

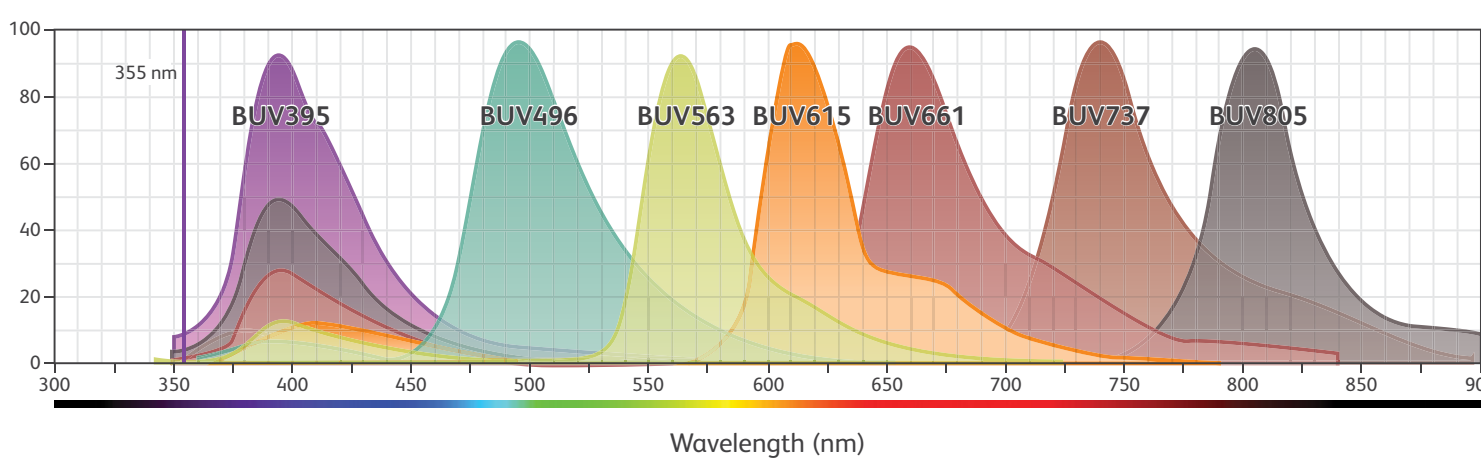
BD Life Sciences—Biosciences Fluorochrome/Laser Reference Poster

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Visit our website for tools and information related to multicolor panel design including the Spectrum Viewer, Interactive Human Cell Map, Clone Comparison Tool, Human and Mouse Panels, and more.

