

**APPENDIX**  
**Colours/shades of dyes**

**TABLE I**  
**Dyes derived from 2-(2'-hydroxy-5'-methylbenzoyl) benzoic acid**

Phenols	Colour of dye	m.p. °C	Colour in ethanol		$\lambda_{max}$ (nm)	pH	Medium
			Alkaline	Neutral			
Phenol	Pinkish red	182-84	Light yellow	Pink	--	--	Neutral
Resorcinol	Dark orange	290-92	Yellow	Golden	535	8.6	Alkaline
				Yellow G.F.	510	10.2	Alkaline
Catechol	Black	>360	Brown	Blackish	--	--	Neutral
				green	--	--	Alkaline
Hydroquinone	Black	>320	Crimson	Dark	--	--	Neutral
				brown	--	--	Alkaline
Phloroglucinol	Orange	320-22	Yellow	Dark Red	--	--	Neutral
				480	9.0	Alkaline	
Pyrogallol	Black	>360	Wine red	Blue violet	--	--	Neutral
				--	--	Alkaline	
Diacetyl	Yellow	188-89	Colorless	Yellowish	--	--	Neutral
				G.F.	--	--	Alkaline
Dibromo	Orange	250-51	Red	Reddish	510	5.8	Neutral
				Pink G.F.	510	8.7	Alkaline

**TABLE II**  
**Dyes derived from 2-(5'-chloro-2'-methylbenzoyl) benzoic acid**

Phenols	Colour of dye	m.p. °C	Colour in ethanol		$\lambda_{max}$ (nm)	pH	Medium
			Alkaline	Neutral			
Phenol	Buff dye	142-44	Brownish red	Pink	--	--	Neutral
				530	8.8	Alkaline	
Resorcinol	Red	278-79	Golden yellow	Reddish	460	5.6	Neutral
				Yellow G.F.	490	9.0	Alkaline
Catechol	Black	>360	Brown	Brownish	--	--	Neutral
				black	--	--	Alkaline
Hydroquinone	Black	>300	Golden brown	Leaf	--	--	Neutral
				brown	--	--	Alkaline
Phloroglucinol	Dark orange	>360	Golden yellow	Reddish	--	--	Neutral
				Orange.	490	9.2	Alkaline
Pyrogallol	Black	>300	Wine red	Violet	--	--	Neutral
				--	--	--	Alkaline
Diacetyl resorcinol dye	Pale yellow	175-76	Yellow	Yellowish	--	--	Neutral
				G.F.	--	--	Alkaline
Dibromo resorcinol dye	Pale orange	250-51	Yellowish orange	Reddish	520	6.0	Neutral
				orangeGF	520	9.5	Alkaline

**TABLE III**  
**Dyes derived from 2-(3'-chloro-4'-chloromethylbenzoyl) benzoic acid**

Phenols	Colour of dye	m.p. °C	Colour in ethanol		$\lambda_{max.}(nm)$	pH	Medium
			Neutral	Alkaline			
Phenol	Dark	113-15	Reddish	Pink	--	--	Neutral
	Brown		cream		535	8.6	Alkaline
Resorcinol	Dark	287-88 dec.	Yellow	Brownish	460	6.4	Neutral
	red		GF	RedGF.	490	9.6	Alkaline
Catechol	Black	>360	Brownish	Brownish	--	--	Neutral
			black	black	--	--	Alkaline
Hydroquinone	Black	>360 dec.	Brown	Blackish	--	--	Neutral
				brown	--	--	Alkaline
Phloroglucinol	reddish	>180	Golden	Dark	--	--	Neutral
	brown		yellow	red	500	9.8	Alkaline
Pyrogallol	Black	>315	Wine	Dark	--	--	Neutral
			red	violet	--	--	Alkaline
Diacetyl resorcinol dye	Pale	182-84	Almost	Yellowish	--	--	Neutral
	yellow		colourless	G.F	--	--	Alkaline
Dibromo resorcinol dye	Dark	290-92	Yellow	Yellowish	520	6.0	Neutral
	orange			orangeGF	520	9.5	Alkaline

