

## **Anti- Bed Bug Bed Sheet**

Bed bugs are small, flat insects that pose a public health risk due to their parasitic nature and blood craving. Numerous studies on bed bugs and their impact on human health have been undertaken. Modern bed bugs, in particular, are resistant to single pyrethroids. It is unknown whether the multiple pyrethroid-impregnated liners are effective. There is limited evidence on insecticides' effectiveness to repel bed bugs. Permethrin, lambda-cyhalothrin, deltamethrin, and a chlorinated pyrrole designated chlorfenapyr are now used in combination with other pyrethroids. Bed bug (*Cimex lectularius*) management strategies can include utilising anti-bed bug bed sheets impregnated with various pyrethroids, particularly in the defence, railway, and hotel industries. Bed bugs were studied in this study to evaluate how they would react to various types of permethrin-impregnated fabric, with special attention paid to contact toxicity, repellency, and feeding inhibition. Bed bugs became inebriated after continuous contact to impregnated anti-bed bug bed sheets, and the population achieved 100% death after 96 hours, despite repellent activity and the mortality being detectable for up to 20 washes. According to photo documentation and recording data, bed bugs easily transferred over to the pyrethroid-impregnated bed sheets and tried to escape swiftly.

Anti-bed bug bed sheets are made of a finely woven polyester and cotton blend fabric that has been impregnated with 1%-concentration combinations of permethrin, deltamethrin, and alpha cypermethrin via a non-covalent bonding procedure, allowing for the formulation's bioavailability repellency and killing bed bugs. The product remains active for up to 20 washes after usage.

### **Contact Details**

Interested companies/industries are requested to apply against this EoI through email or by DAK to following address:-

**To, (with all attachments)**

**Director**

**Defence Research Laboratory (DRL)**

**Govt. of India, Ministry of Defence**

**Defence R&D Organisation**

**Dekargaon, Tezpur (Assam)-784501**

**Email-director.drl @gov.in**

**Copy to (without attachments):-**

**The Director**

**Directorate of Industry Interface & technology Management (DIITM)**

**Room No. 447, DRDO Bhawan, Rajaji Marg, New Delhi-110 011**

**Email-diitm.hqr@gov.in**

**List of supporting documents to be attached with EoI**

- (a) Memorandum and Articles of Association (Should be incorporated as per Indian Companies Act, as amended time to time)
- (b) Certificates of registration as a manufacturing unit, if any.
- (c) Audited Balance Sheet for the preceding three years.
- (d) Income Tax returns for the preceding three year period
- (e) Details of shareholding/ownership pattern especially foreign partners/ shareholders, foreign employees, directors, etc. The company must adhere to the prevailing Govt of India policies and regulations on Foreign Direct Investment (FDI)/DIPP norms as applicable.
- (f) Annual budget for R&D during last three years.
- (g) Numbers and details of IPR or patents, etc., held by the company.
- (h) Number of technically or professionally qualified personnel.
- (i) Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).
- (j) Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise.
- (k) List of Testing and Support equipment's
- (l) ISO/ ISI certification or any other certification
- (m) Relevant clearances form the authorities/ ministries (if any)
- (n) Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.
- (o) Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.
- (p) PESO and DPIIT license for explosive handling if ToT is for high energy Material, explosives, propellants, and component/ system dealing with it etc.
- (q) Under taking form company seeking ToT that none of its Directors, Independent Directors, non-executive Directors, Key management personnel are involved in any corrupt practices, unfair means and illegal activities.
- (r) Details of the industrials license for defence manufacturing be provided by the industry seeking ToTs