

Label IT® Nucleic Acid Labeling Reagents

Applications :

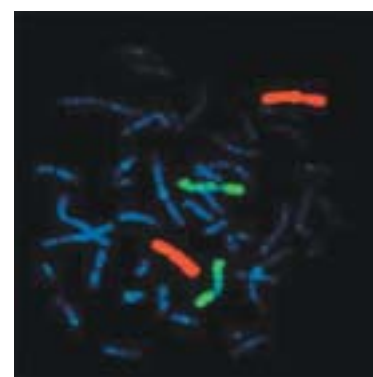
- ◆ Southern, Northern and dot (slot) blots, colony and plaque lifts, microarrays and *in situ* hybridizations.
- ◆ DNA and RNA tracking studies
- ◆ Dnase and Rnase detection
- ◆ DNA condensation assays.
- ◆ Direct covalent attachment of labels to any polynucleic acid.
- ◆ Easy to use - one reagent - one step
- ◆ Uniform & consistent labeling.
- ◆ Easily control the scale and extent of the labeling reaction.

Label IT® Nucleic Acid Labeling Reagents offer efficient, one-step, non-radioactive labeling of DNA or RNA. The non-enzymatic Label ITy reagents covalently label the guanine residues of the nucleic acid in a non-destructive manner. The site of modification is not involved in base pairing, making this method an excellent choice for hybridization experiments. The labeling process eliminates biases encountered in alternative methods as labeled nucleotide incorporation and as enzymatic labeling. One can covalently attach rhodamine, fluorescein, digoxin, biotin, DNP (dinitrophenyl), and Cy™3 or Cy™5 dyes to any nucleic acid species within minutes. Labeling reactions requires only a single reagent and labeled products can be used in almost any molecular biology application. These reagents work equally well with DNA (double-stranded, single-stranded, supercoiled, or linear) and RNA. The labeling reactions can be easily scaled up without compromising the labeling efficiency. Adjustment of the incubation time and/or the amount of reagent easily controls the labeling density. Excitation and emission wavelengths for each fluorescent Label IT® reagent are listed in the table shown below :

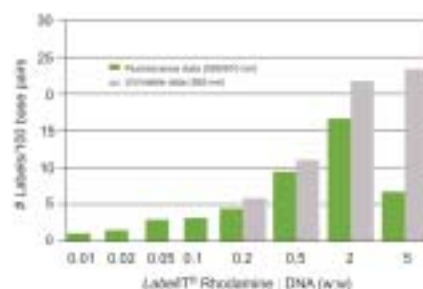
Labeling Reagent	Excitation Wavelength (nm)	Emission Wavelength (nm)
5-carboxy-X-rhodamine	576	597
Tetramethyl-rhodamine	546	576
5-carboxy fluorescein	492	518
Cy™3	550	570
Cy™5	649	670

Efficient, simple, and reliable non-radioactive DNA labeling is essential to a wide variety of molecular and cell biology applications. Traditional non-radioactive labeling methods (random priming, nick translation) are enzyme-mediated and thus inherently difficult to control. The labeling efficiency of these reactions is dictated by the enzyme's ability to incorporate a labeled-nucleotide precursor into a growing nucleic acid chain. This labeled-nucleotide precursor is never the preferred substrate for the enzyme. Hence, the efficiency of the reaction is always low and large pools of unincorporated labeled-nucleotide precursors remain after the reaction. The versatility, high efficiency, and simplicity of the Label IT® Reagents make them an ideal choice for a variety of non-radioactive labeling applications.

Description	Cat.#	Qty
Label IT® Cy™3 Labeling Kit	J4369E	25 tests
$\lambda_{exc}/\lambda_{em}$: 550/570 nm	J4369D	100 tests
Label IT® Cy™5 Labeling Kit	J44031	25 tests
$\lambda_{exc}/\lambda_{em}$: 650/670 nm	J44030	100 tests
Label IT® CX-Rhodamine Labeling Kit	J41660	100 tests
$\lambda_{exc}/\lambda_{em}$: 570/590 nm	J41661	25 tests
Label IT® TM-Rhodamine Labeling Kit	J54850	100 tests
$\lambda_{exc}/\lambda_{em}$: 550/570 nm	J54851	25 tests
Label IT® Fluorescein Labeling Kit	T34130	100 tests
$\lambda_{exc}/\lambda_{em}$: 492/520 nm	T34131	25 tests
Label IT® Digoxin Labeling Kit	J42160	100 tests
	J42161	25 tests
Label IT® Biotin Labeling Kit	J43281	100 tests
	J43280	25 tests
Label IT® DNP Labeling Kit	J45240	100 tests
	J45241	25 tests



