

Agilent Fragment Analyzer Consumables

Analysis kits and capillary arrays



The unique design features of the Fragment Analyzer instruments combines ease of use automated electrophoresis with the flexibility to switch between DNA and RNA analysis kits without maintenance between runs. The reagent kit portfolio covers a broad range of applications and offers efficient solutions for separating and analyzing nucleic acids.

Quantitative

The kits below use internal standards for accurate quantification and are ideal for various applications such as next-generation sequencing (NGS) quality control, cfDNA, and genomic DNA.

DNA/NGS Fragment Analysis

Kit Name	NGS Fragment Kit (1-6000 bp) DNF-473	HS NGS Fragment Kit (1-6000 bp) DNF-474	Small Fragment Kit DNF-476	HS Small Fragment Kit DNF-477
Sizing range	100 bp – 6,000 bp	100 bp – 6,000 bp	50 bp – 1,500 bp	50 bp – 1,500 bp
Sizing accuracy	± 5% ^{1,2}	± 5% ²	± 5% ^{2,5,6}	± 5% ⁸
Sizing precision	2% CV ^{1,2}	2% CV ²	2% CV ^{5,7}	2% CV ⁸
Separation resolution ¹⁰	100 bp – 1,000 bp ≤ 5%; 1,000 bp – 6,000 bp ≤ 10%	100 bp – 1,000 bp ≤ 5%; 1,000 bp – 6,000 bp ≤ 10%	50 bp – 900 bp ≤ 5%; 900 bp – 1,500 bp ≤ 10%	50 bp – 900 bp ⁸ ≤ 5%; 900 bp – 1,500 bp ⁸ ≤ 10%
Quantification accuracy	± 25% ^{1,3}	± 25% ^{2,4}	± 25% ^{5,6}	± 25% ⁸
Quantification precision	15% CV ^{1,3}	15% CV ^{2,4}	15% CV ^{5,6}	15% CV ⁸
Quantification range	DNA Fragment ¹ : 0.1 ng/μL – 10 ng/μL; DNA Smear ³ : 5 ng/μL – 100 ng/μL	DNA Fragment ² : 5 pg/μL – 500 pg/μL; DNA Smear ⁴ : 50 pg/μL – 5 ng/μL	DNA Fragment ⁵ : 0.1 ng/μL – 10 ng/μL; DNA Smear ⁶ : 5 ng/μL – 100 ng/μL	DNA Fragment ⁸ : 5 pg/μL – 500 pg/μL; DNA Smear ⁹ : 100 pg/μL – 5 ng/μL
Physical Specifications				
Analysis time ¹⁰	50 min	50 min	45 min	40 min
Sample volume	2 μl	2 μl	2 μl	2 μl
Guaranteed shelf life	Minimum 4 months	Minimum 4 months	Minimum 4 months	Minimum 4 months
Kit size	500 and 1,000 samples	500 and 1,000 samples	500 samples	500 samples

¹ Results using 300 bp and 1,000 bp DNA fragment standards in 1X TE buffer.

² Results using DNA Ladder in 1X TE buffer.

³ Results using sheared gDNA with smear range 50 bp – 2,000 bp in 1X TE buffer.

⁴ Results using DNA samples in 1X TE buffer.

⁵ Results using 400 bp DNA fragment standard in 1X TE buffer.

⁶ Results using sheared gDNA with smear range from 10 bp – 1,400 bp in 1X TE buffer.

⁷ Specifications not applicable to the FA 12-Capillary Array Long, 55 cm and FA/ZAG 96-Capillary Array Long, 55 cm.

⁸ Results using 500 bp DNA fragment standards and DNA Ladder in 1X TE buffer.

⁹ Results using sheared gDNA with smear range from 10 bp – 1,400 bp in 1X TE buffer with 33-55 Array.

¹⁰ Short capillary array, 33 cm.

