

TECHNICAL NOTE RELATED TO THE MARKET SURVEY ON OPTICAL FIBER FOR THE BROADER APPROACH

Fusion for Energy in collaboration with EURO-Fusion is preparing its procurement activity for the supply of an approximate 1500 km of optical fibre according to the technical specifications reported below:

Fibre length	About 1500 km
Fibre type	Multimode, step index
Fibre materials	<p>Core: pure or fluorine doped silica;</p> <p>Cladding: fluorine doped silica;</p> <p>Coating: if required, the material shall be suitable for fiber bundle assemblies: as thin as possible and resistant to temperature up to 300 °C, e.g. polyimide.</p> <p>Transmission spectral interval required: 480-1070 nm;</p> <p>The materials must be chosen as the best compromise between optimum transmission in the spectral range 480-1070 nm and radiation hardness.</p>
Diameter	<p>Core: 180-200 ±10 micron</p> <p>Cladding: 200-220 ±5%micron;</p> <p>The fiber will be used to build a tightly packed fiber bundle after the coating is removed. For this assembly process, the whole diameter including coating shall be 230-250 ±8% micron.</p>
Numerical aperture	Equal to or greater than 0.22
Radiation hardness	<p>The fiber shall preferably endure a neutron and gamma dose of 0.3 MGy, corresponding to a neutron dose of about 10¹⁶ neutrons/cm².</p> <p>Core and cladding Fluorine doping, H₂ loading (metal jacket for H₂ retention to be considered if viable).</p> <p>Pre-irradiation annealing to ≥ 300°C could be considered as radiation hardening methods.</p>

- The scope of procurement only covers the supply of bare fibre. Please note that the fibre will then be cut and assembled into fibre bundles.
- Specifications are still under definition.

You are invited to provide information on optical fibres that meet the attached specifications and that you can supply in the quantity of interest within a reasonable time.

In particular please provide information on the following points for each product you will propose:

- Name of commercial fibre if available;
- Attenuation curve in the spectral range 300-1200 nm;
- Detailed materials composition;
- Precise available diameters with accuracy;
- Minimum bending radius;
- Operational temperature range;
- Radiation hardness qualification;
- Expected stability of mechanical and optical specifications in terms of time (foreseen service time: 20 years) and radiation dose;
- Indicative delivery time.

Specifically to radiation hardness, please send all available documentation that can demonstrate the level of immunity to transmission loss due to neutron dose.

At a lower priority level we are also seeking products with numerical aperture higher than NA 0.22, but satisfying all other requested specifications, including radiation hardness.

We are keen to provide any further clarification and are open to discuss our specification.

CALL FOR TENDER TENTATIVE SCHEDULE

The launching of the call for tender is planned for June 2019 (tentative date).

CONTRACT TENTATIVE SCHEDULE

The signature of the contract is planned for the November 2019 (tentative date).

F4E MARKET SURVEY

You can answer directly to the Market survey by clicking [HERE](#).

For any question, please contact benjamin.perier@f4e.europa.eu

Thank you for your interest.
