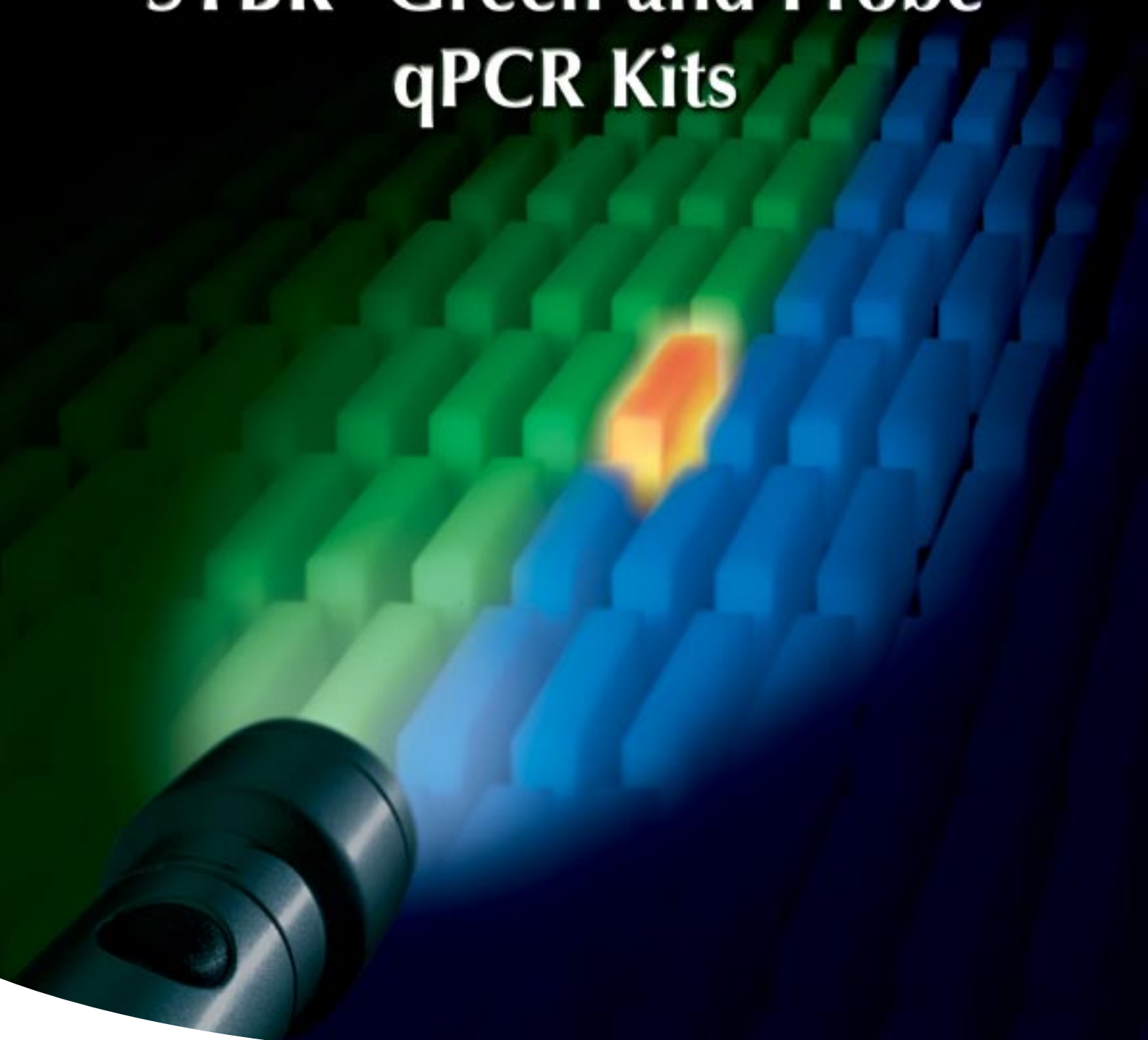


DyNAmo™

SYBR® Green and Probe
qPCR Kits



DyNAmo™

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Finnzymes' DyNAmo™ qPCR Kits are a superior choice for quantitative real-time analysis. These kits offer excellent performance in detection and quantification of DNA and RNA sequences from various sources. DyNAmo qPCR Kit family contains optimized kits for both SYBR® Green and probe chemistries with various platforms. All DyNAmo qPCR Kits are provided as convenient 2x master mixes - only template and primers need to be added. Rox passive reference dye is included in the kits as a separate tube (not included in capillary kits F-420S/L and F-440S/L or block kit F-400S/L). All Finnzymes' DyNAmo qPCR Kits contain dUTP and therefore UNG (uracil-N-glycosylase) treatment can be used to minimize the effect of carry-over contamination. Use the table below to select the right kit for your purposes.

DyNAmo™ SYBR® Green qPCR Kits

DyNAmo SYBR Green qPCR Kits are designed for quantitative real-time PCR using SYBR Green I dye for detection. SYBR Green I is a dye that binds to any double stranded DNA and thus PCR products can be quantified without sequence specific probes. The performance of DyNAmo SYBR Green qPCR Kits is based on a uniquely modified *Thermus brockianus* (*Tbr*) DNA polymerase. The modified polymerase incorporates a non-specific DNA binding domain that lends physical stability to the polymerase-DNA complex. The DyNAmo SYBR Green qPCR Kit family contains optimized kits for both block-based and capillary-based instruments.

DyNAmo™ Probe qPCR Kit

DyNAmo Probe qPCR Kit is designed for quantitative real-time PCR with probe detection. The kit is compatible

