

eFluor® Organic Dyes

Optimized for Flow Cytometry

eFluor® is the eBioscience brand of fluorochromes for labeling and detection of biomolecules. eFluor Organic Dyes is a proprietary line of fluorescent dyes within the eFluor brand engineered for superior optical performance and detection for applications using laser-based systems, notably flow cytometry. Our eFluor Organic Dyes include four dyes compatible with commonly used laser lines available on standard flow cytometers:

eFluor 450—an organic dye excited with a UV (355 nm) or violet (405 nm) laser; a direct alternative to other 450 nm emitting dyes.

PerCP-eFluor 710—a tandem dye excited with the blue (488 nm) laser; two to three-fold brighter than PerCP-Cy5.5.

eFluor 660—an organic dye excited with the red (633 nm) laser; an alternative dye option to APC or Alexa Fluor® 647.

APC-eFluor 780—a tandem dye excited by the red (633 nm) laser; replaces APC-Alexa Fluor® 750 in the eBioscience portfolio.

All eFluor products are named for their emission wavelength and the Organic Dyes are fully compatible with protein-based dyes, other organic dyes and eFluor Nanocrystal reagents. These features, combined with our broad portfolio of biological content, easily enables dye selection for optimized multicolor antibody panel design for flow cytometry.

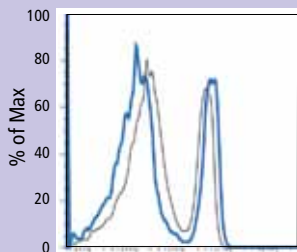
FEATURING

- eFluor® 450
- PerCP-eFluor® 710
- eFluor® 660
- APC-eFluor® 780

eFluor®
ORGANIC DYES

Violet Laser 405 nm

eFluor® 450

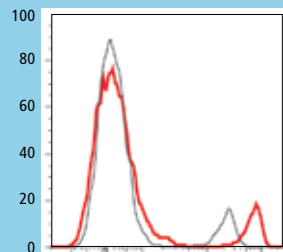


CD4 (clone RM4-5)

Mouse splenocytes stained with Anti-CD4 (clone RM4-5) conjugated to eFluor® 450 (—BLUE) or Pacific Blue® (—GRAY)

Blue Laser 488 nm

PerCP-eFluor® 710

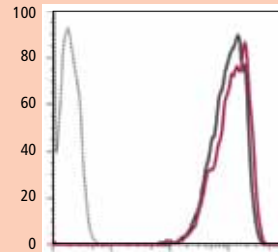


CD8 (clone 53-6.7)

Mouse splenocytes stained with Anti-CD8 (clone 53-6.7) conjugated to PerCP-eFluor® 710 (—RED) or PerCP-Cy5.5 (—BLACK)

Red Laser 630-640 nm

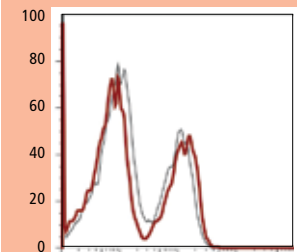
eFluor® 660



CD36 (clone NL07)

Human monocytes stained with Anti-CD36 (clone NL07) conjugated to eFluor® 660 (—RED) or Alexa Fluor® 647 (—GRAY). Isotype control staining is shown with the gray dotted line.

APC-eFluor® 780



CD3 (clone 17A2)

Mouse splenocytes stained with Anti-CD3 (clone 17A2) conjugated to APC-eFluor® 780 (—RED) or APC-Alexa Fluor® 750 (—GRAY)

Alternative for:

