

JEOKİMYASAL KÖMÜRLEŞME

Table 3. Classification and properties of brown coals and the distinction between 'Braunkohle' and 'Steinkohle' (according to German usage)¹

Rank of coal	Megascopic	Microscopic	Chemical-Physical				
			PATTEISKY & M. TEICHMÜLLER (1960)	Streak (Colour)	Behaviour on boiling with KOH	Behaviour with dilute HNO ₃	
Braunkohle (brown coal) Hartbraunkohle (hard brown coal)	Weichbraunkohle (soft brown coal)	brown, dull, partly earthy	large pore volume, gelification rare, open cell lumens (textinite)	75–35 % H ₂ O < 4000 kcal/kg ² usually > 60 – < 70 % C ³			
	Mattbraunkohle (dull brown coal)	dark brown to black, dull to low brightness	less pore volume, stronger gelification, open cell lumens (textinite) rare	35–25 % H ₂ O 4000–5500 kcal/kg ² usually < 71 – ca. 71 % C ³ ca. 53–49 % VM ³	brown, seldom black	brown solution	red solution
	Glanzbraunkohle (bright brown coal)	black, bright	gelification (vitrinitization) completed, micrinite not yet formed	usually > 8–10 % H ₂ O 5500–7000 kcal/kg ² ca. 71–77 % C ³ ca. 49–42 % VM ³			
Steinkohle (bituminous coal)	black, bright	like Glanzbraunkohle, micrinite formed	usually < 8–10 % H ₂ O usually > 7000 kcal/kg ² usually > 77 % C ³ usually < 42 % VM ³	black, seldom brown	no colour	no colour	