with sequence specific probes, e.g. TaqMan® probes. The performance of the DyNAmo Probe qPCR Kit is based on a hot start *Tbr* DNA polymerase. DyNAmo Probe qPCR Kit is compatible with both block-based and capillary-based instruments.

DyNAmo™ 2-Step qRT-PCR Kits

DyNAmo qPCR Kit family includes 2-Step qRT-PCR kits for SYBR Green and probe chemistries for both block-based and capillary-based instruments. The kits contain all necessary reagents for cDNA synthesis from various RNA sources and for subsequent qPCR. Both random primers and oligo(dT) primers are included in the kits. Alternatively, the user can use gene specific primers.

The reverse transcriptase in DyNAmo 2-Step qRT-PCR Kits is M-MuLV RNase H⁺, which provides higher sensitivity to qPCR than RNase H⁻ reverse transcriptases. The RNase H activity facilitates the annealing of PCR primers to the cDNA by degrading the RNA in the RNA-cDNA hybrid before the PCR step. RNase inhibitor is mixed with the RT-enzyme. The use of a 2-step qRT-PCR protocol enables close control and monitoring of both cDNA synthesis and the qPCR step, resulting in a reliable RNA quantification. With 2-step kits it is possible to detect multiple targets from one cDNA synthesis reaction.

DyNAmo™ cDNA Synthesis Kit

The new DyNAmo™ cDNA Synthesis Kit is a stand-alone part of Finnzymes' DyNAmo 2-step qRT-PCR Kits and it can be used in conjunction with DyNAmo qPCR Kits or with any other qPCR kit suitable for the application.

Kit selection table for Finnzymes' DyNAmo™ qPCR Kits:

Chemistry	SYBR® Green (DyNAmo™ SYBR® Green qPCR Kits)				Probe (DyNAmo™ Probe qPCR Kits)			
	DNA		RNA*		DNA		RNA*	
Template	DNA		RNA*		DNA		RNA*	
Instrument	Block	Capillary	Block	Capillary	Block	Capillary	Block	Capillary
Kit	F-410S/L F-400RS/L F-400S/L	F-420S/L	F-430S/L	F-440S/L	F-450S/L	F-450S/L	F-460S/L	F-460S/L

* When using RNA as starting material, DyNAmo cDNA Synthesis Kit (F-470) for producing cDNA is available separately.