**TABLE IV**  
**Dyes derived from 2-(2'-hydroxy--5'-methylbenzoyl) tetrachlorobenzoic acid**

Phenols	Colour of dye	m.p. °C	Colour in ethanol		$\lambda_{max.}(nm)$	pH	Medium
			Neutral	Alkaline			
Phenol	Reddish	220-22	Light	Violet	510	5.8	Neutral
	orange		yellow		535	8.6	Alkaline
Resorcinol	greenish	280-81 dec.	Cream	Reddish	470	5.8	Neutral
	brown			orange G.F	520	9.6	Alkaline
Catechol	Black	242-43	Golden	Brown	--	--	Neutral
			brown		--	--	Alkaline
Hydroquinone	Black	270-71 dec	Light	Brown	--	--	Neutral
			brown		--	--	Alkaline
Phloroglucinol	Dark	>180	Wine	Deep	--	--	Neutral
	red		red	red GF	490	9.8	Alkaline
Pyrogallol	Black	>360	Dark	Blue	--	--	Neutral
			brown		--	--	Alkaline
Triacetyl resorcinol dye	Golden	165-67	Almost	Yellowish	--	--	Neutral
	brown		colourless	G.F.	--	--	Alkaline
Tribromo resorcinol dye	Cream	315-317	Yellowish	Yellowish	520	6.0	Neutral
			Orange	orangeGF	530	10.4	Alkaline

**TABLE V**  
**Dyes derived from 2-(5'-chloro--2'-methylbenzoyl) tetrachlorobenzoic acid**

Phenols	Colour of dye	m.p. °C	Colour in ethanol		$\lambda_{max}$ (nm)	pH	Medium
			Neutral	Alkaline			
Phenol	Orange	260-62	Light	Violet	510	5.6	Neutral
	brown		yellow		540	9.5	Alkaline
Resorcinol	Lemon yellow	299-300	Pale cream	Light orange G.F.	460	5.5	Neutral
	Black		250	Light brown	Golden brown	510	9.5
Catechol	Black	>300	Golden brown	Yellowish brown	--	--	Neutral
Hydroquinone	Black	>300	Golden brown	Yellowish brown	--	--	Alkaline
Phloroglucinol	Grey	>300	Grey	Pale cream	--	--	Neutral
Pyrogallol	Black	180	Light brown	Blackish brown	500	8.5	Alkaline
		dec.			--	--	Neutral
Diacetyl resorcinol dye	Buff colour	180-82	Pale yellow	Reddish G.F.	--	--	Alkaline
Dibromo resorcinol dye	Grey	160-62	Light Pink	Pink	520	5.5	Neutral
					GF	530	9.0

**TABLE VI**  
**Dyes derived from 2-(3'-chloro--4'-chloromethylbenzoyl) tetrachlorobenzoic acid**

Phenols	Colour of dye	m.p. °C	Colour in ethanol		$\lambda_{max}$ (nm)	pH	Medium
			Neutral	Alkaline			
Phenol	Pinkish white	240-42	Light yellow	Rose red	510	5.9	Neutral
	Golden yellow		Deep orange G.F.	530	9.0	Alkaline	
Resorcinol	Golden yellow	306-08	Deep orange G.F.	Deep red G.F.	455	5.6	Neutral
	Black		260	Brown	Dark brown	500	9.5
Catechol	Black	>360	Leaf brown	Deep brown	--	--	Neutral
Hydroquinone	Black	>360	Leaf brown	Deep brown	--	--	Alkaline
Phloroglucinol	blackish brown	>310	Golden brown	Dark red	490	8.5	Neutral
Pyrogallol	blackish brown	>360	Leaf brown	Violet	--	--	Alkaline
Diacetyl resorcinol dye	Buff colour	167-69	Light yellow	Pink	--	--	Neutral
Dibromo resorcinol dye	blackish rose	235-37			520	5.5	Neutral
					pink GF	530	10.0

