

# Properties of ATTO-Dyes

Label	$\lambda_{\text{abs}}$ , nm	$\epsilon_{\text{max}}$ , M <sup>-1</sup> cm <sup>-1</sup>	$\lambda_{\text{fl}}$ , nm	$\eta_{\text{fl}}$ , %	$\tau_{\text{fl}}$ , ns	CF <sub>260</sub>	CF <sub>280</sub>	MW, g/mol (NHS-ester)	MW, g/mol (Maleimide)	$\Delta m$ (NHS- ester : amine)	$\Delta m$ (maleimide : thiol)	$\Delta q$
ATTO 390	390	24000	479	90	5.0	0.52	0.08	440	465	325.4	465.5	0
ATTO 425	436	45000	484	90	3.6	0.27	0.23	498	524	383.4	523.6	0
ATTO 465	453	75000	508	75	5.0	1.12	0.54	493	518	278.4	418.5	+ 1
ATTO 488	501	90000	523	80	4.1	0.25	0.10	981	1067	570.6	710.7	- 1
ATTO 495	495	80000	527	70	1.0	0.57	0.39	1111	989	334.4	474.6	+ 1
ATTO 514	511	115000	533	85	3,9	0.21	0.08	549	574	734.6	874.7	- 1
ATTO 520	516	110000	538	90	3.6	0.13	0.18	564	589	349.5	489.6	+1
ATTO 532	532	115000	553	90	3.8	0.22	0.11	1081	1063	626.7	766.8	- 1
ATTO Rho6G	535	115000	560	90	4.1	0.22	0.19	711	749	496.6	636.7	+ 1
ATTO 540Q	542	105000				0.22	0.24	756	781	541.6	681.8	+ 1
ATTO 550	554	120000	576	80	3.6	0.24	0.12	791	816	576.8	716.9	+ 1
ATTO 565	563	120000	592	90	4.0	0.34	0.16	708	733	492.6	632.7	+ 1
ATTO Rho3B	565	120000	592	50	1.5	0.28	0.14	739	764	524.7	664.8	+ 1
ATTO Rho11	571	120000	595	80	4.0	0.25	0.09	763	788	548.7	688.8	+ 1
ATTO Rho12	576	120000	601	80	4.0	0.27	0.09	847	872	632.9	773.0	+ 1
ATTO Thio12	579	110000	609	15	2.0	0.10	0.37	699	724	484.6	624.8	+ 1
ATTO 580Q	586	110000				0.36	0.13	787	812	677.9	818.0	+ 1
ATTO Rho101	586	120000	610	80	4.2	0.24	0.19	892	917	572.7	712.9	+ 1
ATTO 590	594	120000	624	80	3.7	0.42	0.44	788	813	572.7	712.8	+ 1
ATTO Rho13	600	120000	625	80	3.9	0.38	0.44	843	867	628.8	769.0	+ 1
ATTO 594	601	120000	627	85	3.9	0.26	0.51	1389	1358	786.9	927.1	- 1
ATTO 610	615	150000	634	70	3.2	0.02	0.05	588	613	373.5	513.7	+ 1
ATTO 612Q	615	115000				0.35	0.57	888	913	673.8	814.0	+ 1
ATTO 620	619	120000	643	50	2.9	0.05	0.07	709	734	494.7	634.8	+ 1
ATTO Rho14	625	140000	646	80	3.7	0.29	0.46	981	1019	766.6	906.8	+ 1
ATTO 633	629	130000	657	64	3.3	0.05	0.06	749	774	534.7	674.9	+ 1
ATTO 647	645	120000	669	20	2.4	0.08	0.04	811	828	574.8	714.9	0
ATTO 647N	644	150000	669	65	3.5	0.06	0.05	843	868	628.9	769.0	+ 1
ATTO 655	663	125000	684	30	1.8	0.24	0.08	887	812	509.6	649.8	0
ATTO Oxa12	663	125000	684	30	1.8	0.24	0.08	835	874	621.9	762.0	+ 1
ATTO 665	663	160000	684	60	2.9	0.07	0.06	820	845	605.7	745.9	+ 1
ATTO 680	680	125000	700	30	1.7	0.30	0.17	828	1024	507.6	647.8	0
ATTO 700	700	120000	719	25	1.6	0.26	0.41	837	971	547.7	687.8	0
ATTO 725	729	120000	752	10	0.5	0.10	0.08	613	638	398.5	538.7	+ 1
ATTO 740	740	120000	764	10	0.6	0.11	0.10	665	690	450.6	590.8	+ 1
ATTO MB2	658	100000				0.11	0.28	553	591	338.4	478.5	+ 1

$\lambda_{\text{abs}}$	longest-wavelength absorption maximum
$\epsilon_{\text{max}}$	molar decadic extinction coefficient at the longest-wavelength absorption maximum
$\lambda_{\text{fl}}$	fluorescence maximum
$\eta_{\text{fl}}$	fluorescence quantum yield
$\tau_{\text{fl}}$	fluorescence decay time

CF <sub>260</sub>	CF <sub>260</sub> = $\epsilon_{260}/\epsilon_{\text{max}}$ : Correction factor used in calculation of degree of labeling (DOL) in case of dye-DNA conjugates
CF <sub>280</sub>	CF <sub>280</sub> = $\epsilon_{280}/\epsilon_{\text{max}}$ : Correction factor used in calculation of degree of labeling (DOL) in case of dye-protein conjugates
MW	molecular weight
$\Delta m$	increase of molecular mass on conjugation with ATTO-label
$\Delta q$	change of electrical charge on conjugation with ATTO-label

Solvent:  
Phosphate Buffered Saline (PBS), pH 7.4.