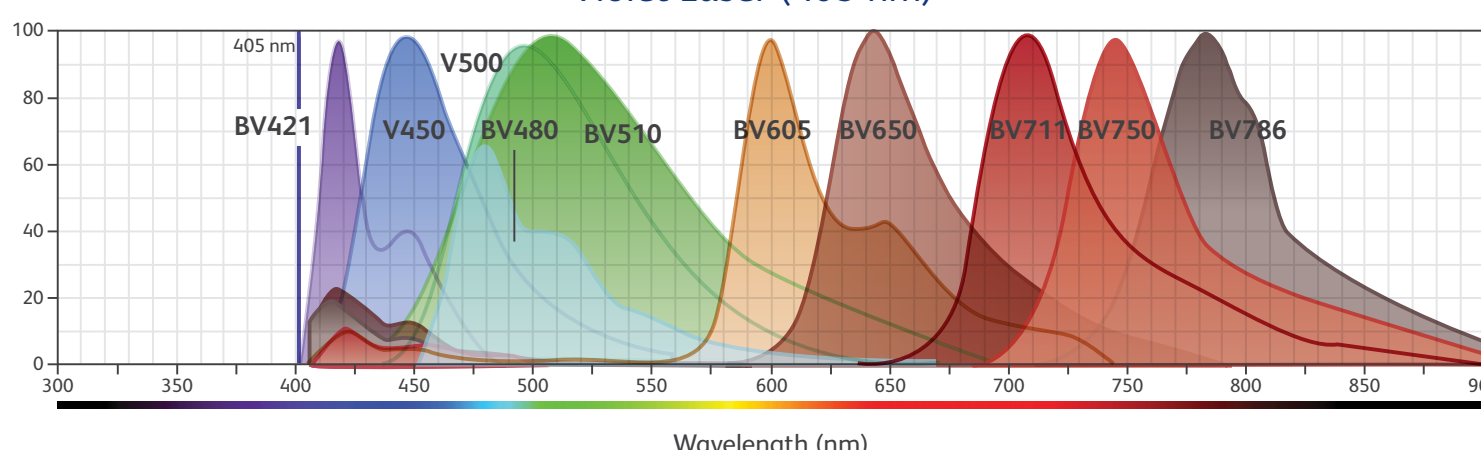
Analyzers	Sorters	Excitation Laser Line	Common Filters	Relative Brightness	Fluorochrome
BD Accuri™ C6 Plus BD FACSCelebris™ BD LSRIFortessa™ Product Family* BD FACSymphony™ Product Family* BD FACSAria™ Product Family* BD FACSMelody™ BD FACSymphony™ SE*		355 nm 349 nm	379/28	■	BD Horizon Brilliant™ Ultraviolet 395 (BUV395) (Ex _{max} 348 nm/Em _{max} 395 nm) is a polymer-based dye with an emission max at 395 nm. BUV395 is designed for instruments equipped with a 355 nm UV laser and a 379/28 filter. This dye is optimal for multicolor flow cytometry because it has minimal spillover into other detectors. BUV395 has been exclusively developed by BD Life Sciences.
		355 nm 349 nm	515/30	■	BD Horizon Brilliant™ Ultraviolet 496 (BUV496) (Ex _{max} 350 nm/Em _{max} 496 nm) is a tandem fluorochrome that combines BD Horizon™ BUV395 and an acceptor dye with an emission max at 496 nm. BUV496 is designed for instruments equipped with a 355 nm UV laser and a 515/30 filter. BUV496 has been exclusively developed by BD Life Sciences.
		355 nm 349 nm	585/15	■	BD Horizon Brilliant™ Ultraviolet 563 (BUV563) (Ex _{max} 350 nm/Em _{max} 564 nm) is a tandem fluorochrome that combines BD Horizon™ BUV395 and an acceptor dye with an emission max at 564 nm. BUV563 is designed for instruments equipped with a 355 nm UV laser and a 585/15 filter. Due to the excitation of the acceptor dye by other laser lines, there may be spillover into channels detecting PE (e.g., 575/26-nm filter) and PE-CF594 (e.g., 610/20-nm filter). BUV563 has been exclusively developed by BD Life Sciences.
		355 nm 349 nm	610/20	■	BD Horizon Brilliant™ Ultraviolet 615 (BUV615) (Ex _{max} 350 nm/Em _{max} 615 nm) is a tandem fluorochrome that combines BD Horizon™ BUV395 and an acceptor dye with an emission max at 615 nm. BUV615 is designed for instruments equipped with a 355 nm UV laser and a 610/20 filter. Due to the excitation of the acceptor dye by the 561 nm (yellow-green) laser line, there may be significant spillover into channels detecting PE-CF594 (e.g., 610/20-nm filter). BUV615 has been exclusively developed by BD Life Sciences.
		355 nm 349 nm	670/25	■	BD Horizon Brilliant™ Ultraviolet 661 (BUV661) (Ex _{max} 350 nm/Em _{max} 660 nm) is a tandem fluorochrome that combines BD Horizon™ BUV395 and an acceptor dye with an emission max at 660 nm. BUV661 is designed for instruments equipped with a 355 nm UV laser and a 670/25 filter. Due to cross laser excitation of the acceptor dye, there may be significant spillover into channels detecting APC (e.g., 660/20-nm filter). BUV661 has been exclusively developed by BD Life Sciences.
		355 nm 349 nm	740/35	■	BD Horizon Brilliant™ Ultraviolet 737 (BUV737) (Ex _{max} 350 nm/Em _{max} 735 nm) is a tandem fluorochrome that combines BD Horizon™ BUV395 and an acceptor dye with an emission max at 735 nm. BUV732 is designed for instruments equipped with a 355 nm UV laser and a 740/35 filter. Due to cross laser excitation of the acceptor dye, there may be significant spillover into channels detecting Alexa Fluor™ 700 (e.g., 730/45-nm filter). BUV737 has been exclusively developed by BD Life Sciences.
		355 nm 349 nm	820/60	■	BD Horizon Brilliant™ Ultraviolet 805 (BUV805) (Ex _{max} 351 nm/Em _{max} 803 nm) is a tandem fluorochrome that combines BD Horizon™ BUV395 and an acceptor dye with an emission max at 803 nm. BUV805 is designed for instruments equipped with a 355 nm UV laser and a 820/60 filter. BUV805 has been exclusively developed by BD Life Sciences.

