

**DARPA BAA HR001120S0019-12**  
**Tough Self-Decontaminating Surfaces (TSDS)**  
**FREQUENTLY ASKED QUESTIONS**

1. Is there a measure of toughness?

**A. While the measure of toughness is left up to the proposer, it is expected that proposer's will include measurements of toughness that demonstrate that the coatings have the wear and abrasion resistance of toughened thermoplastics and the chemical and UV resistance of CARC coatings. Some examples of potential tests include: tape and pencil tests, impact resistance, taber abrasion, falling abrasive, salt spray, UV exposure, and humidity testing.**

2. What are the required functions of the multi-functional coating?

**A. The two key functions of the coating are to provide protection for the underlying surface in a way that is analogous to CARC coatings while also exhibiting self-decontaminating, broadband antimicrobial properties with little need to refresh the coating.**

3. What standard is acceptable to measure wear?

**A. It is expected that the proposer will suggest a series of tests to demonstrate the wear resistance of the coating system that is in-line with MIL-DTL-53072 F for CARC coatings. Unique approaches to coating solutions however may require special considerations to determine wear. Some examples of potential tests include: tape and pencil tests, impact resistance, taber abrasion, falling abrasive, salt spray, UV exposure, and humidity testing. Further details for testing may also be found in the ASTM standards for paint and coatings.**

4. Will the coating be applied to CARC coatings or replace CARC coatings?

**A. It is expected that proposed solutions will either be compatible with existing CARC coatings or replace CARC coatings while providing the same advantages of CARC coatings and the desired antimicrobial properties.**

5. Does DARPA have data (e.g. Pareto Analysis) of high priority military systems and subsystems that need to be addressed?

**A. This effort seeks a general purpose coating system that could be applied to a wide variety of surfaces on military vehicles including land, air, and maritime systems.**

6. Phase I, i. Schedule/Milestones/Deliverables Month 6 – Should the text read “prediction” vs. “predication?”

**A. Yes**

7. Phase II, please share the testing matrix to be used by the potential independent verification of coating performance.

**A. This is requested to match the testing matrix invoked by the research team in Phase I.**

8. Regarding “simulants” are there expected chemical and biological agents to be tested? Would E.coli, S. aureus and B. subtilis spores be suitable simulants for Phase I? Are there any target viral agents?

**A. There are not any specific expected simulants. There are many potential simulants that can be found in the open literature for chemical, biological, and viral agents. Proposer's are encouraged to pick a few representative simulants that demonstrate the broad-spectrum effectiveness of their coatings.**

9. Could you elaborate on the specification of 99% killing in <5 minutes? Is there a particular standard associated with this or that we should be aware of?

**A. Proposer's are encouraged to provide a reasonable path to achieving the goal of 99% killing in <5 minutes, but the method to demonstrate achievement of this goal is left to the proposers.**

10. Based on the information provided would this proposed solution be of interest to DARPA and if so, would a Phase I proposal be welcomed in response to this solicitation?

**A. The call for proposals is open to accepting a wide variety of approaches and it is open to both Phase I and Direct-to-Phase II.**

11. Please confirm that the surface is a hard rigid solid.

**A. It is expected that hard rigid surfaces would be relevant to many commercial and DoD applications however coatings for soft flexible surfaces would also be of interest if they also possess high toughness.**

12. Please disclose if the surface is metal or plastic so that we know the electrical conductivity. Do we need to worry about interaction with existing coating such as radar absorbing material?

**A. It is expected that the proposer will select a DoD-relevant application/substrate to apply their coating or antimicrobial system. Applicability of the proposed antimicrobial system to a wide variety of substrates will help broaden the potential applications.**

13. Please confirm that the surface is not flexible such as face mask.

**A. Please refer to the above answers to questions 11 and 12.**

14. Please confirm that the surface will not touch the faces, mouths and eyes and we do not have to worry about toxicity. Our chemicals are not toxic, but if it is used to hold food, we need to perform extra tests.

**A. If toxicity is a concern for the proposed technology, please define the appropriate uses and limitations of your technology in terms of DoD or commercial applications.**

15. Please confirm that the surface is moving in air such as the surface of a tank. As such, the main source of contamination comes from air/aerosol.

**A. Proposals should address the decontamination of surfaces. It is expected that a wide variety of contaminate deposition methods could occur in relevant operational environments including aerosols, contact deposition, and a variety of other methods.**

16. Our AOT can destroy biological agents and most chemical agents by oxidation without problem. However, there are some chemicals that oxidation cannot destroy. Do we need to worry about these extreme cases?

**A. Proposers are expected to demonstrate antimicrobial properties of their coatings with readily available simulants. Demonstration of broad banded antimicrobial response is preferred, however it is expected that solutions will have limitations as well.**

17. Is there a preferred ASTM or ISO or EPA test procedure? Is it sufficient to demonstrate that our coating can diminish concentration of contamination in air initially during Phase 1 program? We like to perform low cost test first to optimize the formulation.

**A. Chemical Agent Resistant Coatings (CARCs) are the existing DoD relevant standard for chemical resistance and rapid decontamination coatings. The testing and certification of CARCs is a good representative example of a testing standard.**