Pacific Blue®
VioBlue®
BD Horizon™ V450
Brilliant Violet™ 421

PerCP-Cy5.5
PE-Cy5.5

Alexa Fluor® 647
APC

APC-Alexa Fluor® 750
APC-H7
APC-Cy7

Mouse Conjugated Antibodies

Description	Clone	Cat No.	Violet Laser	Blue Laser	Red Laser	
			eFluor® 450	PerCP-eFluor® 710	eFluor® 660	APC-eFluor® 780
Aiolos	8B2	5789			•	
Allergin-1	TX83	5926			•	
β-Catenin	15B8	2567			•	
CD3e	145-2C11	0031	•			•
CD4	GK1.5	0041	•	•	•	•
CD8b	eBioH35-17.2	0083	•	•		
CD11a	M17/4	0111	•	•		
CD11b	M17/70	0112	•		•	•
CD11c	N418	0114	•		•	•
CD14	Sa2-8	0141		•		
CD19	eBio1D3	0193	•		•	•
CD21/CD35	eBio4E3	0212	•	•		
CD21/CD35	eBio8D9	0211				•
CD23	B3B4	0232	•	•	•	
CD24	M1/69	0242	•	•		•
CD25	eBio7D4	0252			•	
CD27	LG.7F9	0271		•		•
CD29 (Integrin β1)	eBioHMB1-1	0291	•	•		•
CD36	No.72-1	0361		•		
CD38	90	0381	•	•		
CD39	24DMS1	0391		•	•	
CD41	eBioMWReg30	0411	•	•		
CD45.2	104	0454	•			•
CD45R (B220)	RA3-6B2	0452	•	•	•	•
CD48	HM48-1	0481	•	•		
CD49b (Integrin α2)	DX5	5971	•	•		•
CD49d (Integrin α4)	R1-2	0492		•		
CD49f (Integrin α6)	eBioGoH3	0495	•	•		
CD69	H1.2F3	0691	•			
CD71 (Transferrin Receptor)	R17217	0711		•		
CD73	eBioTY/11.8	0731	•	•		
CD79a	24C2.5	0791			•	
CD79a	HM47	0792		•		•
CD94	18d3	0941	•			
CD106 (VCAM-1)	429	1061	•		•	
CD107a (LAMP-1)	eBio1D4B	1071	•	•	•	
CD107b (LAMP-2)	eBioABL-93	1072	•		•	
CD122	TM-β1	1222	•	•		
CD127	A7R34	1271	•		•	•
CD135 (Flt3)	A2F10	1351		•		
CD144 (VE-Cadherin)	eBioBV13	1441	•	•	•	
CD160	CNX46-3	1601			•	
CD172a (SIRP α)	P84	1721		•		
CD178 (Fas Ligand)	MFL3	5911		•		
CD185 (CXCR5)	SPRCL5	7185		•		
CD195 (CCR5)	HM-CCR5 (7A4)	1951		•		
CD196 (CCR6)	sirx6	7196			•	
CD199 (CCR9)	eBioCW-1.2	1991	•	•		
CD200	OX90	5200		•	•	
CD200 Receptor	OX110	5201		•		
CD201 (EPCR)	eBio1560	2012		•		
CD207 (Langerin)	RMUL2	2073			•	
CD209a (DC-SIGN)	MMD3	2094			•	
CD223 (Lag-3)	eBioC9B7W	2231	•	•		
CD278 (ICOS)	15F9	9940		•		
CD279 (PD-1)	J43	9985		•		
CD279 (PD-1)	RMP1-30	9981	•	•		
CD282 (TLR2)	6C2	9021			•	
CD282 (TLR2)	T2.5	9024	•	•	•	
CD326 (EpCAM)	G8.8	5791	•	•		
Clec9A	42D2	5975		•		
CXCL1 (GRO α)	W3ZLCXC	7519			•	
CXCL9 (MIG)	MIG-2F5.5	3009			•	
Endomucin	eBioV.7C7	5851		•	•	
F4/80 Antigen	BM8	4801	•	•	•	•