¹ for correlation with the ASTM classification see Table 4

² moist, ash-free

³ dry, ash-free; VM = volatile matter

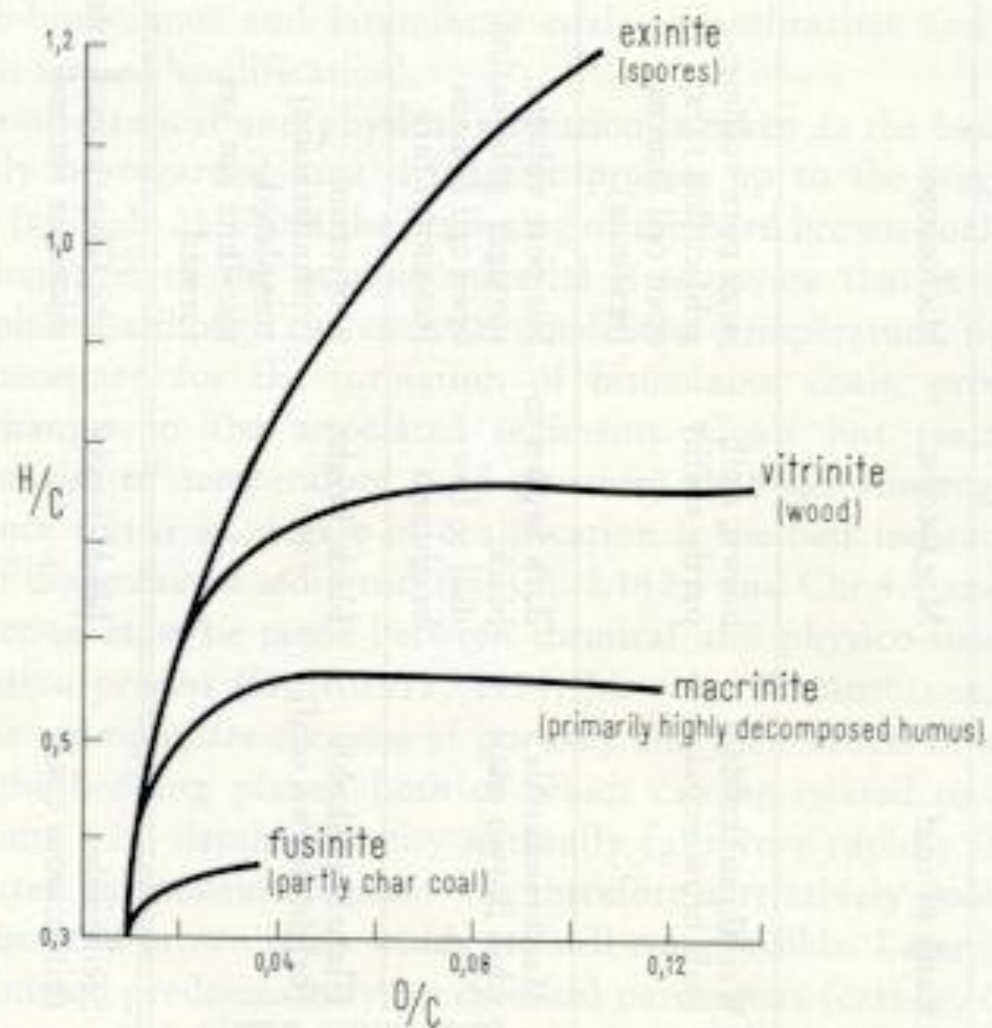


Fig. 16. Coalification tracks of different macerals based on H/C: O/C atomic ratios (after VAN KREVELEN, 1961).