Ultraviolet Laser (355 nm)



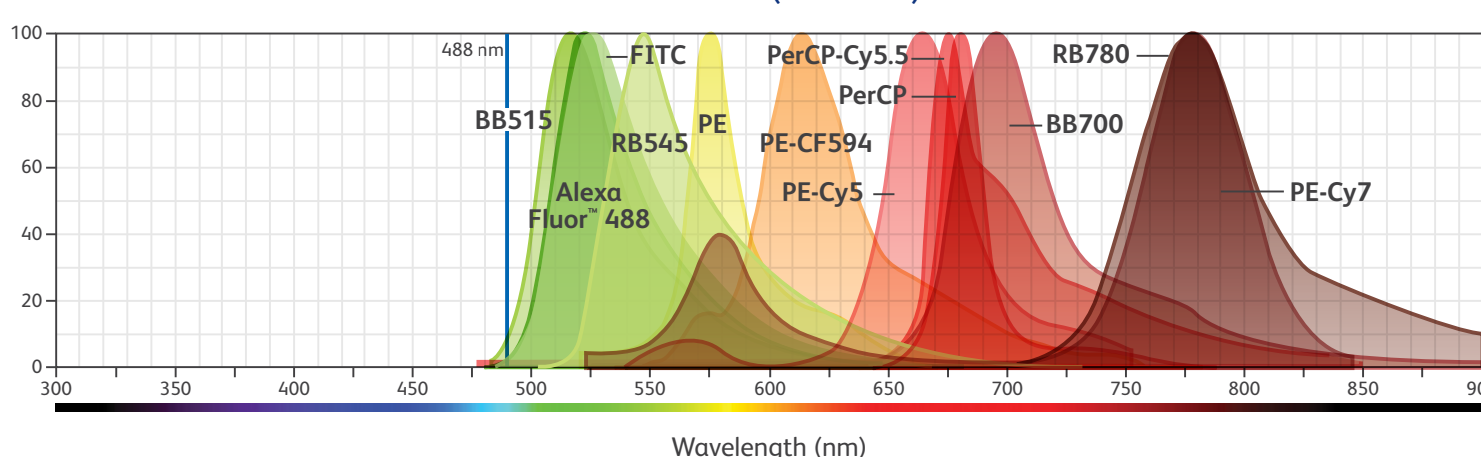
Analyzers	Sorters	Excitation Laser Line	Common Filters	Relative Brightness	Fluorochrome
BD Accuri™ C6 Plus BD FACSCelebris™ BD LSRIFortessa™ Product Family* BD FACSymphony™ Product Family* BD FACSAria™ Product Family* BD FACSMelody™ BD FACSymphony™ SE*		405 nm	450/50	■	BD Horizon Brilliant™ Violet 421 (BV421) (Ex _{max} 407 nm/Em _{max} 423 nm) is a polymer-based dye excited by the violet laser and is one of the brightest fluorochromes offered by BD Life Sciences. Conjugates are typically 10 times brighter than Pacific Blue™ conjugates and are often as bright as or brighter than PE conjugates.
		405 nm	450/50	■	BD Horizon™ Violet 450 (V450) (Ex _{max} 405 nm/Em _{max} 450 nm) is a coumarin dye excited by the violet laser. Due to low relative brightness, this fluorochrome should be paired with a high antigen-expression specificity.
		405 nm	525/50	■	BD Horizon Brilliant™ Violet 480 (BV480) (Ex _{max} 440 nm/Em _{max} 479 nm) is a polymer-based dye detected using an optical filter centered near 480 nm (e.g., a 525/50 bandpass filter). Due to its emission profile, BV480 has less spillover into the BV605, BV650 and BV711 channels. Due to its excitation profile, BV480 will also have less cross-laser excitation with the UV laser, resulting in less spillover into UV channels compared to BV510.
		405 nm	525/50	■	BD Horizon Brilliant™ Violet 510 (BV510) (Ex _{max} 405 nm/Em _{max} 512 nm) is a polymer-based dye that is brighter than BD Horizon™ V500. Due to similar excitation and emission properties, BD Horizon™ BV510 and BD Horizon™ V500 should not be used simultaneously.
		405 nm	525/50	■	BD Horizon™ Violet 500 (V500) (Ex _{max} 415 nm/Em _{max} 499 nm) is an organic dye excited by the violet laser. BD Horizon™ V500 should not be used simultaneously with BD Horizon™ BV510. Due to low relative brightness, this fluorochrome should be paired with a high antigen-expression specificity.