Mouse Conjugated Antibodies

Description	Clone	Cat No.	Violet Laser	Blue Laser	Red Laser	
			eFluor® 450	PerCP-eFluor® 710	eFluor® 660	APC-eFluor® 780
Foxp3	FJK-16s	5773	•		•	
Galectin-3	eBioM3/38	5301			•	
Gata-3	TWAI	9966		•	•	
GL7 (T and B Cell Activation Marker)	GL-7	5902			•	
gp49 Receptor	H1.1	5784			•	
Granzyme B	NGZB	8898	•	•	•	
IFN γ	XMG1.2	7311	•		•	
IgM	II/41	5790	•	•		
IκB ζ	LK2NAP	6801		•		
IL-9	RM9A4	8091			•	
IL-13	eBio13A	7133	•	•		
IL-15 Receptor α	DNT15Ra	7149		•		
IL-17A	eBio17B7	7177	•	•	•	
IL-17F	eBio18F10	7471		•	•	
IL-21	mhalx21	7213		•	•	
IL-27 p28	MM27-7B1	7285		•		
Jagged 2	HMJ2-1	3392			•	
Ki-67	SoLA15	5698	•	•		
KLRG1	2F1	5893	•	•		
LAP (Latency Associated Peptide)	TW7-16B4	9821		•		
Ly-6C	HK1.4	5932	•			
MHC Class I (H-2Kb)	AF6-88.5.5.3	5958	•	•		
MHC Class I (H-2Kd)	SF1-1.1.1	5957	•	•		
MHC Class I H-2Dd	34-2-12	5947		•		
MHC Class II (I-Ak)	10-3.6	5933		•		
MHC Class II (I-Ak α)	11-5.2	5324		•		
NK1.1	PK136	5941	•			•
NKG2A/C/E	20d5	5896		•		
Podoplanin	eBio8.1.1	5381			•	
ROR γ (t)	B2D	6981		•		
Siglec H	eBio440c	0333		•	•	
SSEA-1	eBioMC-480	8813		•	•	
TCR β	H57-597	5961	•	•		•
TIGIT	GIGD7	9501		•	•	
TL1A	Tandys1a	7911		•		
TNF α	TN3-19	7423			•	
V α2 TCR	B20.1	5812	•	•		•
V α3.2 TCR	RR3-16	5799		•		
V β5.1/5.2 TCR	MR9-4	5796		•		
V β6 TCR	RR4-7	5795		•		
V β9 TCR	MR10-2	5823	•			
V β11 TCR	RR3-15	5827		•		
V β12 TCR	MR11-1	5798		•		
V β13 TCR	MR12-3	5797		•		
V β4 TCR	GL2	5702			•	

Support Antibodies

Description	Clone	Cat No.	Violet Laser	Blue Laser	Red Laser	
			eFluor® 450	PerCP-eFluor® 710	eFluor® 660	APC-eFluor® 780
Anti-BrdU	BU20A	5071		•		
Anti-FITC	FITC-9	3300			•	
Anti-GFP	5F12.4	6498		•	•	

Human Conjugated Antibodies

Description	Clone	Cat. No.	Laser			
			Violet Laser	Blue Laser	Red Laser	
			eFluor® 450	PerCP-eFluor® 710	eFluor® 660	APC-eFluor® 780
CD1a	HI149	0019	•	•	•	
CD1d	51.1	0016		•		
CD3	SK7	0036	•	•		•
CD4	OKT4	0048	•			•
CD4	SK3	0047	•	•		•
CD7	eBio124-1D1	0079	•			
CD8a	SK1	0087	•	•		•
CD8b	SID18BEE	5273			•	
CD11b	ICRF44	0118		•		•
CD11c	3.9	0116	•	•		
CD11c	BU15	0128				•
CD15	MMA	0158	•	•		
CD16	CB16	0168	•	•		•
CD19	SJ25C1	0198	•	•		•
CD20	L26	0202			•	
CD23	EBVCS2	0238	•			•
CD24	eBioSN3	0247	•	•		•
CD27	O323	0279	•	•		•
CD28	CD28.2	0289	•			
CD31 (PECAM-1)	WM-59	0319	•	•		•
CD32	6C4	0329		•		
CD34	4H11	0349	•	•		•
CD36	eBioNL07	0369		•	•	
CD38	HB7	0388	•	•		
CD38	HIT2	0389	•			•
CD40	5C3	0409	•	•		
CD41a	HIP8	0419	•	•		
CD42a	GR-P	0428	•			
CD45	HI30	0459	•	•		•
CD45R (B220)	RA3-6B2	0452	•	•	•	•
CD45RA	GRT22	0468		•		
CD45RA	HI100	0458	•			•
CD45RB	PD7/26	9458			•	
CD45RO	UCHL1	0457	•	•		
CD49f (Integrin α6)	eBioGoH3	0495	•	•		
CD56 (NCAM)	CMSSB	0567		•		•
CD62L (L-Selectin)	DREG-56	0629	•	•		•
CD73	AD2	0739	•	•		
CD74	VIC-Y1	0747			•	
CD79a	HM47	0792		•		•
CD85d (ILT4)	42D1	5149		•		
CD85j (ILT2)	HP-F1	5129		•		
CD85k (ILT3)	ZM4.1	5139		•		
CD103 (Integrin αE)	Ber-ACT8	1037		•		
CD104 (Integrin β4)	439-9B	1049			•	
CD105 (Endoglin)	SN6	1057	•			
CD107a (LAMP-1)	eBioH4A3	1079			•	
CD114 (G-CSFR)	LMM741	1149		•		
CD117 (c-Kit)	104D2	1178	•	•		
CD123	7G3	1238	•	•		
CD127	eBioRDR5	1278	•		•	•
CD144 (VE-Cadherin)	16B1	1449		•		
CD154 (CD40 Ligand)	24-31	1548	•	•		•
CD158a	HP-MA4	1589	•			
CD161	HP-3G10	1619	•			
CD162 (PSGL-1)	FLEG	1629		•		
CD166 (ALCAM)	3A6	1668		•		
CD172a (SIRP α)	15-414	1729		•		
CD182 (CXCR2)	ebio5E8-C7-F10	1829		•		
CD197 (CCR7)	3D12	1979		•		•
CD206 (MMR)	19.2	2069	•	•		

