

Multifunctional Insecticidal Bi-component Filament for Long Lasting Mosquito Net

Insecticide-loaded textile articles are used to provide protection against vector borne diseases. This technology describes a method for making insecticide-incorporated filaments having long lasting efficiency against vector protection. Pyrethroids, a family of insecticides that includes permethrin, alpha-cypermethrin and deltamethrin (DM) are highly effective in killing mosquitoes, by disabling their nervous systems. WHO sanctioned the use of selected set of these pyrethroids. DM has a much longer duration as well as stronger insecticidal activity than other commonly available insecticides; therefore, the doses needed for protection against mosquitoes are extremely low. So, it is efficiently economical. DM is also advantageous because its activity persists over a wide range of temperature.

Various insecticide formulation-containing binders have been used to impart insecticidal efficiency on knitted fabric by exhaust/pad method. However, these fabrics could not sustain their insecticidal efficacy after repeated laundry washes. In order to achieve durability, insecticides have been incorporated into polymer matrix prior to melt spinning. Incorporation of insecticide into textile articles also has its regulation limit, and if insecticide has been incorporated only into surface of filament instead of entire cross-section then enhanced insecticidal efficiency will be resulted.

We initiated bi-component filament-spinning route having sheath-core structure where insecticide is in the sheath only.

DRDO has developed insecticidal filaments successfully having 100% mortality up to 20 wash cycles for long-lasting effect, incorporating insecticide in the yarn. The developed yarn shows adequate tenacity and elongation. The insecticide-incorporated knitted fabric also possesses excellent bursting strength. Thus, the bi-component melt-spinning technique can be effectively used to manufacture insecticide-incorporated filaments having long-lasting efficacy that can be further converted into various textile stores such as long-lasting insecticidal net, tents, shelters and curtains.



Photograph of Long Lasting Net Fabric

Interested industries are requested to submit their financial bid in **sealed envelope mentioning name of technology on top of the envelope**, along with relevant documents as per the list in appendix-A, through one of the following agencies only, to DRDO before the bid ending date:-

S. No	Name of the Agency	Point of Contact
1	<p>The Associated Chambers of Commerce and Industry of India (ASSOCHAM) 4th Floor, YMCA Cultural Centre and Library Building, 01, Jai Singh Road, New Delhi - 110001</p> <p>Phone: 46550555 (Hunting Line) Fax: 01123347008/9 Website :www[dot]assocham[dot]or</p>	<p>Ms Kavita Sharma Addl Director and Head - Energy and Infra Mobile : 09871801002 Tele: 0091-11-23347040 Email: kavita[dot]sharma[at]assocham[dot]com Website : www.assocham.org</p>

	g	
2	<p>National Research Development Corporation Address :20-22, Zamroodhpur Community Centre, Kailash Colony Extn. New Delhi - 110048</p> <p>Tel : +91-11-29240401 to 29240407 Fax: +91-11-29240409 / 29240410 General E-mail : write2[at]nrdc[dot]in</p>	<p>Sh. Rajendra Gondane Sr. Manager (Business Development) National Research Development Corporation 20-22, Zamroodhpur Community Centre, Kailash Colony Extn. New Delhi - 110048 INDIA</p> <p>Mobile : +91-9910496554 EPABX : +91-11-29240401-07 (Extn. 444) Fax : +91-11-29240409 -10 Email : rgondane[at]nrdc[dot]in Website : www[dot]nrdcindia[dot]com</p>
3	<p>PHD Chamber of Commerce and Industry Address: PHD House, 4/2 Siri Institutional Area, August Kranti Marg, New Delhi 110016</p> <p>Tel : 91-11-26863801-04, 49545454 Fax : 91-11-26855450, 49545451 Website : www.phdcci.in E-mail : phdcci[at]phdcci[dot]in</p>	<p>Nasir Jamal Joint Secretary PHD Chamber of Commerce & Industry Address: PHD House, 4/2 Siri Institutional Area, August Kranti Marg, New Delhi 110016 INDIA</p> <p>Mobile : +91-9810185714, 8210343267 Phone : +91-11-49545454, 49545400 Extn : 279 Fax : +91-11-26855450</p>
4	<p>Confederation of Indian Industry (CII) Address: The Mantosh Sondhi Centre 23, Institutional Area, Lodi Road, New Delhi - 110 003 (India)</p> <p>Tel : 91 11 45771000 / 24629994-7 Fax : 91 11 24626149 E-Mail : info[at]cii[dot]in Website : www.cii.in</p>	<p>Amit Kumar Deputy Director – Defence & Aerospace Society of Indian Defence Manufacturers (SIDM) C/o Confederation of Indian Industry (CII) Address: 3rd Floor, IGSSS, 28 Institutional Area, Lodhi Road, New Delhi – 110003 INDIA</p> <p>Mobile : +91-9990059163 Phone : +91-11-45772062 Fax : +91-11-45772022 Email : amit[dot]kumar[at]cii[dot]in Website : www.sidm.in</p>

List of Support documents to be attached

- (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.