Genomic DNA Analysis

Kit Name	Genomic DNA 50 kb Kit DNF-467	HS Genomic DNA 50 kb Kit DNF-468
Sizing range	75 bp – 60,000 bp	75 bp – 60,000 bp
Quantification accuracy ¹	± 30%	± 30%
Quantification precision ¹	25% CV	25% CV
gDNA concentration range ¹	25 ng/μL – 250 ng/μL	0.3 ng/μL – 12 ng/μL
Physical Specifications		
Analysis time ²	60 min	60 min
Sample volume	1 μl	2 μl
Guaranteed shelf life	Minimum 4 months	Minimum 4 months
Kit size	500 samples	500 samples

¹ Results using human blood genomic DNA in 1X TE buffer.

² Short capillary array, 33 cm.

Quantitative

Large Fragment Analysis

Kit Name	HS Large Fragment 50 kb Kit DNF-464	Large Fragment Kit DNF-492
Sizing range	75 bp – 48,500 bp	75 bp – 20,000 bp
Sizing accuracy	$\pm 15\%$ at ≤ 15 kb ¹ ; $\pm 25\%$ at ≥ 15 kb ²	$\pm 15\%$ ^{4,5}
Sizing precision	$\pm 10\%$	
Quantification accuracy	$\pm 25\%$ ³	$\pm 25\%$ ⁴
Quantification precision	20% CV ³	20% CV ⁴
Quantification range	DNA Fragment ³ : 5 pg/μL – 600 pg/μL (Optimal concentration 500 – 600 pg/μL); DNA Smear ³ : 50 pg/μL – 5 ng/μL (Optimal concentration of 1 ng/μL)	DNA Fragment ⁴ : 0.1 ng/μL – 10 ng/μL; DNA Smear ⁴ : 5 ng/μL – 100 ng/μL
Maximum DNA concentration	600 pg/μL per fragment; 5 ng/μL per total sample	
Physical Specifications		
Analysis time ⁶	55 min	50 min
Sample volume	2 μl	2 μl
Guaranteed shelf life	Minimum 4 months	Minimum 4 months
Kit size	500 samples	500 samples

¹ Results using DNA fragment standards at < 15 kb at 600 pg/μL and DNA smears at 1 ng/μL prepared in 1X TE buffer.

² Results using DNA Fragment standards at > 15 kb at 600 pg/μL and DNA smears at 1 ng/μL prepared from 1X TE buffer

³ Results using DNA fragment standards and DNA smears prepared in 1X TE buffer.

⁴ Results using DNA fragment standards in 1X TE buffer.

⁵ Results using DNA Ladder in 1X TE buffer.

⁶ Short capillary array, 33 cm.

RNA Analysis

Kit Name	Small RNA Kit DNF-470	RNA Kit (15 nt) DNF-471	
		Total RNA ³	IVT mRNA ⁴
Sizing range	15 nt – 200 nt	200 nt – 6,000 nt	200 nt – 6,000 nt ⁴ ; 500 nt – 9,000 nt ⁵
Sizing accuracy	N/A	$\pm 5\%$ ³	$\pm 10\%$ ⁶
Sizing precision	N/A	5% CV ³	5% CV ⁶
Limit of detection (S/N > 3)	N/A	5 ng/μL	1 ng/μL
Input concentration range	MicroRNA: 50 pg/μL – 2,000 pg/μL; Small RNA: 1 ng/μL – 20 ng/μL; Total RNA: 5 ng/μL – 100 ng/μL	5 ng/μL – 500 ng/μL	20 ng/μL – 100 ng/μL
Qualitative range	25 pg/μL – 2,500 pg/μL ¹	5 ng/μL – 500 ng/μL	1 ng/μL – 100 ng/μL
Quantitative range	50 pg/μL – 2,000 pg/μL ¹	25 ng/μL – 500 ng/μL	20 ng/μL – 100 ng/μL
Quantification accuracy	N/A	$\pm 20\%$ ³	$\pm 20\%$ ⁶
Quantification precision	25% CV ²	10% CV ³	10% CV ⁶
Physical Specifications			
Analysis time ⁷	24 min	40 min	40 min ⁴ ; 90 min ⁵
Sample volume	2 μl	2 μl	2 μl
Guaranteed shelf life	Minimum 4 months	Minimum 4 months	Minimum 4 months
Kit size	275 samples	500 and 1,000 samples	500 and 1,000 samples

¹ Results using total RNA, small RNA and microRNA samples and fragments diluted in nuclease-free water.