		405 nm	610/20	■	BD Horizon Brilliant™ Violet 605 (BV605) (Ex _{max} 407 nm/Em _{max} 605 nm) is a tandem fluorochrome that combines BD Horizon™ BV421 and an acceptor dye with emission at 605 nm. These conjugates are very bright, exhibiting similar brightness to equivalent PE conjugates. Due to the excitation of the acceptor dye by the yellow-green (561-nm) laser, there will be significant spillover of the BD Horizon™ BV605 signal into the PE and BD Horizon™ PE-CF594 detectors off the yellow-green laser.
		405 nm	660/20	■	BD Horizon Brilliant™ Violet 650 (BV650) (Ex _{max} 406 nm/Em _{max} 649 nm) is a tandem fluorochrome of BD Horizon™ BV421 and an acceptor dye with an emission max at 649 nm. Due to the excitation and emission characteristics of the acceptor dye, there will be spillover into the APC and Alexa Fluor™ 700 detectors.
		405 nm	712/20	■	BD Horizon Brilliant™ Violet 711 (BV711) (Ex _{max} 407 nm/Em _{max} 713 nm) is a tandem fluorochrome of BD Horizon™ BV421 and an acceptor dye with an emission max at 713 nm. This dye offers a very bright choice for the violet laser. Due to the excitation and emission characteristics of the acceptor dye, there may be moderate spillover into the Alexa Fluor™ 700 and PerCP-Cy5.5 detectors.
		405 nm	750/30	■	BD Horizon Brilliant™ Violet 750 (BV750) (Ex _{max} 409 nm/Em _{max} 754 nm) is a tandem fluorochrome that combines BD Horizon™ BV421 and an acceptor dye with an emission max at 754 nm. BV750 is designed for instruments equipped with a 405 nm violet laser and a 750/30 filter. Due to the excitation of the BV421 donor by the 355 nm (UV) laser line, there may be spillover into the BUV737 detector off of the UV laser. Due to the close proximity of their emission spectra, there will be significant spillover from BV750 into BV786. BV750 has been exclusively developed by BD Life Sciences.
		405 nm	780/60	■	BD Horizon Brilliant™ Violet 786 (BV786) (Ex _{max} 407 nm/Em _{max} 786 nm) is a tandem fluorochrome of BD Horizon™ BV421 and an acceptor dye with an emission max at 786 nm. BD Horizon™ BV786 offers a bright choice for the violet laser.

