Thermo SCIENTIFIC

PRODUCT INFORMATION

Thermo Scientific RiboRuler High Range RNA Ladder

#SM1821 100 (5 × 20) µL
(for 50 applications)

Lot: _ **Expiry Date: _**

Supplied with: 1 mL of 2X RNA Loading Dye

Store at -70°C or at -20°C (up to 6 months).

www.thermoscientific.com/onebio

Description

Thermo Scientific RiboRuler High Range RNA Ladder is a mixture of eight chromatography-purified single-stranded RNA transcripts (in bases): 6000, 4000, 3000, 2000, 1500, 1000, 500 and 200. The ladder is designed for qualitative and quantitative analysis of RNA on agarose gels stained with ethidium bromide or SYBR® Green II.

The ladder is free of degraded RNA and NTP's. Therefore, spectrophotometric measurements provide accurate values of RNA concentration in each ladder band. Due to this feature, the RiboRuler™ RNA ladder could be used for approximate RNA quantification on gels.

The RiboRuler High Range RNA Ladder is recommended for electrophoresis in the following: native 1% agarose with TAE buffer, denaturing formaldehyde agarose with MOPS buffer and denaturing glyoxal/DMSO agarose with sodium phosphate buffer (*see* RNA electrophoresis protocols on www.thermoscientific.com/onebio).

The ladder can be labeled radioactively with T4 Polynucleotide Kinase (*see* the RNA labeling protocol on www.thermoscientific.com/onebio) for use in Northern blots.

Storage Buffer

1 mM EDTA (pH 6.0).

2X RNA Loading Dye

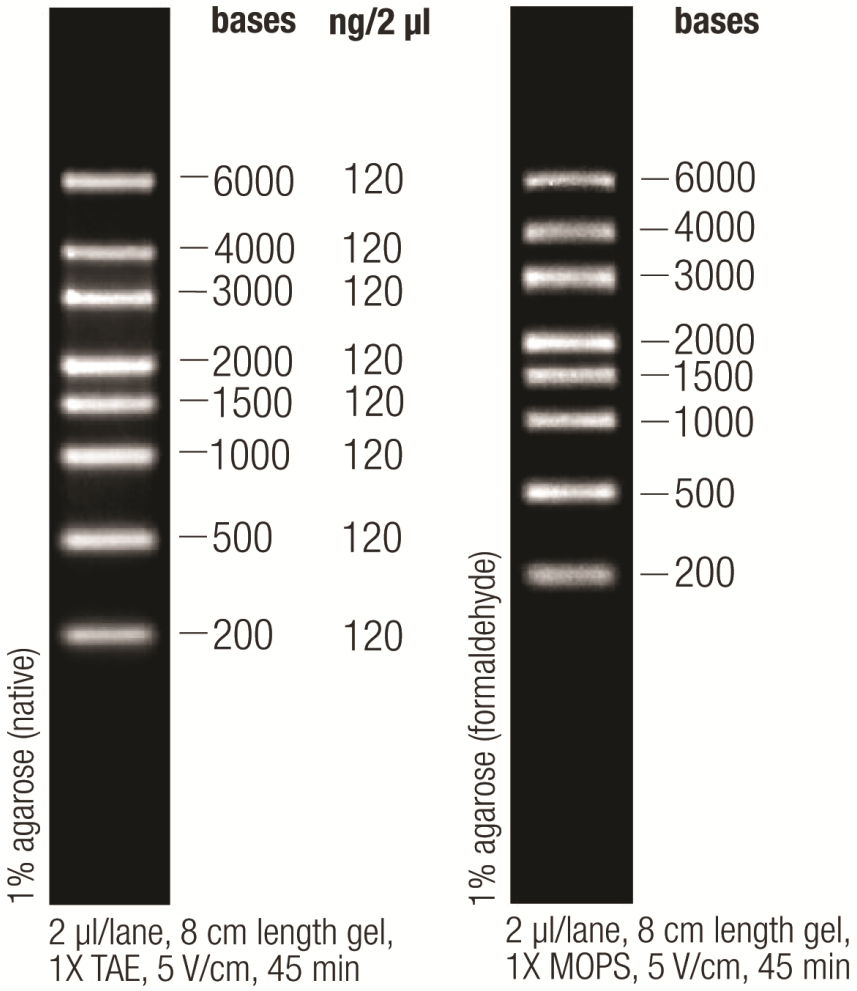
95% formamide, 0.025% SDS, 0.025% bromophenol blue, 0.025% xylene cyanol FF, 0.025% ethidium bromide, 0.5 mM EDTA.