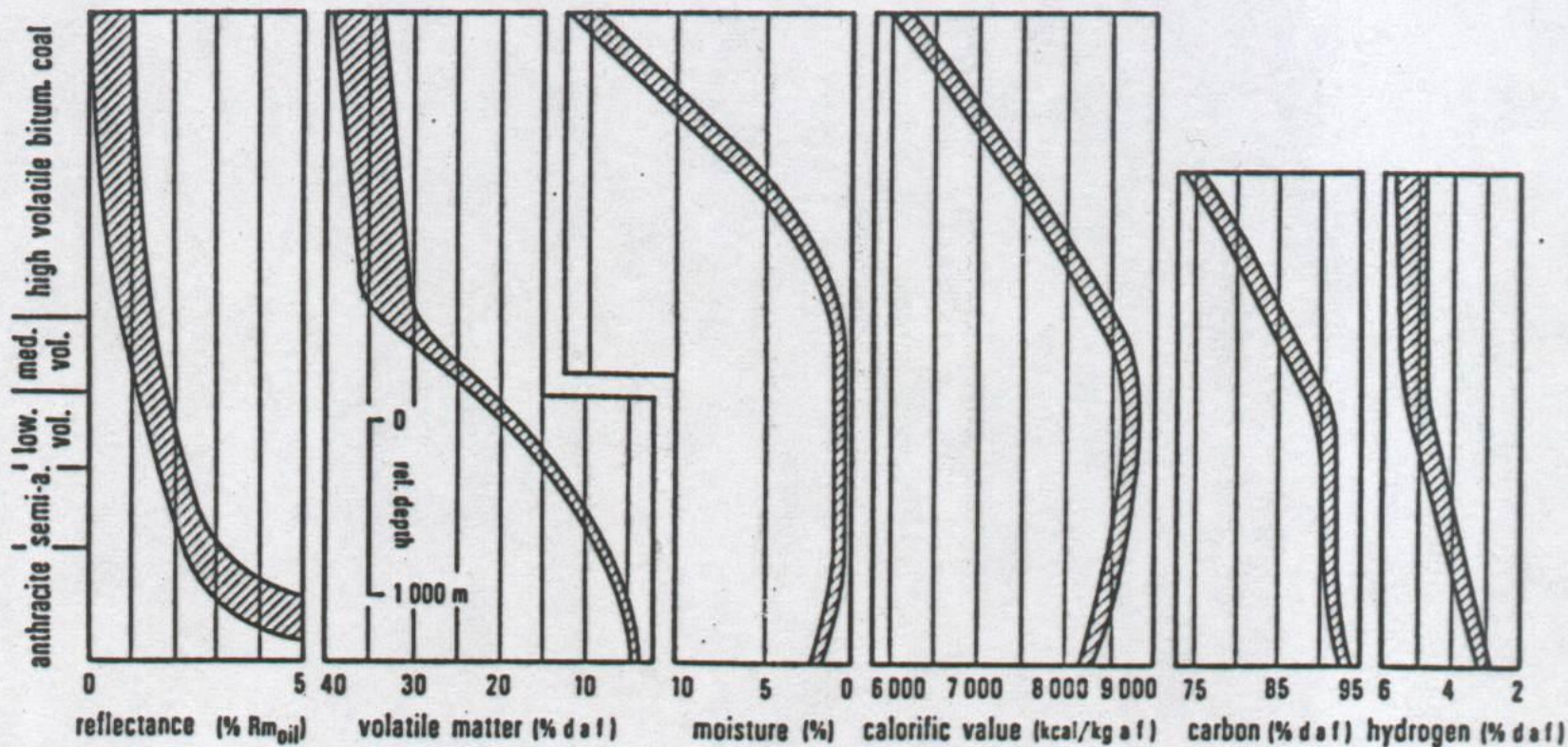


Fig. 17. Increase of degree of coalification with depth based on vitrite analyses and vitrinite reflectivities from deep boreholes and shafts, mainly in the Ruhr district (after M. & R. TEICHMÜLLER, 1967).