**TABLE VII**  
**Dyes derived from 2-(2'-hydroxy-5'-methylbenzoyl)-3-nitrobenzoic acid**

Phenols	Colour		Colour in ethanol		$\lambda_{max.}(nm)$	pH	Medium
	of dye	m.p. °C	Neutral	Alkaline			
Phenol	Brown	>360	Light brown	Light pink	530	9.0	Alkaline
Resorcinol	Brown	301-303	Light yellow	Brownish red G.F	460 500	6.0 9.5	Neutral Alkaline
Catechol	Brownish black	>360	Light brown	Brown	--	--	Neutral Alkaline
Hydroquinone	Black	262	Light green	Brown	--	--	Neutral Alkaline
Phloroglucinol	Red	>360	Wine red	Orange red	495	8.6	Alkaline
Pyrogallol	Brownish black	>360	Light brown	Light violet	--	--	Neutral Alkaline
Triacetyl resorcinol dye	Deep yellow	242	Yellowish brown	Reddish G F	--	--	Neutral Alkaline
Tribromo resorcinol dye	Brown	174	Pink	Deep Pink	520 530	5.5 8.5	Neutral Alkaline

**TABLE VIII**  
**Dyes derived from 2-(5'-chloro--2'-methylbenzoyl)-3-nitro benzoic acid**

Phenols	Colour		Colour in ethanol		$\lambda_{max.}(nm)$	pH	Medium
	of dye	m.p. °C	Neutral	Alkaline			
Phenol	Blackish brown	300	Brown	Reddish violet	550	9.0	Neutral Alkaline
Resorcinol	Greenish brown	312	Lemon yellow	Red G F	460 510	6.0 9.5	Neutral Alkaline
Catechol	Black	>360	Brown brown	Brownish black	--	--	Neutral Alkaline
Hydroquinone	Black	234 dec.	Light brown	Dark brown	--	--	Neutral Alkaline
Phloroglucinol	Brownish red	>320	Orange red	Deep orange red	500	8.5	Neutral Alkaline
Pyrogallol	Black	>360 dec	Light brown	Brown	--	--	Neutral Alkaline
Diacetyl resorcinol dye	Pale cream	280	Light yellow	Reddish G.F	--	--	Neutral Alkaline
Tribromo resorcinol dye	Dark Brownish	182 dec	Pink	Reddish pink GF	520 500	5.5 8.2	Neutral Alkaline

**TABLE IX****Dyes derived from 2-(3'-chloro--4'-chloromethylbenzoyl)-3-nitro benzoic acid**

Phenols	Colour		Colour in ethanol		$\lambda_{\max.}(\text{nm})$	pH	Medium
	of dye	m.p. °C	Neutral	Alkaline			
Phenol	Light	214-16	Light	Light	--	--	Neutral
	pink		brown	violet	550	9.5	Alkaline
Resorcinol	Reddish	225-27	Golden	Brown	460	5.8	Neutral
	brown		yellow		520	8.6	Alkaline
Catechol	Black	250	Light	Golden	--	--	Neutral
			brown	brown		--	--
Hydroquinone	Black	314-16	Light	Reddish	--	--	Neutral
			brown	brown		--	--
Phloroglucinol	Brown	298-99	Wine	Dark	--	--	Neutral
			red	red	510	9.2	Alkaline
Pyrogallol	Black	342-43	Reddish	Reddish	--	--	Neutral
			brown	brown		--	--
Diacetyl resorcinol dye	Leaf	264-266	Almost	Pinkish	--	--	Neutral
	brown		colourless	G.F.	--	--	Alkaline
Dibromo resorcinol dye	Dark	160-62	Yellowish	Orange	530	6.5	Neutral
	brown		red	GF	530	8.8	Alkaline

**TABLE X****Dyes derived from 2- $\alpha$ -naphthoyl-3-nitro benzoic acid**

Phenols	Colour		Colour in ethanol		$\lambda_{\max.}(\text{nm})$	pH	Medium
	of dye	m.p. °C	Neutral	Alkaline			
Phenol	Brown	120	Colourless	Pink	--	--	Neutral
		dec			530	9.6	Alkaline
Resorcinol	Dark	281-83	Yellow	Yellowish	460	6.4	Neutral
	red			orange G F.	490	9.8	Alkaline
Catechol	Black	>300	Light	Brown	--	--	Neutral
			brown			--	--
Hydroquinone	Black	148-50	Brown	Light	--	--	Neutral
				violet		--	--
Phloroglucinol	Dark	260	Light	Brown	--	--	Neutral
	brown		dec	brown		490	8.4
Pyrogallol	Black	188-89	Reddish	Violet	--	--	Neutral
		dec	brown		--	--	Alkaline
Diacetyl resorcinol dye	Pale	210-12	Almost	Yellowish	--	--	Neutral
	yellow		colourless	G F.	--	--	Alkaline
Dibromo resorcinol dye	Reddish	280-82	Yellowish	Yellowish	530	6.0	Neutral
	orange		red	orangeGF	530	9.0	Alkaline