Violet Laser (405 nm)

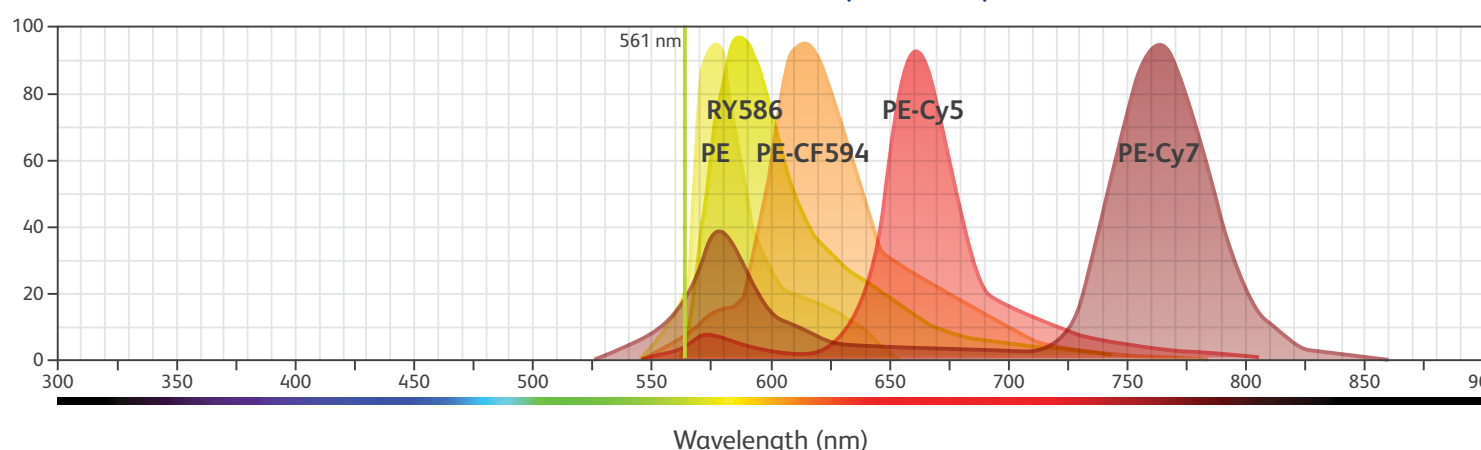


Analyzers	Sorters	Excitation Laser Line	Common Filters	Relative Brightness	Fluorochrome
BD Accuri™ C6 Plus BD FACSCelebris™ BD LSRIFortessa™ Product Family* BD FACSymphony™ Product Family* BD FACSAria™ Product Family* BD FACSMelody™ BD FACSymphony™ SE*		488 nm	530/30	■	BD Horizon Brilliant™ Blue 515 (BB515) (Ex _{max} 490 nm/Em _{max} 515 nm) is a dye that was exclusively developed by BD Life Sciences as an additional bright dye for the blue laser. This dye is significantly brighter than FITC and has less spillover into channels detecting PE (e.g., 575/26-nm filter). Due to similar excitation and emission properties, BD Horizon™ BB515 and FITC/Alexa Fluor™ 488 should not be used simultaneously.
		488 nm	530/30	■	Alexa Fluor™ 488 (A488) (Ex _{max} 494 nm/Em _{max} 517 nm) conjugates are highly photostable and remain fluorescent over a broad pH range. Alexa Fluor™ 488 is optimal for intracellular applications. Due to nearly identical excitation and emission properties, FITC and Alexa Fluor™ 488 should not be used simultaneously. Alexa Fluor™ 488 exhibits extraordinary photostability, which makes it highly suitable for fluorescence microscopy.
		488 nm	530/30	■	FITC (Ex _{max} 494 nm/Em _{max} 518 nm) Fluorescein isothiocyanate (FITC) is a fluorochrome with an approximate molecular weight of 389-Da. FITC is sensitive to pH changes and photobleaching. Due to nearly identical excitation and emission properties, FITC and Alexa Fluor™ 488 should not be used simultaneously.
		488 nm	^	■	BD Horizon RealBlue™ 545 (RB545) (Ex _{max} 496 nm/Em _{max} 545 nm) fluorochrome is part of the BD family of blue (488-nm) laser dyes. Driven by BD innovation, RB545 can be used on spectral cytometers and is designed to be excited by the blue (488-nm) laser with minimal excitation by the 561-nm yellow-green laser. RB545 has minimal spillover into yellow-green detectors and a brightness level similar to FITC. Given its unique emission max, on a spectral instrument RB545 can be used simultaneously with FITC, Alexa Fluor™ 488 or BB515 to provide an additional color off of the blue laser.
		488 nm 532 nm 561 nm	575/26	■	PE (Ex _{max} 496 nm, 566 nm/Em _{max} 576 nm) R-phycoerythrin (PE) is an accessory photosynthetic pigment found in red algae. It exists in vitro as a 240-kDa protein with 23 phycoerythrin chromophores per molecule. This makes PE a bright fluorochrome for flow cytometry applications, but its photobleaching properties make it unsuitable for fluorescence microscopy.
