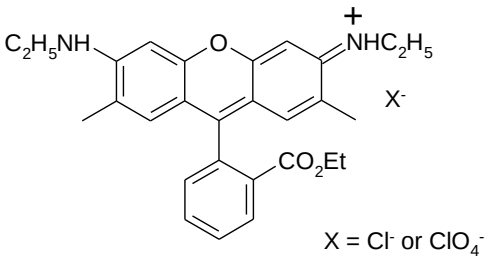
2150 Bixby Road
Lockbourne, OH 43137
Tel: 614.492.5610
E-mail: info.exciton@luxotticaretail.com
www.exciton.luxottica.com

Rhodamine 6G*

Synonym: 2-[6-(ethylamino)-3-(ethylimino)-2,7-dimethyl-3H-xanthen-9-yl]-benzoic acid, ethyl ester, chloride or or perchlorate; Basic Red 1 (Rhodamine 6G = ethyl ester; Rhodamine 590 = methyl ester; to the best of our knowledge, the two esters have equivalent performance)
Catalog No.: 05906 (chloride); 05905 (perchlorate)
CAS No.: 989-38-8 (05906); 13161-28-9 (05905)
MW: 479.02 (05906); 543.01 (05905)
Chemical Formula: $C_{28}H_{31}ClN_2O_3$ (05906); $C_{28}H_{31}N_2O_3.ClO_4$ (05905)
Appearance: Red solid (05906); red to violet (05905)
Molar Absorptivity (in ethanol): 9.70 x 10^4 L $mole^{-1}$ cm^{-1} (chloride form)
Structure:



Laser Dye Catalog No.	Lasing Wavelength Max. (nm)	Range (nm)	Pump Source (nm)	Solvent	Concentration (molar)	Abs λ-max	Fl λ-max
Rhodamine 6G	578	565-612	FL[3]	Methanol	5 x 10^{-5}	530[e]	556[e]
(Available as	584	570-618	FL[3]	Ethanol	5 x 10^{-5}		
the Chloride,	585	562-622	FL[69]	Methanol	4 x 10^{-5}		
Cl, **05906**; the	586	563-625	FL[11]	Methanol	5 x 10^{-5}		
Perchlorate,	590		FL[63]	Methanol	8 x 10^{-5}		
ClO_4, **05905**)	596	577-614	FL[69]	MeOH/H_2O,1/3			
	598	577-625	FL[12]	MeOH/H_2O,1/1	1.3 x 10^{-4}		
		590-610	FL[188]	β-cyclodextrin/H_2O	2.3 x 10^{-4}		
	600		FL[63]	4% LO/H_2O	1.2 x 10^{-4}		
	610	585-633	FL[12]	4% LO/H_2O	1.3 x 10^{-4}		
	606		FL (Triaxial) [227]	Acrylic Copolymer	1 x 10^{-4}		
	580		KrF(248)[44]	Ethanol	1 x 10^{-3}		
	590		KrF(248)[46]	p-Dioxane			
	574	563-615	XeCl(308)[114]	Methanol	1.5 x 10^{-3}		
	580	567-610	XeCl(308)[204]	Ethanol	2.5 x 10^{-3}(osc), 1.8 x 10^{-3}(amp)		
	582	570-616	XeCl(308)[118]	Ethanol	2.5 x 10^{-3}(osc), 3.8 x 10^{-5}(KR620)(amp)		
	583	566-610	XeCl(308)[110]	Methanol	1.5 x 10^{-3}		
	585	570-602	XeCl(308)[110]	Methanol	1 x 10^{-3}		
	591		XeCl(308)[112]	Ethanol	4 x 10^{-3}		
	586	570-614	XeF(351)[154]	Ethanol	5 x 10^{-3}		
	550		Nd:YAG(532)[54]	Methanol	3 x 10^{-4}		
	560	552-580	Nd:YAG(532)[57]	Methanol	2.2 x 10^{-4}(osc), 3.2 x 10^{-5}(amp)		
	562	546-592	Nd:YAG(532)[55]	Methanol			