**TABLE XI**  
**Dyes derived from 2-(3'-phenanthroyl)-3-nitro benzoic acid**

Phenols	Colour		Colour in ethanol		$\lambda_{max.}(nm)$	pH	Medium
	of dye	m.p. °C	Neutral	Alkaline			
Phenol	Brown	128-30	Light	Rose	500	6.2	Neutral
			yellow	pink	530	9.0	Alkaline
Resorcinol	Red	319-21	Yellow	Yellowish	460	6.0	Neutral
			orange G F	500	8.4	Alkaline	
Catechol	Black	>300	Blackish	Blackish	--	--	Neutral
			green	green	--	--	Alkaline
Hydroquinone	Brown	87-89	Light	Greenish	--	--	Neutral
			brown	brown	--	--	Alkaline
Phloroglucinol	Orange brown	>300	Reddish	Red	--	--	Neutral
			brown	500	9.0	Alkaline	
Pyrogallol	Black	>300	Brownish	Violet	--	--	Neutral
			dec red	--	--	Alkaline	
Diacetyl resorcinol dye	Yellow	196-98	Yellow	Reddish	--	--	Neutral
			G.F.	--	--	Alkaline	
Dibromo resorcinol dye	Brick red	148-50	Yellowish	Yellowish	520	6.0	Neutral
			red	orangeGF:520	8.4	Alkaline	

**TABLE XII**  
**Dyes derived from 2-(2'-anthracenoyl)-3-nitro benzoic acid**

Phenols	Colour		Colour in ethanol		$\lambda_{max.}(nm)$	pH	Medium
	of dye	m.p. °C	Neutral	Alkaline			
Phenol	Brown	230	Light	Light	510	5.8	Neutral
			dec. brown	pink	530	9.5	Alkaline
Resorcinol	Red	>300	Yellow	Yellowish	460	5.6	Neutral
			G.F. 500	9.5	Alkaline		
Catechol	Black	>300	Brown	Dark	--	--	Neutral
			green	green	--	--	Alkaline
Hydroquinone	Black	116-18	Light	Light	--	--	Neutral
			yellow	pink	--	--	Alkaline
Phloroglucinol	Dark brown	>300	Brownish	Red	--	--	Neutral
			red	480	9.0	Alkaline	
Pyrogallol	Black	260	Red	Violet	--	--	Neutral
			dec	--	--	Alkaline	
Diacetyl resorcinol dye	Light yellow	214-16	Light	Reddish	--	--	Neutral
			yellow	G.F.	--	--	Alkaline
Dibromo resorcinol dye	Brick red	215	Yellow	Orange:520	6.2	Neutral	
			dec.	redGF:530	8.5	Alkaline	

**TABLE XIII**  
**Dyes derived from 2-(3'-acenaphthoyl)-3-nitro benzoic acid**

Phenols	Colour of dye	m.p. °C	Colour in ethanol		$\lambda_{max}$ (nm)	pH	Medium
			Neutral	Alkaline			
Phenol	Grey	110-12	Light yellow	Pink	500	6.3	Neutral
Resorcinol	Red	309-311	Yellow	Yellowish orange G.F.	530	8.8	Alkaline
Catechol	Blackish brown	>300	Brown	Bluish green	455	5.8	Neutral
Hydroquinone	brown	200-02	Reddish brown	Purple	500	9.0	Alkaline
Phloroglucinol	Light brown	240 dec.	Light brown	Dark brown	--	--	Neutral
Pyrogallol	Black	208-10	Reddish brown	Violet	500	8.6	Alkaline
Diacetyl resorcinol dye	Yellowish white	148-50	Light yellow	Yellowish G.F.	--	--	Neutral
Dibromo resorcinol dye	Brick red	136-38	Yellow	Yellowish orangeGF	530	5.5	Alkaline
					530	9.5	Alkaline