Human Conjugated Antibodies

Description	Clone	Cat. No.	Laser			
			Violet Laser	Blue Laser	Red Laser	
			eFluor® 450	PerCP-eFluor® 710	eFluor® 660	APC-eFluor® 780
CD229 (Ly-9)	HLy9.25	2299		•		
CD243 (ABCB1)	UIC2	2439		•		
CD274 (B7-H1)	MIH1	5983		•		
CD278 (ICOS)	ISA-3	9948	•	•		
CD279 (PD-1)	MIH4	9969		•		
CD282 (TLR2)	T2.5	9024	•		•	
CD294 (CRTH2)	BM16	2949			•	
CD300c	TX45	3006			•	
CD303a	201A	9818		•		
Bcl-6	BCL-UP	9880		•		
β-Catenin	15B8	2567			•	
c-ErbB3/HER3	SGP1	6555		•		
CX3CR1	2A9-1	6099		•		
Eomes	WD1928	4877	•		•	
Foxp3	150D/E4	4774			•	
Galectin-3	eBioM3/38	5301			•	
GARP	G14D9	9882		•	•	
Gata-3	TWAJ	9966		•	•	
GL7 (T and B Cell Activation Marker)	GL-7	5902			•	
Glycophorin A (M)	6A7M	9884	•			
Glycoprotein VI	HY101	9813			•	
GM-CSF	GM2F3	7356			•	
HLA-ABC	W6/32	9983		•		
IFN γ	4S.B3	7319	•	•	•	•
Ig kappa Light Chain	TB28-2	9970	•	•		
Ig lambda Light Chain	1-155-2	9990	•	•		
IL-6	MQ2-13A5	7069		•		
IL-8	8CH	8088	•	•		
IL-9	MH9A4	7097			•	
IL-10	JES3-9D7	7108	•		•	
IL-12 p35	SNKY35	7359			•	
IL-12/IL-23 p40	C8.6	7129	•		•	
IL-12/IL-23 p40	C17.8	7123	•		•	
IL-17A	eBio64DEC17	7179	•		•	•
IL-17AF	20LJS09	9179	•		•	
IL-22	22URTI	7229	•	•	•	
IL-27 EB13	ebic6	7358		•		
IL-27 p28	3D1p28	8277			•	
Ki-67	20Raj1	5699	•	•		
Myeloperoxidase (MPO)	MPO455-8E6	1299	•			
Podoplanin	NZ-1.3	9381		•		
SSEA-1	eBioMC-480	8813		•	•	
TIGIT	MBSA43	9500		•		
TIM3	F38-2E2	3109	•	•		
TL1A	Tandys1a	7911		•		
TRA-1-60 (Podocalyxin)	TRA-1-60	8863		•		
TSLP Receptor	1A6	5499		•		