2150 Bixby Road
Lockbourne, OH 43137
Tel: 614.492.5610
E-mail: info.exciton@luxotticaretail.com
www.exciton.luxottica.com

Laser Dye Catalog No.	Lasing Wavelength Max. (nm)	Range (nm)	Pump Source (nm)	Solvent	Concentration (molar)	Abs λ-max	Fl λ-max
	563	550-590	Nd:YAG(532)[58]	Methanol			
	563	552-584	Nd:YAG(532)[53]	Methanol	120.6mg/l(osc), 51mg/l(amp)		
	564		Nd:YAG(532)[5]	Ethanol	3.7×10^{-4}(osc), 3×10^{-5}(amp)		
	566	556-580	Nd:YAG(532)[110]	Methanol	1×10^{-4}		
	566	559-576	Nd:YAG(532)[239]	Ethanol	1.9×10^{-4}		
	574	563-597	Nd:YAG(355)[110]	Methanol	6×10^{-4}		
	574	563-597	Nd:YAG(355)[239]	Ethanol	8.4×10^{-4}		
	575	556-620	Nd:YAG(d,m-I,QS)[168]	EG			
	575	565-600	Nd:YAG(532)[116]	Ethanol	5×10^{-4}		
	577	567-602	Nd:YAG(355)[109]	Ethanol	2.5×10^{-3}		
	577		Nd:YAG(532,25kHz, 40 watts) [229]	MeOH/H_2O),1/1	1.75×10^{-4}		
	578	566-600	Nd:YAG(532)[110]	Methanol	1×10^{-4}(R590)		
					1.3×10^{-5}(R610)		
	567	557-590	N_2(337)[122]		+C540A		
	576	555-618	N_2(337)[73]	Ethanol			
	579	568-605	N_2(337)[5]	Ethanol	5×10^{-3}		
	585	571-616	N_2(337)[114]	Ethanol	4.2×10^{-3}		
	596	569-635	N_2(337)[90]	Ethanol	5.3×10^{-3}		
	596	575-625	N_2(337)[183]	Methanol	55mg/20ml		
	590	570-650	Ar(458,514)[17]	EG	2×10^{-3}		
	593	573-640	Ar(Blue/Green)[123]	LO/EG,3/1 + COT			
	598	566-640	Ar(458-514)[206]	EG/MeOH,9.5/0.5	2.1×10^{-3}**		
	600	567-657	Ar(cw)[14]	EG			
	602	560-654	Kr(Blue/Green)[68]	MeOH/EG	80% pump absorption		
	567	555-584	Cu(511)[153]	Methanol	4×10^{-4}		
	572	599-606	Cu(511)[153]	Methanol	9.6×10^{-4}		
	572	-564-600-	Cu(511,578)[28]	Ethanol	1×10^{-3}		
	585	563-607	Cu(511)[175]	Methanol	4×10^{-4}		
	590	575-614	Cu(511)[153]	Methanol	8.8×10^{-4}(R590)+ 2.1×10^{-4}(KR620)		