DyNAmo™ SYBR® Green qPCR Kits

DyNAmo SYBR Green qPCR Kits are 2x master mixes designed for quantitative real-time PCR using SYBR Green I dye for detection. The performance of the DyNAmo SYBR Green qPCR Kits is based on a uniquely modified *Thermus brockianus* DNA polymerase and SYBR Green I fluorescent dye. Optimized qPCR buffer together with optimal SYBR Green I concentration enable the modified DNA polymerase to amplify target DNA reproducibly and with great sensitivity.

Advantages

- **Specificity:** Modified hot start *Thermus brockianus* DNA polymerase (in F-410S/L and F-420S/L) minimizes the formation of unwanted primer-dimers and extension of non-specifically bound primers.
- **Sensitivity:** Optimized master mix allows reproducible detection of low-copy number templates.
- **Broad dynamic range:** Delivers a dynamic range of up to eight orders of magnitude starting even from one copy of the target gene.

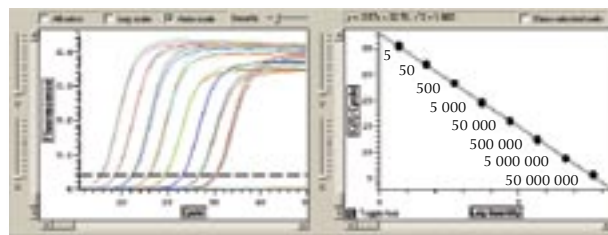
DyNAmo™ SYBR® Green 2-Step qRT-PCR Kits

DyNAmo SYBR Green 2-Step qRT-PCR Kits enable reproducible detection and quantification of RNA with great sensitivity and specificity. The kits include all the necessary reagents for quantitative cDNA synthesis and SYBR Green qPCR. The RT-step in these kits is based on M-MuLV RNase H⁺, which provides higher sensitivity to qPCR than RNase H⁻ reverse transcriptases. The performance of the qPCR step in DyNAmo SYBR Green 2-Step qRT-PCR Kit is based on F-410S/L kit and the performance of DyNAmo Capillary SYBR Green 2-Step qRT-PCR Kit is based on F-420S/L kit.

Advantages

- **Broad dynamic range:** up to 1 µg of RNA.
- **Reliable results with different RNA sources:** mRNA, total RNA, viral RNA and *in vitro* transcribed RNA.
- **Flexible:** two-step system, all priming options.
- **Optimized 2x mixes** for both cDNA synthesis and qPCR.
- **Specific and sensitive:** uniquely engineered *Tbr* DNA polymerase.
- **Convenient to use:** 2x mixes and short protocols.

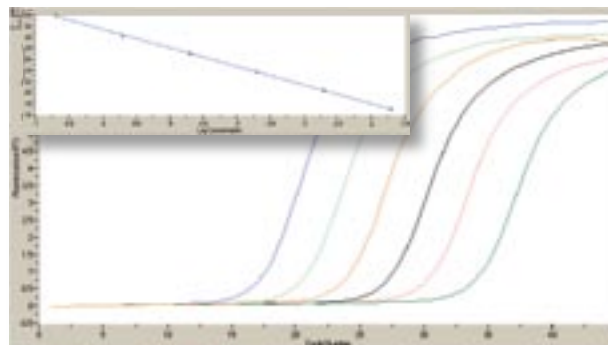
Sensitivity and a broad dynamic range



A 335 bp PCR product was amplified from lambda DNA with DyNAmo HS SYBR Green qPCR Kit. A reaction volume of 20 µl was used with starting template copy number ranging from 5 to 50 000 000 copies. Reactions were set up on DNA Engine Opticon® System (Bio-Rad Laboratories).

