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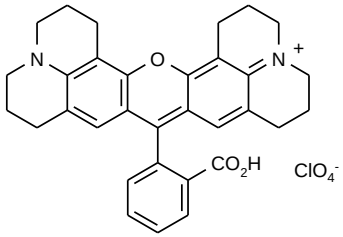
RHODAMINE 640 PERCHLORATE

Synonym: 9-(2-carboxyphenyl)-2,3,6,7,12,13,16,17-octahydro-1H,5H,11H,15H,-xantheno[2,3,4-ij:5,6,7-i'j']-diquinolizin-4-ium perchlorate; Rhodamine 101
Catalog No.: 06400
CAS No.: 72102-91-1 **MW:** 591.05
Chemical Formula: $C_{32}H_{31}N_2O_3.ClO_4$
Appearance: Dark green crystals with bronze sheen
Molar absorptivity (at 567nm): 10.50 x 10^4 L $mole^{-1}$ cm^{-1}
Structure:



Lasing Wavelength

Max. (nm)	Range (nm)	Pump Source (nm)	Solvent	Concentration (molar)	Abs λ-max	Fl λ-max
630		FL[27]	Ethanol(basic)		575(a)[m]	594[m]
635	610-670	FL[69]	Methanol	4 x 10^{-5}		
640		FL[27]	Ethanol(acidic)			
642	627-657	FL[69]	Methanol			
643	623-657	FL[3]	Ethanol	1 x 10^{-4}		
650		FL[63]	Methanol	1.2 x 10^{-4}		
652	620-687	FL[12]	MeOH/H_2O,3/2	1.1 x 10^{-4}		
618	608-668	XeCl(308)[114]	Ethanol	1.3 x 10^{-3}		
623	613-672	XeCl(308)[118]	Ethanol	1.2 x 10^{-3}(osc)		
625	610-673	XeCl(308)[204]	Methanol	1.25 x 10^{-3}(osc), 7 x 10^{-4}(amp)		
602	589-623	Nd:YAG(532)[55]				
603	598-626	Nd:YAG(532)[57]	Methanol	2.4 x 10^{-4}(osc), 3.2 x 10^{-5}(amp)		
605	594-629	Nd:YAG(532)[53]	Methanol	R640(3.6x10^{-5}) + R610(7.9x10^{-5})(osc), R640(1.8x10^{-5}) + R610(3.9x10^{-5})(amp)		
611		Nd:YAG(532)[54]	Methanol	5 x 10^{-4}		
612	598-640	Nd:YAG(532)[58]				
613	605-630	Nd:YAG(532)[53]	Methanol	3.6 x 10^{-4}(osc), 1.9 x 10^{-4}(amp)		
619	607-640	Nd:YAG(532)[110]	Methanol	2.5 x 10^{-4}		
620	608-668	Nd:YAG(532)[116]	Ethanol	5 x 10^{-4}		
624	614-662	Nd:YAG(532)[239]	Ethanol	4.2 x 10^{-4}		
630	621-674	Nd:YAG(355)[239]	Ethanol	8.5 x 10^{-4}		
650	620-680	Nd:YAG(355)[109]	MeOH/H_2O,3/2	3.5 x 10^{-3}		
640	620-680	N_2(337)[30]	Ethanol	5 x 10^{-3}		
644	620-673	N_2(337)[50]	Ethanol	5.7 x 10^{-3}		
652	620-678	N_2(337)[114]	Ethanol	5.1 x 10^{-3}		
653	625-680	N_2(337)[183]	Methanol	60mg/20ml		