² Results using RNA Ladder as sample.

³ Results using Small RNA Ladder as sample.

⁴ Analysis with the DNF-47133 method.

⁵ Analysis with Lonza RNA Marker and the DNF-471E33 Extended IVT mRNA method.

⁶ Results using 900 nt, 6,000 nt, and 9,000 nt IVT mRNA samples with no modifications on the Fragment Analyzer instruments with a FA Capillary Array Short 33 cm array.

⁷ Short capillary array, 33 cm.

Quantitative

Kit Name	HS RNA kit (15 nt) DNF-472		
	Total RNA and ribo-depleted RNA	IVT mRNA Low Concentration	IVT mRNA Mid Concentration
Sizing range	200 nt – 6,000 nt	200 nt – 6,000 nt ² ; 500 nt – 9,000 nt ³	200 nt – 6,000 nt ⁵ ; 500 nt – 9,000 nt ⁶
Sizing accuracy	± 20% ¹	± 15% ⁴	± 15% ⁴
Sizing precision	20% CV ¹	10% CV ⁴	5% CV ⁴
Limit of detection (S/N > 3) or sensitivity	Total RNA: 50 pg/μL; Ribo-depleted RNA: 250 pg/μL	15 pg/μL ⁴	N/A
Input concentration range	Total RNA: 50 pg/μL – 5,000 pg/μL; Ribo-depleted RNA: 500 pg/μL – 5,000 pg/μL	500 pg/μL – 2,500 pg/μL ⁴	2,500 pg/μL – 10,000 pg/μL ⁴
Quantitative range	Total RNA: 50 pg/μL – 5,000 pg/μL; Ribo-depleted RNA: 500 pg/μL – 5,000 pg/μL	N/A	N/A
Quantification accuracy	± 30% ¹	N/A	N/A
Quantification precision	20% CV ¹	N/A	N/A
Physical Specifications			
Analysis time ⁷	40 min	45 min ² ; 90 min ³	45 min ⁵ ; 90 min ⁶
Sample volume	2 μl	2 μl	2 μl
Guaranteed shelf life	Minimum 4 months	Minimum 4 months	Minimum 4 months
Kit size	500 and 1,000 samples	500 and 1,000 samples	500 and 1,000 samples

¹ Results using RNA Ladder as sample.

² Analysis with the DNF-472A33 – HS IVT mRNA Low Concentration method.

³ Analysis with Lonza RNA Marker and the DNF-472AE33 – 4kV HS IVT mRNA Extended Low Concentration method.

⁴ Results using 1,800 nt, 4,300 nt, and 9,000 nt IVT mRNA with no modifications on the 5200 and 5300 Fragment Analyzer instruments with the FA Capillary Array Short, 33 cm.

⁵ Analysis with the DNF-472B33 – HS IVT mRNA Mid Concentration method.

⁶ Analysis with Lonza RNA Marker and the DNF-472BE33 – 4kV HS IVT mRNA Extended Mid Concentration method.

⁷ Short capillary array, 33 cm.

Qualitative

The kits below are for sizing and qualitative analysis, using a double injection of sizing markers and sample. Appropriate for genotyping or analysis of SSR's/microsatellites, and PCR fragments.