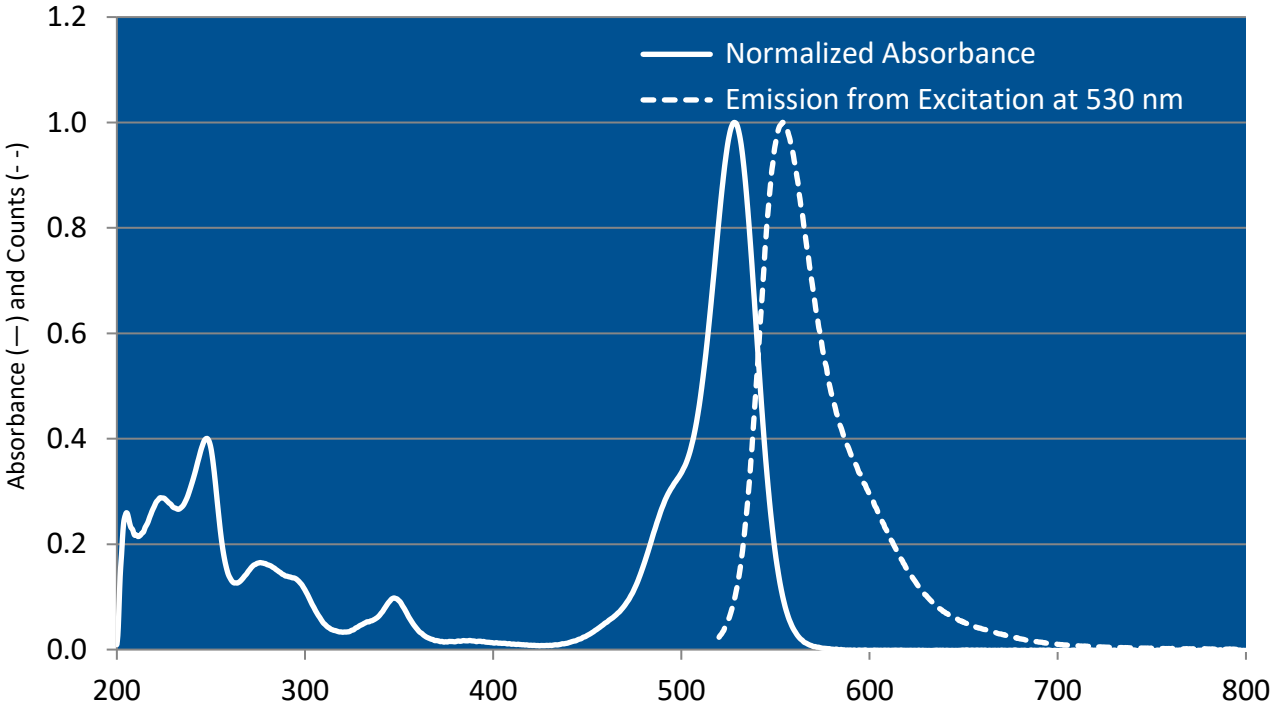
** This represents a maximum value. Concentration should be adjusted to 80-85% absorption of the pump light.

E = Ethanol; EG = Ethylene Glycol; MeOH = Methanol; LO = Ammonyx LO; COT = Cyclooctatetraene

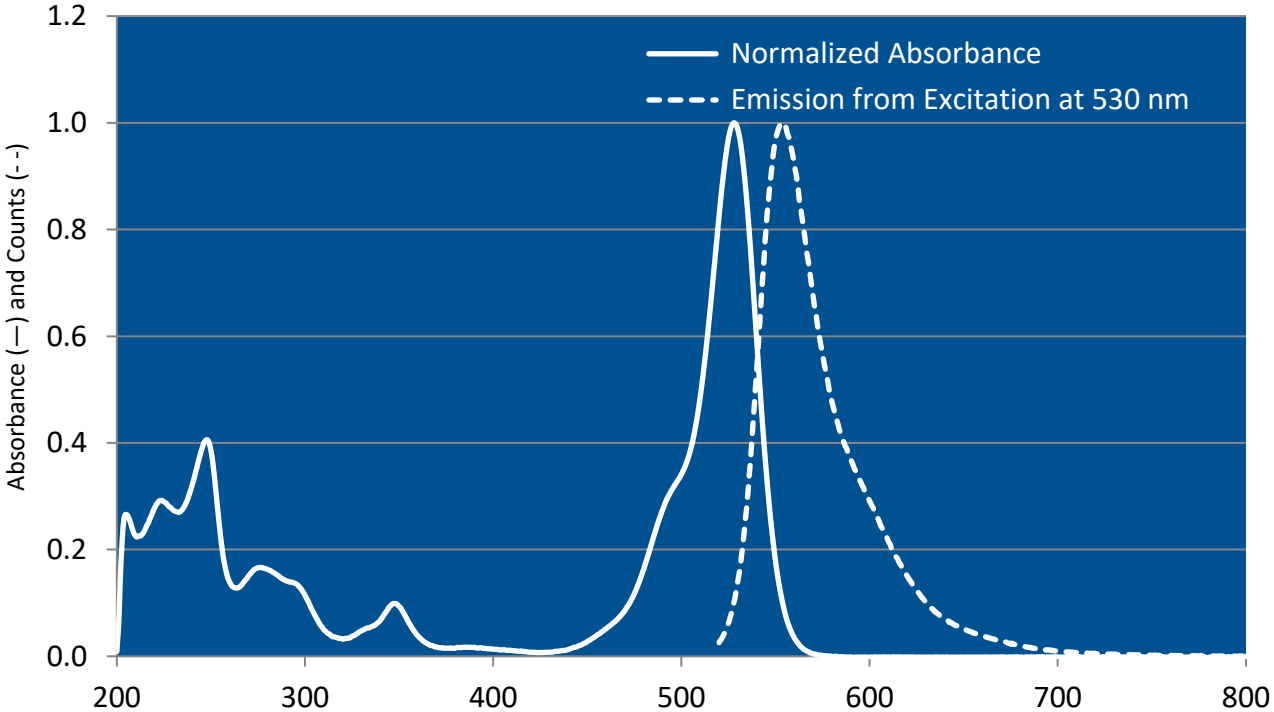
* Equivalent species may be provided or substituted