To view the complete eFluor® product portfolio, visit www.eBioscience.com

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eFluor® 450

Excitation: Violet (405 nm) laser

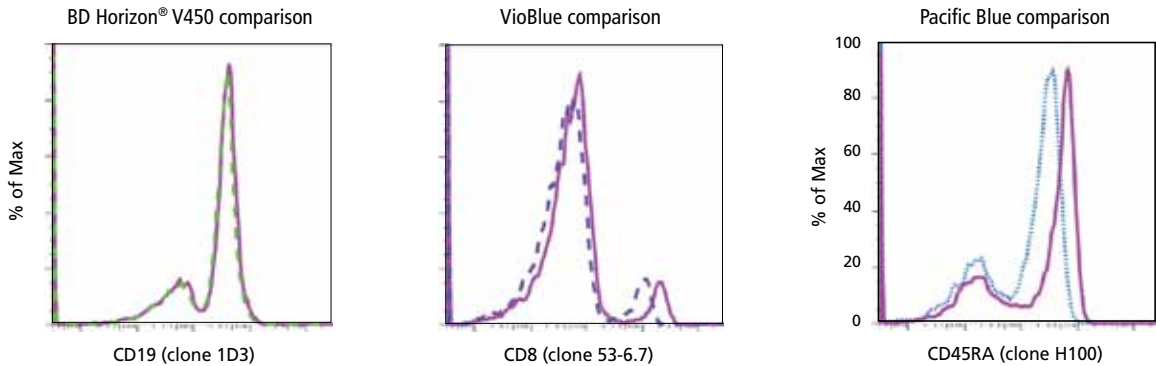
Emission Peak: 450 nm

Band Pass Filter: 450/50 nm

The eFluor® 450 organic dye was developed to provide a high performance fluorochrome for flow cytometry as a competitive alternative for Pacific Blue™, BD Horizon™ V450 and VioBlue®. Stability data shows eFluor 450 performs equally as bright, with a minimal loss of fluorescence, when cells are exposed to an aldehyde fixative treatment for up to 24 hours. Benefits of eFluor 450 include:

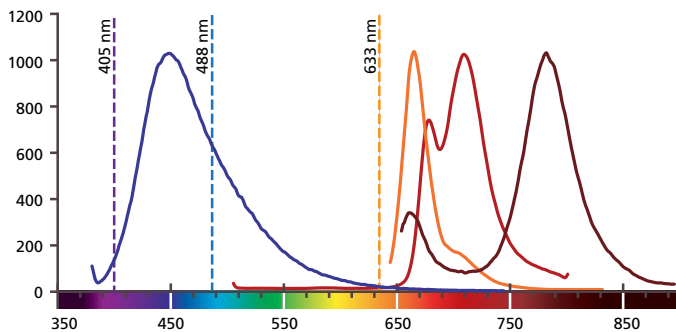
- Equal or better fluorescence intensity as compared to several UV and violet-excited dyes
- Stable performance when treated with aldehyde fixation
- Broad fluorophore options to extend multi-color panel design to the violet laser

eFluor® 450 compared with other 450 nm emitting dyes



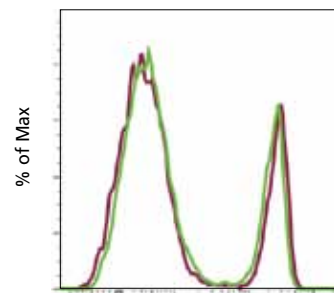
Mouse splenocytes stained with Anti-CD19 (clone 1D3) conjugated to eFluor 450 (—PURPLE) or BD Horizon® V450 (--GREEN left panel). Mouse splenocytes stained with Anti-CD8 (clone 53-6.7) conjugated to eFluor 450 (—PURPLE) or VioBlue (--BLUE middle panel). Human PBMCs stained with Anti-CD45RA (clone H100) conjugated to eFluor 450 (—PURPLE) or Pacific Blue® (--BLUE right panel).