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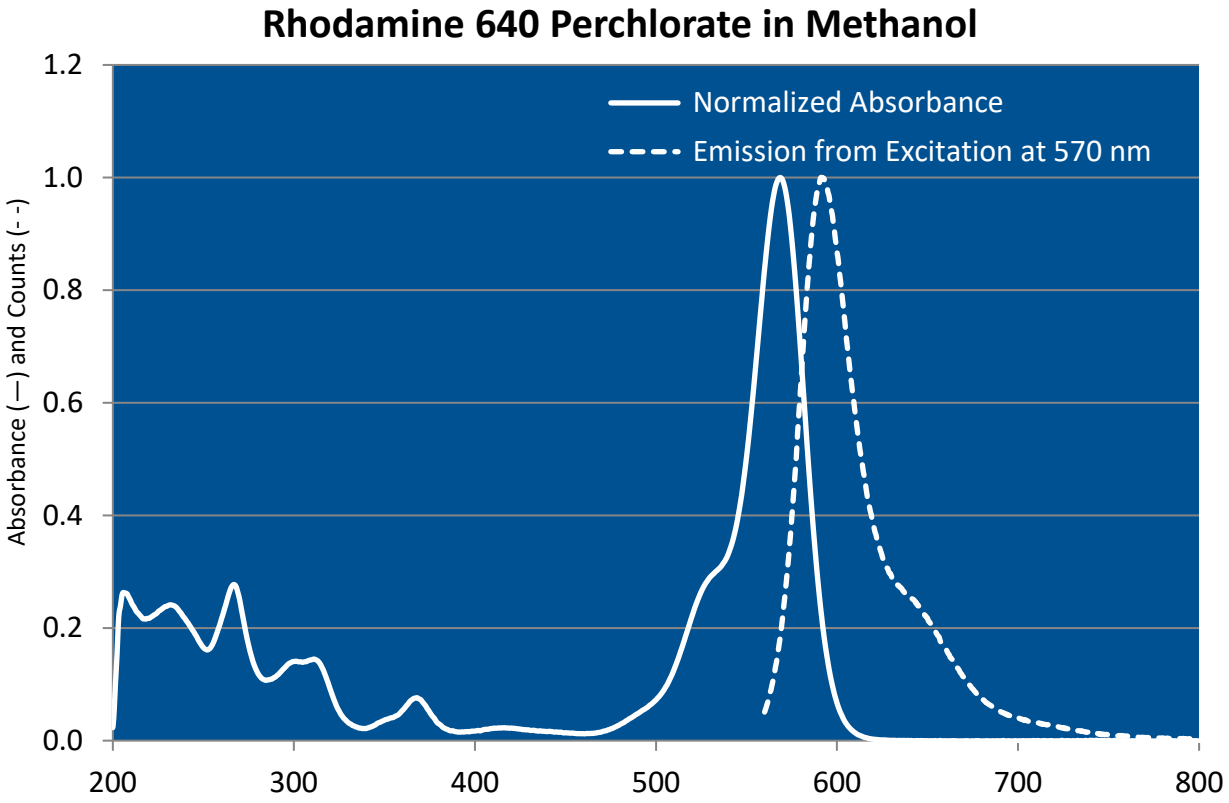
659	626-700	$N_2(337)$[90]	Ethanol	5×10^{-3}
671	634-704	$N_2(337)$[73]	DMSO + HCl	
645	620-690	Ar(458-514)[17]	EG	1.5×10^{-3}(R640), 1.5×10^{-3}(R590)
648	608-710	Ar or Kr(568)[68]	MeOH/EG,1/7.5	80% pump absorption
652	624-675	Ar(vis)[87]	EG	2×10^{-3}(R640), 1×10^{-3}(R590)
616	605-633	Cu(511,578)[153]	Methanol	1×10^{-3}
630	607-659	Cu(511,578)[175]	Methanol	

DMSO = Dimethylsulfoxide; EG = Ethylene glycol; HCI = Hydrochloric acid; MeOH/H_2O = Methanol/water; m = methanol



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Quantum Yields and Lifetimes

Absorbance (nm)	Emission (nm)	Quantum Yield (max = 1.0)	Solvent	Lifetime (ns)	References, Notes
		1	Ethanol	5.3	R-2(16)
			Ethanol	4.6	R-2
	588	0.96	Basic Ethanol		R-8
		Fluorescent quantum yield relative to QSH (ff 0.55) at 25 degrees C; 1.34×10^{-7}M			
	585-665	0.913	Ethanol		S-4
		1	Methanol	4.9	R-2

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For a current list of biology, biological stain, or biochemistry references for Rhodamine 640 from PubMed, click on the following link:

Rhodamine 640 or Rhodamine 101 (all references are listed under Rhodamine 101 in PubMed as of May 2006)