

Private Company

Anti-adhesion technologies for synthetic rubber processing

MATERIALS

Background

Ethylene propylene diene monomer (EPDM) sheets are synthetic rubber materials widely used in applications such as roofing membranes, seals, and gaskets due to their durability, flexibility, and weather resistance. The manufacturing process of producing EPDM sheets involves dusting their surfaces with fine, non-reactive powders such as mica or talc. This creates a thin lubrication barrier that reduces stickiness to itself and to equipment, making handling and transportation easier. Dusting also prevents adhesion, protects sheets during curing and storage, and reduces surface defects. Despite these benefits, the dusting process can pose challenges, including environmental and health risks, such as potential hazards from powder inhalation. Additionally, the final product is not aesthetically clean and requires an additional cleaning process to remove residue for optimal bonding to substrates (e.g., insulation boards) during sheet installation as a roofing membrane.

What we're looking for

We are looking for solutions to eliminate dusting during the EPDM curing process. This could involve changes to the manufacturing process, modifications to the EPDM formulation, or other approaches.

Solutions of interest include:

- Environmentally friendly spray-coatings and/or anti-tack agents
- Chemical additives that could act as a lubrication barrier
- Thin films or coatings that can temporarily prevent self-adhesion of EPDM rubber
- Alternative curing process

Our must-have requirements are:

- No major changes to the process or formulation that compromise physical properties requirements, such as tensile, elongation at break, specific gravity, tear strength, hardness

Our nice-to-have's are:

- Achieves the desired goals with minimal changes in formulation and process
- No significant increase in manufacturing costs

What's out of scope:

- Any technology that has no potential to be deployed at large scale in a manufacturing plant within 3-4 years
- Solutions that permanently alter the surface chemistry of the EPDM sheet, impairing the material's ability to bond effectively during final application processes

Acceptable technology readiness levels (TRL): Levels 3-9

1. Basic principles observed
2. Concept development
3. Experimental proof of concept
4. Validated in lab conditions
5. Validated in relevant environment
6. Demonstrated in relevant environment
7. Regulatory approval
8. Product in production
9. Product in market

What we can offer you

Eligible partnership models:

- Sponsored research
- Co-development
- Supply/purchase
- Licensing

Benefits:

Sponsored Research

Up to \$100,000 for the first year, with the potential for an extension based on project progress and outcomes.

Expertise

Internal expertise in the R&D labs and with the R&D chemists and engineers.

Data

We can provide existing data, and any support needed with collecting data and subsequent analysis.

Facilities and Services

Access to our equipment and lab capabilities.

Please contact the University of South Florida Technology Transfer office representative for submission - Roisin McNally at rmcnally@usf.edu.