Kit Name	dsDNA 905 Reagent Kit (1-500 bp) DNF-905	dsDNA 910 Reagent Kit (35-1500 bp) DNF-910	dsDNA 915 Reagent Kit (35-5000 bp) DNF-915	dsDNA 920 Reagent Kit (75-15000 bp) DNF-920
Sizing range	35 bp – 500 bp	35 bp – 1,500 bp	35 bp – 5,000 bp	75 bp – 15,000 bp
Sizing accuracy ¹	± 5%	± 5%	± 5%	± 5%
Sizing precision ¹	2% CV	2% CV	2% CV	2% CV
Separation resolution ²	5 bp @ 300 bp	35 bp – 100 bp ≤ 10%; 100 bp – 1,000 bp ≤ 5%; 1,000 bp – 1,500 bp ≤ 10%	35 bp – 100 bp ≤ 10%; 100 bp – 1,000 bp ≤ 5%; 1,000 bp – 5,000 bp ≤ 10%	75 bp – 1,500 bp ≤ 5%; 1,500 bp – 15,000 bp ≤ 10%
DNA fragment concentration range ¹	0.5 ng/μL – 50 ng/μL	0.5 ng/μL – 50 ng/μL	0.5 ng/μL – 50 ng/μL	0.5 ng/μL – 50 ng/μL
Physical Specifications				
Analysis time ²	60 min	45 min	50 min	50 min
Sample volume	2 μl	2 μl	2 μl	2 μl
Guaranteed shelf life	Minimum 4 months	Minimum 4 months	Minimum 4 months	Minimum 4 months
Kit size	500 and 1,000 samples	500 and 1,000 samples	500 and 1,000 samples	500 samples

¹ Results using DNA Ladder or DNA fragment standards initially prepared in 1X TE buffer.

² Short capillary array, 33 cm.

Qualitative

Kit Name	dsDNA 930 Reagent Kit (75-20000 bp) DNF-930	dsDNA 935 Reagent Kit (1-1500 bp) DNF-935	Plasmid DNA Kit DNF-940
Sizing range	75 bp – 20,000 bp	100 bp – 1,500 bp	2,000 bp – 10,000 bp
Sizing accuracy	± 10% ¹	± 5% ¹	± 10% ²
Sizing precision ¹	5% CV	2% CV	N/A
Separation resolution ⁵	75 bp – 1,500 bp ≤ 10%; 1,500 bp – 20,000 bp ≤ 15%	1 bp – 100 bp ≤ 15%; 100 bp – 1,500 bp ≤ 10%	N/A
DNA fragment concentration range	0.5 ng/μL – 50 ng/μL ¹	0.5 ng/μL – 50 ng/μL ¹	0.1 ng/μL – 1 ng/μL ^{2,3}
Physical Specifications			
Analysis time ⁵	30 min	20 min	30 min
Sample volume	2 μl	2 μl	Variable ⁴
Guaranteed shelf life	Minimum 4 months	Minimum 4 months	Minimum 4 months
Kit size	500 and 1,000 samples	500 and 1,000 samples	500 samples

¹ Results using DNA Ladder or DNA fragment standards initially prepared in 1X TE buffer.

² Results obtained using plasmid DNA Ladder or supercoiled DNA sample prepared in 1X TE buffer.

³ Final concentration DNA in 1X TE buffer

⁴ 24 μL final sample volume required; optimal sample concentration range in 1X TE buffer

⁵ Short capillary array, 33 cm.

Capillary

Agilent developed various capillary arrays for the Fragment Analyzer systems to provide superior separation resolution and nucleic acid quantification.

Array Name	Number of Capillaries	Effective Length	Total Length	Part Number
FA 12-Capillary Array Ultrashort ¹	12	22 cm	47 cm	A2300-1250-2247
FA 12-Capillary Array Short	12	33 cm	55 cm	A2300-1250-3355
FA 12-Capillary Array Long	12	55 cm	80 cm	A2300-1250-5580
FA 48-Capillary Array Short	48	33 cm	55 cm	A2300-4850-3355
FA/ZAG 96-Capillary Array Short	96	33 cm	55 cm	A2300-9650-3355
FA/ZAG 96-Capillary Array Long	96	55 cm	80 cm	A2300-9650-5580

¹ The FA 12-Capillary Array Ultrashort, 22 cm is only available for the 5200 Fragment Analyzer system.

www.agilent.com/genomics/fragment-analyzer

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