



## Carbon Black Nano-Strings, 200 nm

### Directions for Use 100350/07 (EN)

Issued: Jun 2008, Revised Jan 2010

### INTENDED USE

Carbon Black Nano-Strings are intended for labelling of proteins. For laboratory use only.

### SUMMARY AND EXPLANATION

Carbon Black Nano-Strings (CBNS) can be conjugated to different antibodies for use in lateral flow immunoassay. The procedure has to be optimised for each antibody. One example, immobilisation of mouse monoclonal antibodies, is shown below.

Coloured particles are widely used as a means to visually detect and quantify various analytes in different immunoassays. CBNS consist of carbon particles combined into elongated primary aggregates, which can easily bind antibodies and other substances to their large surface area. Compared to other particles, such as gold and blue polystyrene, also used in these types of tests, they give higher signal intensity<sup>1</sup>, making possible the development of ultra-sensitive tests suitable for low concentration analytes. The grey or black signal achieved can be read with instruments like ordinary flatbed scanners.

### REAGENTS

A volume of 2 mL CBNS is sufficient for 10-15,000 immuno-chromatographic tests.

Art. No.	Name and Contents	
0220	Carbon Black Nano-Strings, 200 nm 1x2 mL CBNS 200	100321
0221	Carbon Black Nano-Strings, 200 nm 1x10 mL CBNS 200	100322
0240	Carbon Black Nano-Strings, Sample Pack 1x1 mL CBNS 100 1x1 mL CBNS 200	100310 100320

Concentration: 10 mg/mL CBNS in 5 mM borate buffer pH 8.4.

Maximum binding for 100 nm: 100-200 µg IgG/mg CBNS.

Maximum binding for 200 nm: 50-100 µg IgG/mg CBNS.

### Storage and Shelf Life

Store at ambient temperature. For expiration dates see the product labels.

### Precautions

- Not for internal or external use in humans or animals. Not for *in vitro* diagnostic use.
- Do not use reagents beyond their expiration dates.
- Contamination of reagents may yield incorrect results.
- Always use good laboratory procedures when handling the product and wear suitable protective clothing.

### PROCEDURE

Optimise the immobilising procedure for each antibody by varying the:

- Antibody concentration
- Buffer pH and ionic strength
- Storage and testing buffer

### Immobilisation of Mouse Monoclonal Antibodies

1. Resuspend the CBNS stock solution by turning the bottle end-over-end. Assure that all material is in suspension.

2. Dilute CBNS to 1 mg/mL in a suitable buffer, for instance 5 mM borate buffer pH 8.4 or 5 mM Tris pH 8 and sonicate using a microprobe for 2 minutes with 30% amplitude (2 second pulses with intermission of 2 seconds).

3. Prepare the antibody by diluting it to two times the final coupling concentration in coupling buffer. The ionic strength of the coupling buffer should be below 30 mM and might be a Tris buffer pH 8.

*NOTE! The optimal coupling buffer should be tested for each antibody. Too high ionic strength will cause aggregation and too low might result in low antibody activity.*

4. Mix one part of diluted CBNS with one part of diluted antibody and incubate end-over-end for 1 hour at 17-30°C.

5. Add bovine serum albumin (BSA) to a final concentration of 1% and incubate end-over-end for 0.5 hour at 17-30°C.

6. Wash by centrifuging at 16,000 G for 5 minutes using a benchtop microcentrifuge. Remove supernatant and resuspend the pellet with a buffer containing 1 % BSA, 0.1 M borate buffer pH 8.4, 0.02 % - 0.05 % NaN<sub>3</sub>. Repeat the washing step 3 times for a total of 4 washes and resuspend to the optimal storage volume. Before use, dilute to suitable testing concentration and testing buffer and sonicate using a microprobe for 20 seconds with 5% amplitude (2 second pulses with intermission of 2 seconds).

### Materials Required

Materials provided by MAIIA Diagnostics:

See reagents.

Materials required but not provided by MAIIA Diagnostics:

- Sonicator probe
- High-speed centrifuge capable of 10-16,000 G
- Bovine serum albumin
- Buffer for dilution of non-conjugated CBNS (e.g. 5 mM borate pH 8.4)
- Coupling buffer (e.g. 30 mM Tris pH 8)
- Storage buffer for protein-CBNS conjugate (e.g. 1 % BSA, 0.1 M borate buffer pH 8.4, 0.02 % - 0.05 % NaN<sub>3</sub>)

### WARRANTY

Information presented here is accurate to the best of our knowledge. It is the responsibility of the user to verify the suitability of the supplied materials and procedures for a particular purpose. In this respect further processing made by the user may affect the results, in which event MAIIA AB disclaims all warranties expressed, implied or statutory, including the implied warranty of merchantability and fitness for use. MAIIA AB and its authorised distributors, in such event, shall not be liable for damages indirect or consequential.

### MANUFACTURER

MAIIA AB, Rapsgatan 7P, SE-75450 Uppsala, Sweden.

### Technical Assistance

If you have any problems or experience any difficulties regarding the products, please do not hesitate to contact us.

Web: [www.maiiadiagnostics.com](http://www.maiiadiagnostics.com)

Email: [info@maiadiagnostics.com](mailto:info@maiadiagnostics.com)

Mail: MAIIA Diagnostics

PO Box 6529

SE-75138 Uppsala, Sweden

### References

<sup>1</sup> Lönnberg, M., Drevin, M., Carlsson, J. Journal of Immunological Methods 339(2), 236-244 (2008) Ultra-sensitive immunochromatographic assay for quantitative determination of erythropoietin.