eFluor® Organic Dye Emission Spectra



— (VIOLET) eFluor 450, — (RED) PerCP-eFluor 710
— (ORANGE) eFluor 660, — (DARK RED) APC-eFluor 780

Stability of eFluor® 450



CD4 (clone RM4-5) eFluor® 450

Mouse splenocytes stained with Anti-CD4 eFluor® 450 and analyzed immediately (— RED). The sample was then fixed in 2% paraformaldehyde overnight at 4°C (— GREEN) and analyzed again.

PerCP-eFluor® 710

Excitation: Blue (488 nm) laser

Emission Peak: 710 nm

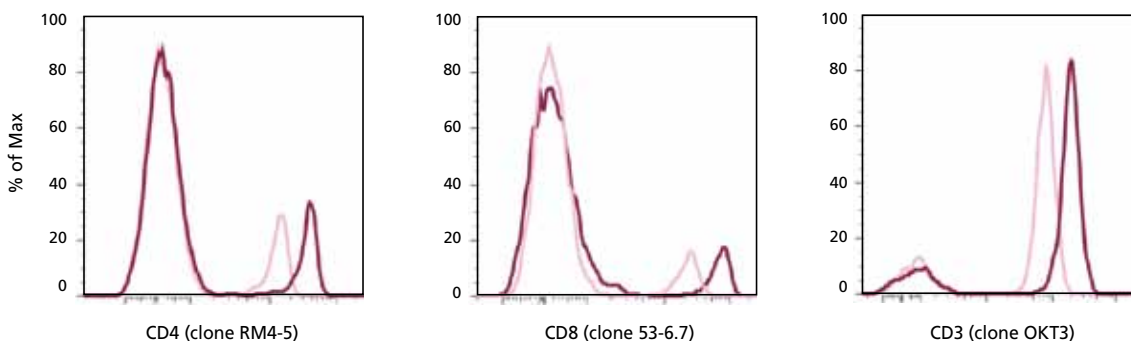
Band Pass Filter: 710/50
(695/40 acceptable)

The PerCP-eFluor® 710 tandem dye was developed as an optimal choice for the FL3 channel on a blue laser line. The benefits of PerCP-eFluor 710 include:

- Greater mean fluorescence intensity (MFI) as compared to PerCP-Cy5.5
- No need for compensation out of the PE detector
- Uses the same filter set as PerCP-Cy5.5 and PE-Cy5.5
- Stable performance when treated with aldehyde fixation or exposed to ambient light

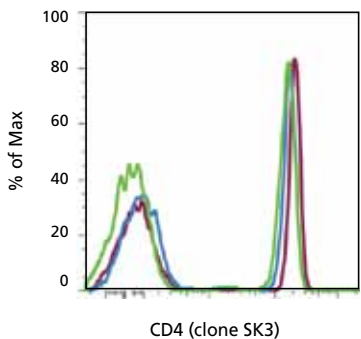
PerCP-eFluor 710 is consistently two to three times brighter than PerCP-Cy5.5 when evaluated in clone to clone comparison tests on identical samples. In contrast to the PE-Cy5.5 tandem, PerCP-eFluor 710 does not exhibit fluorescence spillover into the PE detector and therefore requires no compensation out of that detector. Although PerCP-eFluor 710 is slightly red-shifted in its emission compared to PerCP-Cy5.5 (710 nm compared to 685 nm), it uses the same filter sets as those recommended for PerCP-Cy5.5 and PE-Cy5.5 detection. Stability testing of PerCP-eFluor 710 conjugates indicate stability as evidenced by minimal effects on compensation.

PerCP-eFluor® 710 exhibits a significant increase in MFI compared to PerCP-Cy5.5



Anti-mouse CD4 (clone RM4-5), Anti-mouse CD8 (clone 53-6.7), and Anti-human CD3 (clone OKT3) conjugated to either PerCP-eFluor® 710 (—RED) or PerCP-Cy5.5 (—PINK) for direct comparison. Mouse splenocytes were stained with Anti-CD4 (left panel) or Anti-CD8 (middle panel). Human PBMCs were stained with Anti-CD3 (right panel).