DyNAmo™ HS SYBR® Green qPCR Kit (F-410S/L) is an optimized hot start kit for all block-based real-time instruments.	
F-410S	40 reactions of 50 µl volume
F-410L	200 reactions of 50 µl volume
DyNAmo™ SYBR® Green qPCR Kits with ROX (F-400RS/L) or without ROX (F-400S/L) are optimized for block-based instruments.	
F-400RS / F-400S	40 reactions of 50 µl volume
F-400RL / F-400L	200 reactions of 50 µl volume
DyNAmo™ Capillary SYBR® Green qPCR Kit (F-420S/L) is an optimized hot start kit for real-time instruments using capillary tubes.	
F-420S	100 reactions of 20 µl volume
F-420L	500 reactions of 20 µl volume

Broad dynamic range, excellent linearity and efficiency



DyNAmo Capillary SYBR Green 2-Step qRT-PCR Kit was used to transcribe 0.2 fg - 0.02 ng bacteriophage MS2 RNA and a constant 100 ng amount of Human HeLa cell total RNA using random priming. The cDNA synthesis reactions were done in 20 µl volumes, from which 1/14 was transferred to qPCR reactions. A 113 bp fragment was amplified from cDNA with MS2 specific primers. Reactions were set up on the LightCycler™ System (Roche).

DyNAmo™ SYBR® Green 2-Step qRT-PCR Kit (F-430S/L) is a two-step hot start kit including all reagents needed for cDNA synthesis and subsequent qPCR. The kit is optimized for block-based real-time instruments.	
F-430S	20 RT reactions of 20 µl volume + 40 qPCR reactions of 50 µl volume
F-430L	100 RT reactions of 20 µl volume + 200 qPCR reactions of 50 µl volume
DyNAmo™ Capillary SYBR® Green 2-Step qRT-PCR Kit (F-440S/L) is a two-step hot start kit including all reagents needed for cDNA synthesis and subsequent qPCR. The kit is optimized for real-time instruments using capillary tubes.	
F-440S	20 RT reactions of 20 µl volume + 100 qPCR reactions of 20 µl volume
F-440L	100 RT reactions of 20 µl volume + 500 qPCR reactions of 20 µl volume
Available separately: DyNAmo™ cDNA Synthesis Kit	
F-470S	20 cDNA synthesis reactions (20 µl each)
F-470L	100 cDNA synthesis reactions (20 µl each)

DyNAmo™ Probe qPCR Kit

The DyNAmo Probe qPCR Kit is a 2x master mix designed for quantitative real-time PCR using both block-based and capillary-based instruments. The performance of the DyNAmo Probe qPCR Kit is based on an efficient hot start *Thermus brockianus* DNA polymerase. The kit contains optimized PCR reagents in a master mix, and it can be used in qPCR with different sequence specific probes (e.g. TaqMan® probes).

Advantages

- **Specificity and sensitivity:** Combines probe chemistry with optimized reagents.
- **Easy to use:** 2x master mix and optimized protocols.
- **Broad dynamic range:** Delivers a dynamic range of up to eight orders of magnitude.

DyNAmo™ Probe 2-Step qRT-PCR Kit

DyNAmo Probe 2-Step qRT-PCR Kit is a two-step hot start kit including all reagents needed for quantitative cDNA synthesis and qPCR. The kit is optimized for both block-based and capillary-based real-time instruments. The cDNA synthesis step in this kit is based on M-MuLV RNase H⁺, as in all DyNAmo 2-Step qRT-PCR Kits. The qPCR step is based on F-450S/L kit.

Advantages

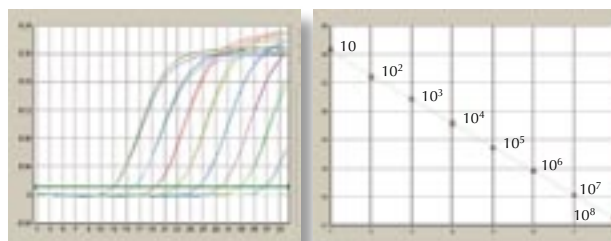
- **Broad dynamic range:** up to 1 µg of RNA.
- **Reliable results with different RNA sources:** mRNA, total RNA, viral RNA and *in vitro* transcribed RNA.
- **Flexible:** two-step system, all priming options.
- **Optimized 2x mixes** for both cDNA synthesis and qPCR.
- **Specific and sensitive:** efficient *Tbr* DNA polymerase.
- **Convenient to use:** 2x mixes and short protocols.