		488 nm 532 nm 561 nm	586/42	■	BD Horizon RealYellow™ 586 (RY586) (Ex _{max} 564 nm/Em _{max} 586-nm) is a small organic fluorochrome, driven by BD innovation, designed to be excited by the yellow-green laser (561 nm) with minimal excitation by the 488-nm blue laser. RY586 can be used instead of PE on conventional instruments equipped with a yellow-green laser (561 nm) or used with PE on spectral instruments. Compared to PE, RY586 is similar in brightness, has minimal spillover into blue detectors and has increased spillover into the 610/20-nm (PE-CF594) detector.
		488 nm 532 nm 561 nm	610/20	■	BD Horizon™ PE-CF594 (PE-CF594) (Ex _{max} 496 nm, 566 nm/Em _{max} 615 nm) is a tandem conjugate, developed exclusively by BD Life Sciences, that combines PE and CF594. PE-CF594 is a brighter alternative to PE-Texas Red with improved spectral characteristics.
		488 nm 532 nm 561 nm	670/30	■	PE-Cy5 (Ex _{max} 496 nm, 566 nm/Em _{max} 670 nm) is a tandem conjugate that combines phycoerythrin and the cyanine dye Cy5. Cy dyes have been shown to exhibit nonspecific binding to Fc receptors, which is most apparent on monocyte populations. A blocking reagent can be used to improve performance.
		488 nm	695/40	■	PerCP (Ex _{max} 481 nm/Em _{max} 675 nm) is a component of the photosynthetic apparatus found in the dinoflagellate <i>Glennodinium</i> . PerCP is a protein complex with a molecular weight of ~35 kDa.
		488 nm	695/40	■	PerCP-Cy5.5 (Ex _{max} 482 nm/Em _{max} 676 nm) is a tandem conjugate that combines PerCP with the cyanine dye Cy5.5. Additionally, the PerCP-Cy5.5 tandem conjugate is not as susceptible to fixative or light instability compared to APC-Cy7 and PE-Cy7.
		488 nm	695/40	■	BD Horizon Brilliant™ Blue 700 (BB700) (Ex _{max} 476 nm/Em _{max} 695 nm) is a dye that was exclusively developed by BD Life Sciences as a brighter alternative to PerCP-Cy5.5. This dye also has less cross-laser excitation off the 405-nm laser, resulting in less spillover into the violet channels compared to PerCP-Cy5.5.
		488 nm 532 nm 561 nm	780/60	■	PE-Cy7 (Ex _{max} 496 nm, 566 nm/Em _{max} 781 nm) is a tandem fluorochrome that combines PE and the cyanine dye Cy7. PE-Cy7 is sensitive to photo-induced degradation, resulting in loss of fluorescence and changes in spillover. Cy dyes have been shown to exhibit nonspecific binding to Fc receptors, which is most apparent on monocyte populations. A blocking reagent can be used to improve performance.
		488 nm	780/60	■	BD Horizon RealBlue™ 780 (RB780) (Ex _{max} 498 nm/Em _{max} 781 nm) is a tandem fluorochrome and part of the BD family of blue laser dyes. Driven by BD innovation, RB780 was designed to be excited by the blue laser (488 nm) with minimal excitation by the 561-nm yellow-green laser. For instruments equipped with a blue laser (488 nm), RB780 can be used as an alternative to PE-Cy7. For instruments equipped with both a blue laser (488 nm) and a yellow-green laser (561 nm), it can be used in conjunction with PE-Cy7. Compared to PE-Cy7, RB780 is similar in brightness and has minimal spillover into yellow-green detectors.