2150 Bixby Road
Lockbourne, OH 43137
Tel: 614.492.5610
E-mail: info.exciton@luxotticaretail.com
www.exciton.luxottica.com

Rhodamine 6G Chloride in Methanol



Rhodamine 6G Perchlorate in Methanol



2150 Bixby Road
Lockbourne, OH 43137
Tel: 614.492.5610
E-mail: info.exciton@luxotticaretail.com
www.exciton.luxottica.com

REFERENCES:

3. Phase-R Corporation, Box G-2 Old Bay Rd., New Durham, NH 03855
5. Laser Photonics, Inc., 12351 Research Parkway, Orlando, FL 32826, formerly, Molectron Corporation and Cooper LaserSonics, Inc.
11. Lasing Characteristics of Seventeen Visible-Wavelength Dyes using a Coaxial-Flashlamp-Pumped Laser, J.B. Marling, J.H. Hawley, E.M. Liston and W.B. Grant, *Appl. Optics*, 13(10), 2317 (1974). **a**. With Rhodamine 6G
12. Chromatix, 560 Oak Meade Parkway, Sunnyvale, CA 94086
14. CW Laser Emission Spanning the Visible Spectrum, J.M. Yarborough, *Appl. Phys. Lett.*, 24(12), 629 (1974). **a**. With Rhodamine 6G
17. Spectra-Physics, 1250 W. Middlefield Road, Mountain View, CA 94039
28. Efficient, High Average Power Dye Amplifiers Pumped by Copper Vapor Lasers, R.S. Hargrove and T. Kan, *IEEE J. Quantum Electron*., QE13, 28D (1977)
44. Some Characteristics of Efficient Dye Laser Emission Obtained By Pumping at 248 nm with a High-Power KrF* Discharge Laser, V.I. Tomin, A.J. Alcock, W.J. Sarjeant, and K.E. Leopold, *Optics Commun*., 26(3), 396 (1978)
46. Characterization of Dye Laser Pumping Using a High-Power KrF Excimer Laser at 248 nm, T.J. McKee, and D.J. James, to be published September 1979 in *Canadian J. Physics*
53. Continuum, 3150 Central Expressway, Santa Clara, CA 95051, formerly, Quantel International
54. W. R. Green, private commun., 1977
55. A High-Power Dye-Laser Pumped by the Second Harmonic of a Nd-YAG Laser, W. Hartig, *Optics Commun*., 27(3), 447 (1978)
57. Quanta-Ray, Note: Quanta-Ray is now incorporated as a part of Spectra-Physics, 1250 W. Middlefield Road, Mountain View, CA 94039
58. J.K. Lasers Ltd., Somers Road, Rugby, Warwickshire, U. K.
63. High Energy Pulsed Dye Lasers for Atmospheric Sounding, J.Y. Allain, *Appl. Optics*, 18(3), 287 (1979)
68. Coherent Inc., 3210 Porter Dr., Palo Alto, CA 94304
69. Candela Laser Corporation, 530 Boston Post Road, Wayland, MA 01778-1833
73. Laser Dye DCM, Spectral Properties, Synthesis and Comparison with other Dyes in the Red, P.R. Hammond, *Optics Commun*., 29(3), 331 (1979)
90. Jobin Yvon, 16-18 rue du Canal B.P. 118, 91163 Longjumeau Cedex France
109. Tuning Ranges of 355 nm Pumped Dyes from 410-715 nm, D.M. Guthals and J.W. Nibler, *Optics Commun*., 29(3), 322 (1979)
110. Lumonics Inc., 105 Schneider Road, Kanata, (Ottawa), Ontario, Canada K2K 1Y3
