsenkirchener Bergwerks AG, Nordstern Mine	1082	86.6	5.32	30.79	4.86	swells	"	+
" " Mine Zollverein 3/10								
" " Seam Zollverein 7	1089	86.1	5.24	32.36	4.68	swells	"	+
Matthias Stinnes, Extraction coal	1068	87.12	5.29	29.95	4.7	swells	"	+