Blue Laser (488 nm) / Yellow-Green Laser (561 nm)

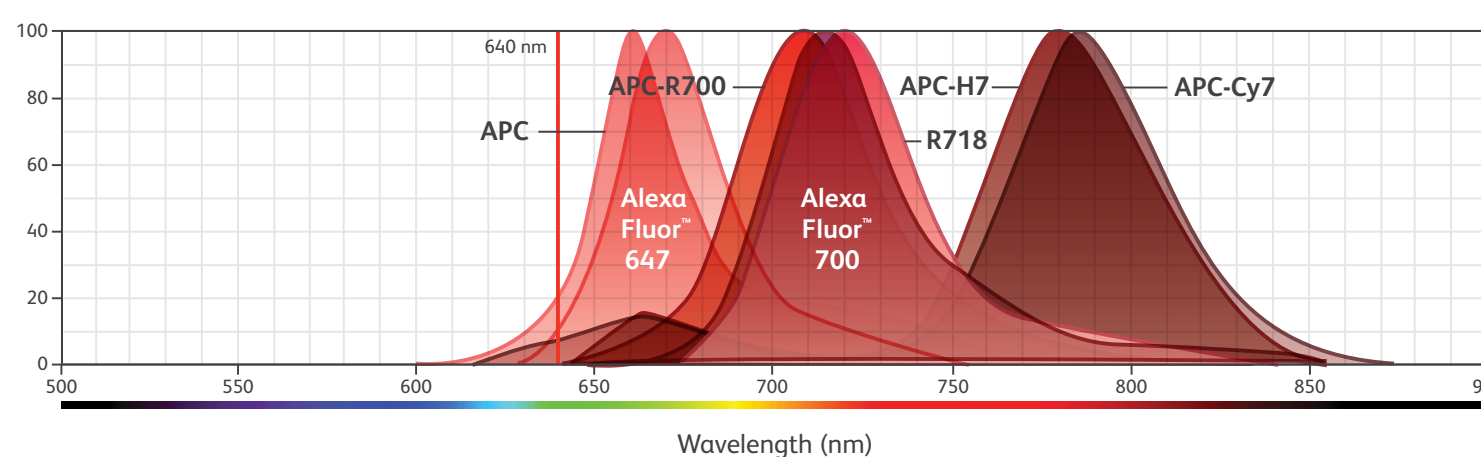


Yellow-Green Laser (561 nm)