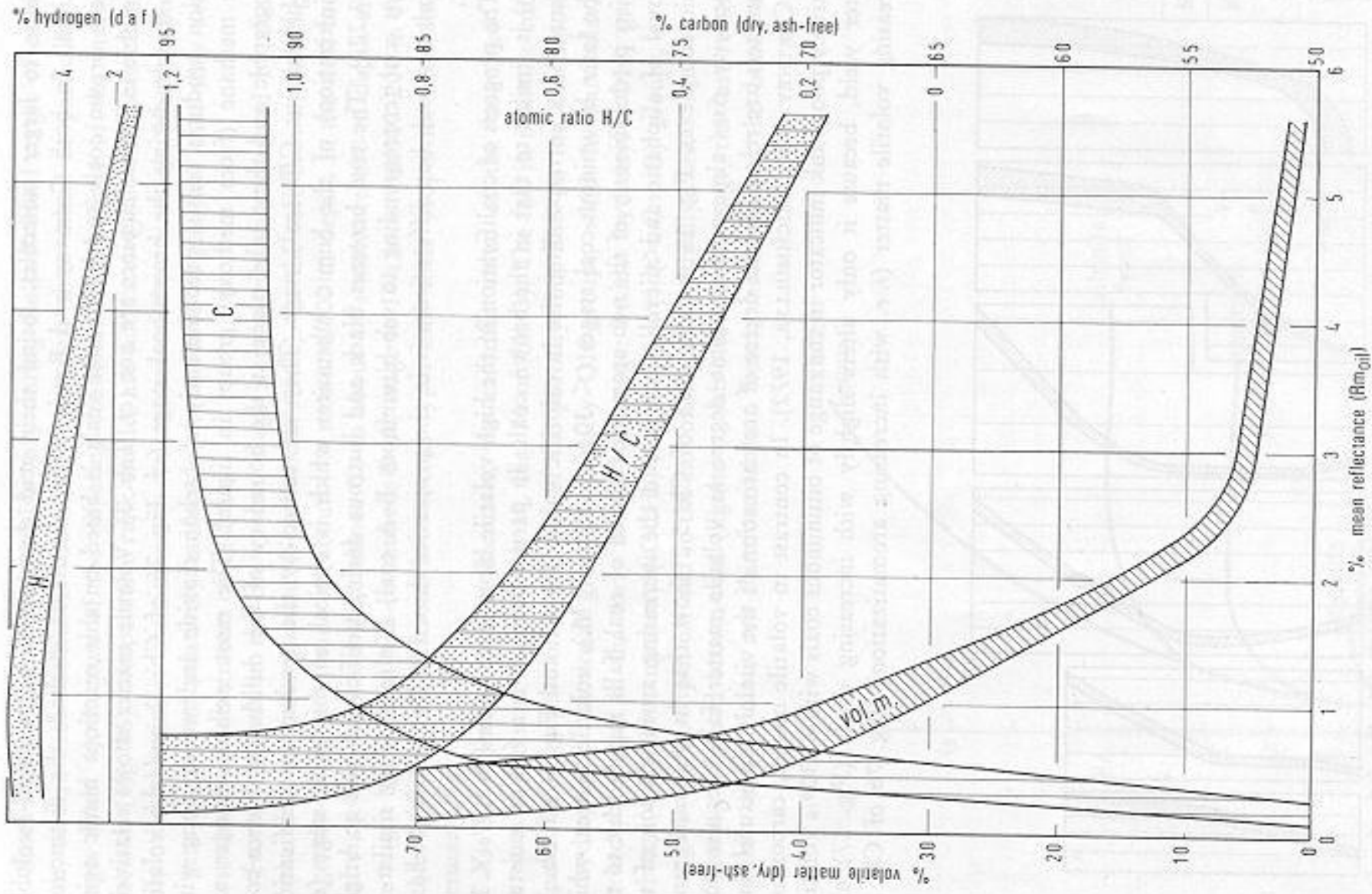
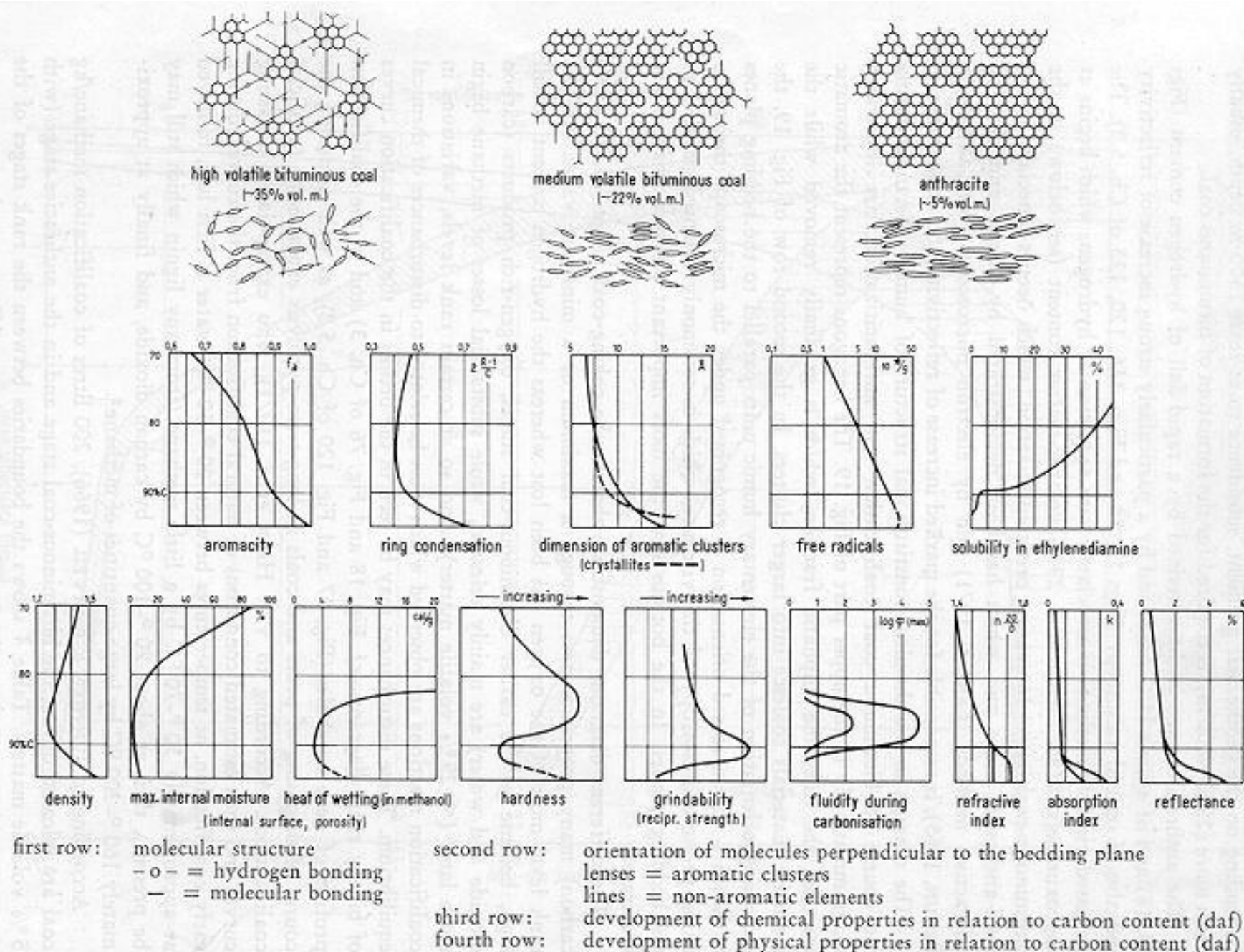


Fig. 18. Relationship between vitrinite reflectance and different chemical-rank parameters (after M. TEICHMÜLLER, 1971).

