DNA-Dye NonTox

Loading Buffer with sensitive DNA-Dye NonTox, Ethidium bromide substitute
Product No. A9555

Description

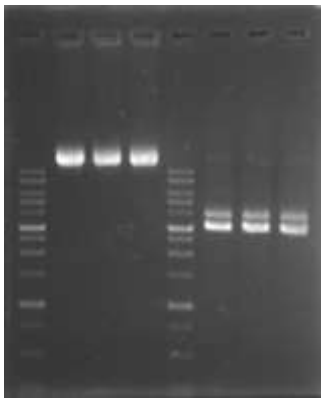
DNA-Dye NonTox is a non-toxic fluorescent reagent supplied in loading buffer. *DNA-Dye NonTox* is a highly sensitive stain for the detection of double-stranded DNA (dsDNA). The dye produces instant visualization of DNA bands on gels upon blue light or UV illumination.

Supplied in 6X DNA Loading Buffer, *DNA-Dye NonTox* is used to prepare DNA markers and samples for loading on agarose or polyacrylamide gels. It contains three tracking dyes Bromophenol Blue, Xylene Cyanol FF, and Orange G for visually tracking the DNA migration during the electrophoresis process.

Replace Ethidium bromide. *DNA-Dye NonTox* is ideal in terms of environmental safety requiring a non-hazardous alternative to Ethidium bromide. In addition, the dye included in *DNA-Dye NonTox* does not affect structure and integrity of DNA.

Storage	2 – 8°C, protected from light
Shelf life:	approx. 12 months

Spectral characteristics:
Excitation maxima of DNA-Dye NonTox are 300 nm (UV light) and 470 nm (blue light). Fluorescence emission of DNA-Dye NonTox bound to dsDNA is centered at 537 nm. Blue light or UV light transilluminators may be used to detect DNA bound to the dye. Due to its spectral characteristics DNA-Dye NonTox is compatible with most systems for gel visualization and documentation. For highest sensitivity, choose green detection filter (approx. 537 nm) if possible.
The detection limit of *DNA-Dye NonTox* is 5 ng DNA/band under optimal conditions, especially when blue light is used for excitation. Under UV light >10ng DNA are typically well detectable.



Agarose gel electrophoresis of DNA stained with *DNA-Dye NonTox*. DNA marker (M) and samples (1 - 6) were stained with *DNA-Dye NonTox*, separated by agarose gel electrophoresis and subsequently detected under UV light.

Instructions for Use

1. Vortex *DNA-Dye NonTox* for 10 seconds prior to use.
2. Dilute 1 part *DNA-Dye NonTox* with 5 parts of DNA sample and mix.

Note: *DNA-Dye NonTox* must be added to DNA markers in order to visualize the ladder bands simultaneously with the sample after electrophoresis.

3. Load sample and run according to standard procedures.
4. After electrophoresis, remove gel and place on UV or a blue light transilluminator to immediately visualize bands.

Note: *DNA-Dye NonTox* attaches to DNA strands, but does not intercalate. Due to this mechanism, variations in the migration behaviour between samples and markers were rarely observed. Bands with very low DNA

amounts (5-10 ng/band) may migrate slower by up to 10 ± 2% than the usually higher concentrated size marker bands.

Advantages of DNA-Dye NonTox at a Glance

Safe Absence of mutagenicity and low toxicity (LC>5000mg/kg) as compared to Ethidium bromide. Low environmental impact – Compliance with the Clean Water Act standards. No water pollution concern. Non-hazardous product. No expenses required for the waste management.

Sensitive As sensitive as Ethidium bromide.

Mild Ethidium bromide causes strand breaks or DNA nicking. Using *DNA-Dye NonTox* instead minimizes such damages. Using blue light excitation even further decreases negative effects on DNA.
As a consequence plasmid DNA shows significantly higher transformation rates when stained with *DNA-Dye NonTox* as compared to Ethidium bromide.

ready-to-use Apply just like a 6X Loading Dye. No de-staining required. Low background.

Assessment of Mutagenic Potential

Ames test is a method used to test mutagenicity of chemical substances. The following results are two examples from bio-safety assays demonstrating the low toxicity and mutagenic potential of *DNA-Dye NonTox*.

Table 1: Ames test/Mutagenicity test results using bacterial strain TA98 (S9-deficient experiment group) for testing *DNA-Dye NonTox* in comparison to Phosphate buffered saline (PBS) as negative control and 4NOP (4-nitro-o-phenylendiamine) as positive control group (n=3).

			Dilution Factor of substance DNA-Dye NonTox				
	Negative control group (D-PBS)	Positive control group (4NOP)§	1 X	2 X	4 X	8X	16 X
Mean bacterial population ± SD	19±3	1325±247	35±2	19±7	22±2	21±1	19±4
Mutagenicity*	--	69,73	1,84$	1,02	1,14	1,12	0,98

* Mutagenicity = Testing substance / negative control group
§ Indication of significance ($p < 0,05$)
$ The mean bacterial population of the testing substance *DNA-Dye NonTox* was 1,84-fold greater than that for the negative control group, which was <2-fold, but *p* value was 0,001 and exhibited significance.

Table 2: Ames test/Mutagenicity test results using bacterial strain TA98 (S9-deficient experiment group) for testing *DNA-Dye NonTox* in comparison to Phosphate buffered saline (PBS) as negative control and SA (Sodium azide) as positive control group (n=3).

			Dilution Factor of substance DNA-Dye NonTox				
	Negative control group (D-PBS)	Positive control group (SA)§	1 X	2 X	4 X	8X	16 X
Mean bacterial population ± SD	14±3	508±17	11±6	12±2	13±3	11±6	18±1
Mutagenicity*	--	36,31	0,79	0,88	0,93	0,81	1,29

* Mutagenicity = Testing substance / negative control group
§ Indication of significance ($p < 0,05$)