Generation of Sensitive FISH Probes. Multicolor chromosome PAINT analysis using Label IT® Biotin labeled human chromosome 7 (Streptavidin-Cy™ 3 conjugate detection) and Label IT® Fluorescein labeled human chromosome 6 on a Jurkat metaphase spread, with DAPI stained chromosomes in blue.

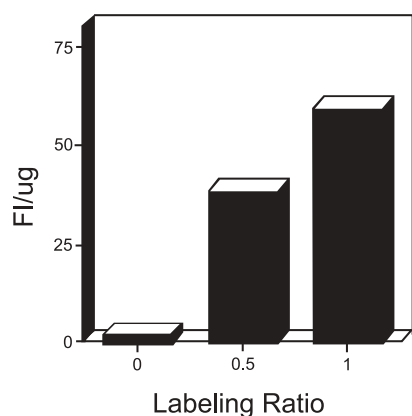
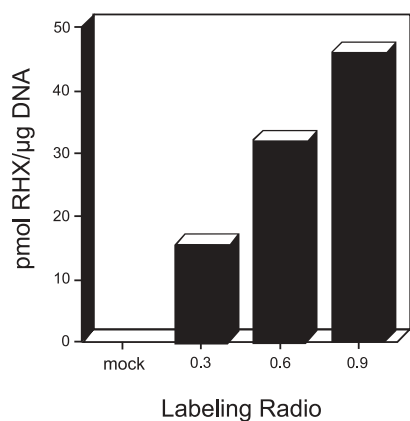


Labeling Density can be Easily Controlled with the Label IT® Reagents. Plasmid DNA was labeled with increasing ratios (w:w) of Label IT® CX-Rhodamine to DNA. The extent of labeling was estimated, and normalized to the amount of recovered DNA (# labels/100 base pairs), using two different criteria: fluorescence intensity of the attached rhodamine (excitation at 585 nm, emission at 610 nm), and visible absorbance at 585 nm. The significance of quenching, at the higher labeling ratios, becomes apparent in the fluorimetric estimations of labeling density.

References :
 Sadjia Bekal et al. ; Rapid Identification of Escherichia Coli Pathotypes by Virulence Gene Detection with DNA Microarrays.
 J. Clin. Microbiol., May 2003 ; 41 : 2113 - 2125.

Nucleic acid labeling and modification

General applications



Label IT® Nucleic Acid Modifying Reagents

- ◆ Direct, covalent attachment of amine or carboxylic acid functional groups to any nucleic acid.
- ◆ Easy to use - one reagent.
- ◆ Easily control the scale and extent of the modifying reaction.
- ◆ This is the only reagent of its kind.

Label IT® Modifying Reagents directly modify DNA and RNA simply and reproducibly with NH₂ or COOH functional groups, by non-enzymatic covalent attachment to guanine residues. Unlike, enzyme-mediated labeling methods, the simplicity of this chemical labeling reaction allows direct control over the level of modification - one can easily determine an optimal modification level for the particular application. The ability to modify DNA and RNA simply and reproducibly with NH₂ or COOH functional groups represents a large technological step forward in the nucleic acid field. Modified nucleic acids are ideal for use in a variety of applications :

- ◆ Labeling with hydrazine, amine, or amine-reactive dyes
- ◆ Attachment to activated glass surfaces, or hydrazide-coated beads or plates
- ◆ Conjugation to proteins or peptides using their activated carboxylic acid groups or water-soluble carbodiimide chemistry.

Each kit contains Label IT® modifying reagent, reconstitution solution, 10X labeling buffer A, denaturation buffer D1, neutralization buffer N1, G50 microspin columns.

Description	Cat.#	Qty
Label IT® Amine modifying Kit	J45961	25 tests
	J45960	100 tests
Label IT® COOH modifying Kit	J52651	25 tests
	J52650	100 tests