112. Efficient Dye Lasers Pumped by an XeCl Excimer Laser, O. Uchino, T. Mizunami, M. Maeda and Y. Miyazoe, *Appl. Phys*., 19, 35 (1979)
114. Optimization of Spectral Coverage in an Eight-Cell Oscillator-Amplifier Dye Laser Pumped at 308nm, F. Bos, *Appl. Optics*, 20, 3553 (1981)
116. Versatile High-Power Single-Longitudinal-Mode Pulsed Dye Laser, F. Bos, *Appl. Optics*, 20(10), 1886 (1981)
118. The XeCl Excimer Laser: A Powerful and Efficient UV Pumping Source for Tunable Dye Lasers, H. Telle, W. Huffer and D. Basting, *Optics Commun.*, 38(5,6), 402 (1981)
122. Increased Gain Through Identification and Alleviation of Dye Self-Absorption in Laser-Pumped Dye Laser, R.E. Drullinger, *Optics Commun*., 39(4), 263 (1981)
123. Powerful Single-Frequency Ring Dye Laser Spanning the Visible Spectrum, T.F. Johnston, Jr., R.H. Brady and W. Proffitt, *Appl. Optics,* 21(13), 2307 (1982)
153. Cooper LaserSonics, Inc. 5674 Sonoma Drive, Pleasanton, CA 94566
154. Dye Laser Radiation in the 370-760nm Region Pumped by a XeF Excimer Laser, T.C. Eschrich and T.J. Morgan, *Applied Optics*, 24(7), 937 (1985)
168. Simple Picosecond Dye Laser System Pumped by a Frequency Doubled, Optically Compressed Q-Switched Mode-Locked Nd:YAG Laser, A.S.L. Gomes and J.R. Taylor, *Optics Commun*., 55(6), 435 (1985)
175. CVL-Pumped Dye Laser For Spectroscopic Application, M. Broyer, J. Chevaleyre, G. Delacretaz and L. Wöste, *App. Phys. B*, 35, 31 (1984)
183. Laser Science, Inc., 26 Landsdowne Street, Cambridge, MA 02139
188. Effect of Cyclodextrins and Water-Soluble Polymers on the Spectroscopic and Lasing Properties of Rhodamine 6G, M.M. Asimov, V.P. Chuev, S.N. Kovalenko, V.M. Nikitchenko and A.N. Rubinov, *Opt. Spectrosc. (USSR)*, 70(3), 320 (1991)
204. Questek, Inc., 44 Manning Road, Billerica, MA 01821 (Tuning Curves for Model 5200B Dye Laser, PDL-3)
206. Coherent Inc., 3210 Porter Dr., Palo Alto, CA 94304; (599 Composite Tuning Curves, 1992; The concentration shown represents a maximum value. The final concentration should be adjusted to obtain 80-85% absorption of the pump light.)
227. Progress in Solid State Dye Laser Development, R.E. Hermes, Proceedings of the Int. Conf. on Lasers '90, STS Press, (1991)
229. Continuous-wave Dye Lasers in the DCM Region, P. Hammond and D. Cooke, Appl. Optics 31(33), 7095 (1992)

2150 Bixby Road
Lockbourne, OH 43137
Tel: 614.492.5610
E-mail: info.exciton@luxotticaretail.com
www.exciton.luxottica.com

239. P. Jauernik, private commun., Sirah Laser- und Plasmatechnik, 2003.

For a current list of biology, biological stain, or biochemistry references for Rhodamine 590 from PubMed, click on the following link: Rhodamine 590 or Rhodamine 6G