Fig. 19. Physical, chemical and molecular changes of vitrite during the coalification of bituminous coals and anthracites (based on different authors: see M. & R. TEICHMÜLLER, 1954 a, 1968 a).



KÖMÜRLEŞMENİN NEDENLERİ

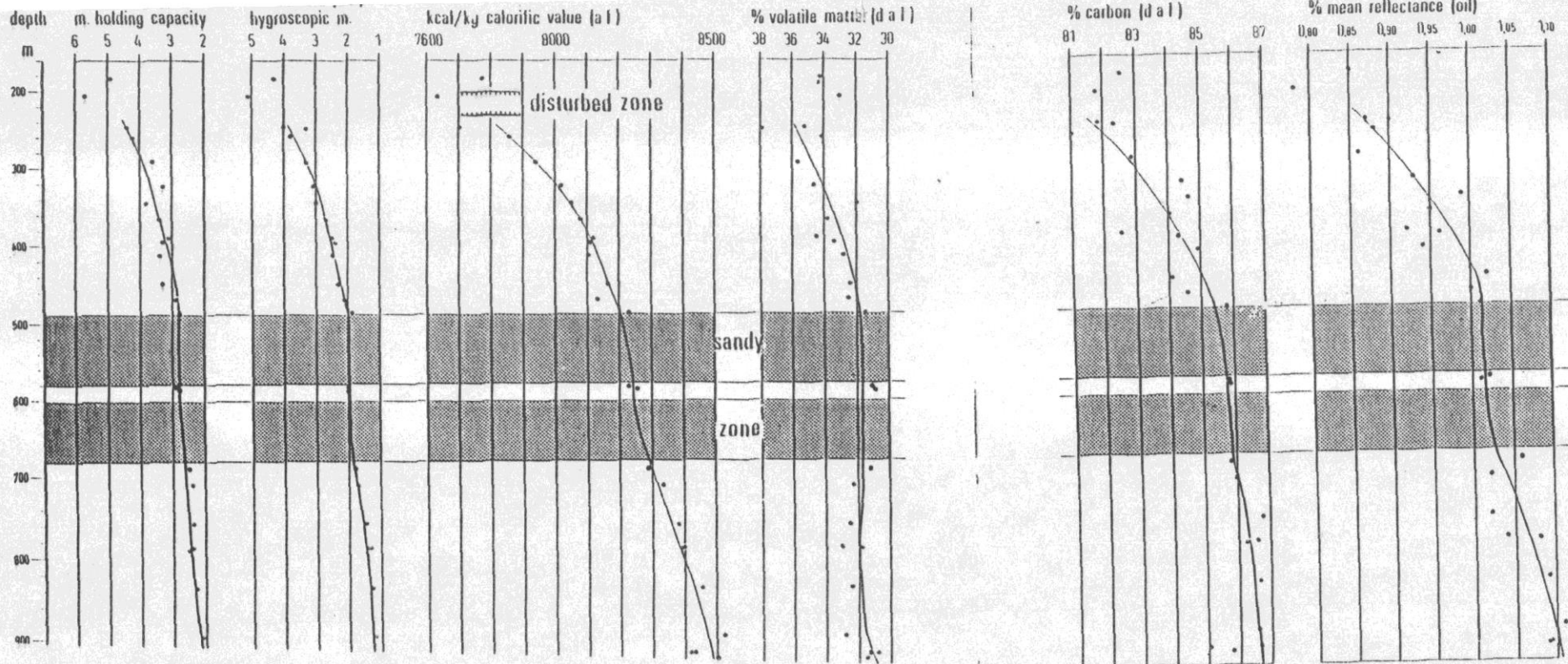




Fig. 21. Course of isorank lines (e. g. isovols, isorefectances) in cross-sections of a folded area after a) preorogenic; b) synorogenic and c) postorogenic coalification (after M. & R. TEICHMÜLLER, 1966 a).