DyNAmo is a trademark of Finnzymes Oy. SYBR is a registered trademark of Molecular Probes, Inc. DNA Engine Opticon is a registered trademark of Bio-Rad Laboratories, Inc. LightCycler is a trademark of a member of the Roche Group. TaqMan is a registered trademark of Roche Molecular Systems, Inc. Probelibrary is a trademark of Exiqon A/S.

The quality system of Finnzymes Oy is certified according to standard SFS-EN ISO9001:2000.

Purchase of DyNAmo™ SYBR® Green qPCR Kits includes an immunity from suit under patents specified in the product insert to use only the amount purchased for the purchaser's own internal research. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

Broad dynamic range and sensitivity

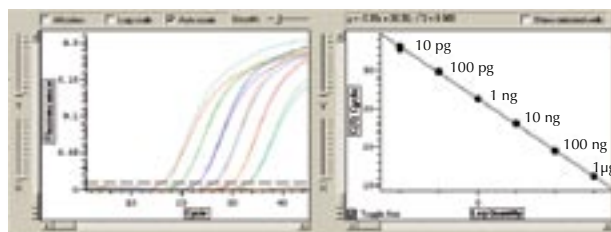


Human papilloma virus genome was cloned into a plasmid. Dilution series from 10⁸ to 10⁰ copies was prepared to be used as a standard DNA. A 76 bp fragment was amplified with F-450L DyNAmo Probe qPCR master mix and detected with a HEX-BHQ labeled TaqMan® probe. Reactions were setup on ABI 7500 Real Time PCR System (Applied Biosystems). The slope of the standard curve was -3.363 and the correlation coefficient R² was 0.9997.

DyNAmo™ Probe qPCR Kit is an optimized hot start kit for both block-based and capillary-based real-time instruments.

F-450S	40 reactions of 50 µl volume
F-450L	200 reactions of 50 µl volume

Reliability, specificity and sensitivity



Human HeLa cell total RNA amounts varying from 10 pg to 1 µg were reverse transcribed using oligo(dT) priming. The cDNA synthesis reactions were done in 20 µl volumes, from which 1/14 was transferred to qPCR reactions. A Calmodulin 1 fragment was amplified with cDNA specific primers and detected with an LNA probe (Probelibrary™, Exiqon). Reactions were done with DyNAmo Probe 2-Step qRT-PCR Kit and run with DNA Engine Opticon® system (Bio-Rad Laboratories).

DyNAmo™ Probe 2-Step qRT-PCR Kit is a two-step hot start kit including all reagents needed for cDNA synthesis and subsequent qPCR. The kit is optimized for block-based and capillary-based real-time instruments.

F-460S	20 RT reactions of 20 µl volume + 40 qPCR reactions of 50 µl volume
F-460L	100 RT reactions of 20 µl volume + 200 qPCR reactions of 50 µl volume

Available separately:
DyNAmo™ cDNA Synthesis Kit

F-470S	20 cDNA synthesis reactions (20 µl each)
F-470L	100 cDNA synthesis reactions (20 µl each)

Practice of the patented 5' Nuclease Core Process requires a license from Applied Biosystems. The purchase of DyNAmo™ Probe qPCR Kits includes an immunity from suit under patents specified in the product insert to use only the amount purchased for the purchaser's own internal research when used with the separate purchase of Licensed Probe. No other patent rights are conveyed expressly, by implication, or by estoppel. Further information on purchasing licenses may be obtained by contacting the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.