Lubrizol

July 20, 2018

Dear Valued Customer,

The proliferation of harmful plastic litter in the marine environment is a concern we all share. Effectively addressing that concern requires a clear understanding of the sources of harm in the marine environment. Equally important is a clear understanding of what is not a source of harm in the marine environment.

The environmental concerns about the use of small, solid plastic particles or "microbeads" in personal care products are well known. Microbeads typically are made of polyethylene, a solid plastic, and are added as exfoliants to wash-off personal care products. (Lubrizol has never made plastic microbeads; our ACTISCRUB™ physical exfoliants are naturally-derived.) The concerns about plastic microbeads include their possible release into the marine environment after being rinsed down the drain. There is evidence that plastic microbeads could be ingested by marine life and contribute to the accumulation of toxins in the food chain.

Recently, some have asked whether acrylate polymers, which are used as ingredients in personal care products, could pose harmful risks to the environment and whether their use should be avoided as a precaution. The answer is no.

Acrylate polymers are different from plastics in fundamental ways, including the functions they serve in personal care products, as well as in physical form. In addition, Lubrizol's recent holistic risk assessment shows that acrylate polymers are largely captured in waste water treatment, are non-toxic and do not bioaccumulate through the food chain. Each of these factors support the conclusion that use of acrylate polymers in personal care products do not pose harmful risk to the environment.

Acrylate polymers and plastics perform different functions in personal care products

Plastic microbeads are synthetic solid particles that maintain their shape and solid form in end use personal care formulations like scrubs and cleansers. Because they are used as exfoliants, it is necessary for microbeads to stay in their solid form during the life of the finished personal care product, which means that they are solid when rinsed down the drain.

Acrylate polymers are used differently in personal care products. Lubrizol acrylate polymer ingredients are used as rheology modifiers, efficient thickeners, binders and stabilizers in gels, creams, lotions, body washes and shampoos. They are crosslinked polymers that swell in water up to 1000 times their original volume (and ten times their original diameter) to form a gel when exposed to a pH environment above 4-6. In addition, they are used at very low levels, typically accounting for between 0.5-3.0% of a finished personal care. Their functionality requires that they do not retain a distinct shape and that they consist of over 90% water in a finished product.

Lubrizol Advanced Materials, Inc.
9911 Brecksville Road
Cleveland, OH 44141-3201
Telephone: 216.447.5000 www.lubrizol.com

Acrylate polymers and plastics have different physical forms in personal care products

The physical difference between plastic microbeads and acrylate polymers are easily demonstrated. Centrifugation and filtration studies comparing finished personal care product formulas containing microbeads with finished formulas containing acrylate polymers plainly illustrate the fundamental physical differences between these ingredients. In these simple studies, the finished formulas containing acrylate polymers included the following Lubrizol ingredients (INCI names):

- Acrylates copolymer
- Acrylates/C10-30 Alkyl Acrylate Crosspolymer
- Acrylates Crosspolymer-4
- Acrylates / Beheneth-25 Methacrylate / HEMA Crosspolymer

During the studies, the plastic microbeads separated during centrifugation and then could be filtered out of the formulation, due to their solid state. Because Lubrizol's polyacrylate ingredients are not solid particles when used in a finished formulation, the acrylate polymers did not separate out after centrifugation and were not filtered out of the formulation. This simple comparison concretely illustrated that the polymers used in a finished personal care are physically distinct from plastic microbeads in the most fundamental of ways. In other words, acrylate polymers clearly do not fit the criteria related to physical state, morphology and dimensions to be classified as microplastics

Acrylate polymers pose no harmful risk to the environmental

Lubrizol has conducted a comprehensive risk assessment under realistic use conditions (applying the most conservative assumptions) to evaluate the potential environmental risk of using acrylate polymer ingredients in finished personal care products. The risk assessment showed that acrylate polymers are effectively captured by waste water treatment systems, thereby reducing polymer concentrations in the effluent water to levels that would not have an adverse impact on the environment. In addition, available literature consistently classifies acrylate polymers to be non-toxic and not bio accumulative. In other words, the odds of acrylate polymers ever reaching the marine environment is very low and, even if they did, they would not cause harm. Thus, the risk assessment rightly concludes that the use of acrylate polymers in finished personal care products poses no harmful risk to the environment.

Lubrizol invites you to contact us to discuss the specifics of both the experimental testing and the environmental risk assessment of our acrylate polymer ingredients in finished personal care products. We look forward to sharing additional information and data with you.

Very truly yours,

Elizabeth A. Grove, Director
Sustainability and Compliance, Personal Home and Health Care

Meera Raghuram, Director
Regulatory Strategy and Policy, Personal Home and Health Care

Andrea Vattani, Manager
Sustainability and Compliance, Personal Home and Health Care

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