Analyzers	Sorters	Excitation Laser Line	Common Filters	Relative Brightness	Fluorochrome
BD Accuri™ C6 Plus BD FACSCelebris™ BD LSRIFortessa™ Product Family* BD FACSymphony™ Product Family* BD FACSAria™ Product Family* BD FACSMelody™ BD FACSymphony™ SE*		628 nm 633 nm 635 nm 640 nm	660/20	■	APC (Ex _{max} 651 nm/Em _{max} 660 nm) Allophycocyanin (APC) is an accessory photosynthetic pigment found in blue-green algae. Its molecular weight is approximately 105 kDa.
		628 nm 633 nm 635 nm 640 nm	660/20	■	Alexa Fluor™ 647 (A647) (Ex _{max} 653 nm/Em _{max} 669 nm) conjugates are highly photostable and remain fluorescent over a broad pH range. Alexa Fluor™ 647 is optimal for intracellular applications and suitable for use in fluorescence microscopy.
		628 nm 633 nm 635 nm 640 nm	730/45	■	BD Horizon™ APC-R700 (A700) (Ex _{max} 651 nm/Em _{max} 706 nm) is a tandem fluorochrome that combines APC with R700, a proprietary organic dye. This dye has been developed exclusively by BD Life Sciences as a brighter alternative to Alexa Fluor™ 700. Due to similar excitation and emission properties, APC-R700, R718 and Alexa Fluor™ 700 should not be used simultaneously.
		628 nm 633 nm 635 nm 640 nm	730/45	■	BD Horizon™ Red 178 (R178) (Ex _{max} 695 nm/Em _{max} 718 nm) is a small molecule fluorochrome with an emission max near 718 nm. R178 can be used as an alternative for Alexa Fluor™ 700 or APC-R700 on instruments equipped with a red laser (628–640 nm) and a 730/45 nm filter. R178 is a bright dye with low nonspecific background staining. As such, R178 offers great resolving power on surface and intracellular markers. Due to similar excitation and emission properties, APC-R700, R718 and Alexa Fluor™ 700 should not be used simultaneously. R178 has been exclusively developed for BD Life Sciences.
		628 nm 633 nm 635 nm 640 nm	730/45	■	Alexa Fluor™ 700 (Ex _{max} 697 nm/Em _{max} 719 nm) is a far-red dye that can be excited with a 633–640-nm laser. Due to similar excitation and emission properties, APC-R700, R718 and Alexa Fluor™ 700 should not be used simultaneously.
		628 nm 633 nm 635 nm 640 nm	780/60	■	APC-Cy7 (Ex _{max} 651 nm/Em _{max} 779 nm) is a tandem fluorochrome that combines APC and the cyanine dye Cy7. Special precautions must be taken with APC-Cy7 conjugates, and cells stained with them, to protect the fluorochrome from long-term exposure to light. Cy dyes have been shown to exhibit nonspecific binding to Fc receptors, which is most apparent on monocyte populations. A blocking reagent can be used to improve performance. Due to nearly identical excitation and emission properties, APC-Cy7 and APC-H7 should not be used simultaneously.
		628 nm 633 nm 635 nm 640 nm	780/60	■	APC-H7 (Ex _{max} 659 nm/Em _{max} 782 nm) is an APC-cyanine tandem fluorochrome that uses an analog of Cy7 and has similar spectral properties to APC-Cy7. APC-H7 conjugates provide greater stability in light and paraformaldehyde fixatives and have less spillover into the APC channel than APC-Cy7 conjugates. Due to nearly identical excitation and emission properties, APC-Cy7 and APC-H7 should not be used simultaneously.

Red Laser (640 nm)



Relative Brightness Key: ■ Dim ■ Moderate ■ Bright ■ Brightest

Relative brightness is dependent on instrument configuration including lasers, filters and laser power. Please confirm instrument is appropriately configured to properly use fluorochrome of interest.

* Capable of detecting up to 12 colors simultaneously (488-nm and 405-nm lasers available on all configurations; 355-nm, 561-nm and 640-nm lasers available on select configurations).
 † Capable of detecting up to 18 colors simultaneously. Contact your BD Representative for information on available laser wavelengths, laser powers and filter sets.
 ‡ Capable of detecting more than 40 colors simultaneously based on chosen configuration. Contact your BD Representative for information on available laser wavelengths, laser powers and filter sets.
 § Capable of detecting up to 18 colors simultaneously (488-nm and 640-nm lasers available on all configurations; 355-nm, 405-nm and 640-nm lasers available on select configurations).
 ¶ Capable of detecting up to 9 colors simultaneously (488-nm laser available on all configurations; 405-nm and 640-nm lasers available on select configurations).
 ** Recommended for spectral flow cytometry.

BD flow cytometers are Class 1 Laser Products.
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 Data referenced on this poster was generated using anti-human CD4 (clone SK3) reagents run on a BD FACSymphony™ AS SE and analyzed using FlowJo™ software.

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bdbiosciences.com/colors

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