CERTIFICATE OF ANALYSIS

Well-defined bands have been formed when a 2 µL aliquot of the RiboRuler High Range RNA Ladder was premixed with the 2X RNA Loading Dye and electrophoresed on a native agarose gel. The RNA concentration has been determined specrophotometrically. The absence of ribonucleases has been confirmed directly using a specific ribonuclease assay.

Quality authorized by: Jurgita Zilinskiene

RiboRuler High Range RNA Ladder



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RECOMMENDATIONS FOR USE

Note

- RNA ladders, as any RNA, are extremely sensitive to degradation by ribonucleases. To avoid RNA degradation, use protective gloves and prepare fresh gels and electrophoresis buffers just before use. Plastic ware, tips and solutions should be treated with diethyl pyrocarbonate.
- Use the supplied 2X RNA Loading Dye both for sample RNA and RNA ladder. The dye (#R0641) is also available separately.
- Mix equal volumes of the 2X RNA Loading Dye and RNA sample, heat at 70ºC for 10 min, chill on ice and load.
- Loading of equal volumes of the sample and the ladder is recommended. The required volumes can be obtained by diluting samples with the 2X RNA Loading Dye and Water, nuclease-free (#R0581).
- The 2X RNA Loading Dye contains a denaturing agent formamide. When samples are treated with this agent, RNA molecules separate according to their size both on native and denaturing agarose gels.
- For more precise RNA analysis and for Nothern blots, denaturing electrophoresis is recommended.

I. Ladder preparation for loading*

❶ Thaw the ladder on ice.
❷ Mix the contents well by pipetting or by gentle vortexing as concentration gradients may form in frozen products over time.
❸ Use a 0.25 µL aliquot of the ladder per 1 mm of the gel lane width.
❹ Prepare the following for 8 mm width of gel lane :
– 2 µL of 2X RNA Loading Dye,
– 2 µL of RiboRuler High Range RNA Ladder.
❺ Vortex briefly and spin down.
❻ Heat at 70ºC for 10 min. Chill quickly on ice and load on gel.

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* The prepared probe is suitable for electrophoresis both in native agarose with TAE buffer, and in denaturing formaldehyde agarose with MOPS buffer. To prepare probes for electrophoresis in glyoxal/DMSO agarose with sodium phosphate buffer, *see* the protocol on www.thermoscientific.com/onebio

II. RNA visualization

- The 2X RNA Loading Dye allows for RNA visualization without additional staining of denaturing agarose gels. If RNA fragments are separated on native agarose gels, additional staining with ethidium bromide is recommended.
- When visualizing a gel under UV light, an additional dark zone of ethidium bromide can sometimes be observed. However, this has no influence on the quality of RNA separation.
- Avoid long exposure to the UV light, as this may cause RNA degradation.
- For Northern blots, perform electrophoresis in denaturing formaldehyde agarose with MOPS buffer. A 2 µL aliquot of the RiboRuler RNA Ladder is well visible after being transferred on Hybond-N^+ membrane from 1% formaldehyde gel, whereas the same amount of RNA ladder is less visible when transferred from 1% native agarose.
- The ethidium bromide present in the sample and/or in the gel does not interfere neither with the RNA transfer onto the membrane, nor with RNA hybridization with the probe.

SAFETY INFORMATION



2X RNA Loading Dye

T Toxic

Hazard-determining components of labeling:
formamide

Risk phrases

R61 May cause harm to the unborn child.

Safety phrases

S53 Avoid exposure - obtain special instructions before use.
S20 When using do not eat or drink.
S23 Do not breathe gas/fumes/vapor/spray.
S36/39 Wear suitable protective clothing and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60 This material and its container must be disposed of as hazardous waste.

PRODUCT USE LIMITATION

This product is developed, designed and sold exclusively *for research purposes and in vitro use only.* The product was not tested for use in diagnostics or for drug development, nor is it suitable for administration to humans or animals. Please refer to www.thermoscientific.com/onebio for Material Safety Data Sheet of the product.

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