PerCP-eFluor® 710 is minimally affected by fixation or light exposure



Compensation Values

- % PerCP-eFluor® 710 signal

Detector	Fresh cells	6 hours-ambient light exposure	2% paraformaldehyde fixation
PE-Cy7	16.2	16.5	16
Alexa Fluor® 700	10.2	10.4	10.5
APC-eFluor® 780	4.6	4.9	4.8

Human PBMCs were stained with Anti-CD4 PerCP-eFluor® 710 and analyzed immediately (—RED). The sample was then divided and either exposed to ambient light for 6 hours (—BLUE) or fixed in 2% paraformaldehyde overnight at 4°C (—GREEN) and analyzed again.

eFluor® 660

Excitation: Red (633 nm) laser

Emission Peak: 668 nm

Band Pass Filter: 660/20

APC-eFluor® 780

Excitation: Red (633 nm) laser

Emission Peak: 780 nm

Band Pass Filter: 780/60

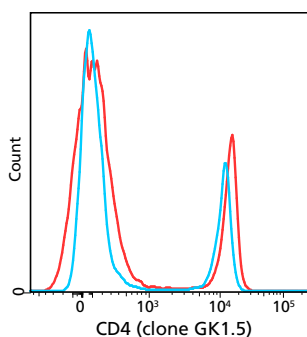
eFluor® 660 is configured as an alternative to Alexa Fluor 647 or APC. The spectral properties make it ideal for fluorophores used in any flow cytometry panel incorporating the red laser.

- Direct alternative for APC and Alexa Fluor 647 fluorochromes
- Stable performance when treated with aldehyde fixation

APC-eFluor 780® has similar spectral properties to APC-H7, APC- Cy7 and APC-Alexa Fluor® 750. It can replace any of these tandem dyes when designing a multicolor staining panel. The APC-eFluor 780 tandem dye is easily compensated when used with APC.

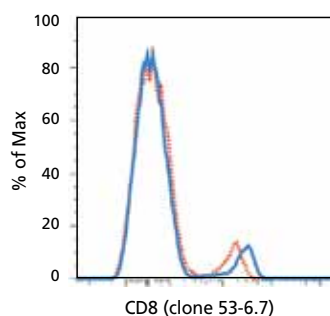
- Equal or better sensitivity than APC-H7 tandem conjugates
- Stable performance when treated with aldehyde fixation or exposed to ambient light
- Uses same filter sets as existing comparative fluorochromes

Fixation effects on eFluor® 660



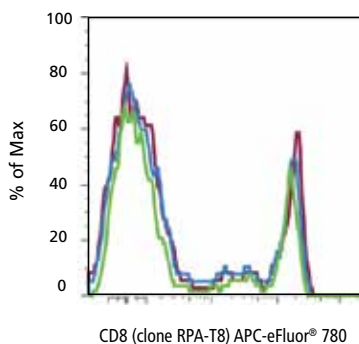
Mouse splenocytes stained with Anti-CD4 (clone GK1.5) eFluor® 660 and analyzed immediately (—RED). The sample was then fixed in 2% paraformaldehyde overnight at 4°C (—BLUE) and analyzed again.

Comparison with APC-H7



Mouse splenocytes stained with Anti-CD8 (clone 53-6.7) conjugated to APC-eFluor® 780 (—BLUE) or APC-H7 (—RED).

Stability of APC-eFluor® 780



Human PBMCs were stained with Anti-CD8 APC-eFluor® 780 and analyzed immediately (—RED). The sample was then divided and either exposed to ambient light for 6 hours (—BLUE) or fixed in 2% paraformaldehyde for 30 minutes at room temperature (—GREEN) and analyzed again.

Compensation Values

- % APC-eFluor® 780 signal

Detector	Fresh cells	6 hours-ambient light exposure	2% paraformaldehyde fixation
PE-Cy7	1.3	1.4	1.3
APC	14.2	18.6	14.4
Alexa Fluor® 700	2.3	3	2.3