ERJ Elastomers for Sustainability 7 - E4S VII

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Q1. Personal Details: Name of person completing form

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Q2. Title of product or project

Asahi Kasei’s new selectively hydrogenated SBR for reduced 6PPD usage

Q3. Main materials technologies involved

Selective hydrogenation, fatigue resistance and sidewall application

Q4. Main goal or objective of the development project

This project aims to reduce the amount of 6PPD usage in rubber compounds by using our selective hydrogenated SBR. Selective hydrogenated SBR make it possible not only to reduce usage of 6PPD but also improve mechanical properties, like fatigue resistance.

Q5. Technical challenges addressed by the project team

Asahi Kasei previously reported on the excellent ozone resistance of selective hydrogenated SBR(HSBR) and reduction of 6PPD(N-(1,3-dimethylbutyl)-N’-phenyl-p-phenylenediamine) usage in the rubber compounds, without sacrificing the ozone resistance. Further studies have shown that HSBR makes it possible, to not only reduce usage of 6PPD but also improve mechanical properties, like fatigue resistance. If high-cis BR is replaced by HSBR in a NR/BR blend, then the equivalent NR/HSBR compound showed about twice the fatigue resistance with respect to the NR/BR compound. Both ozone resistance and fatigue resistance are important properties that governs product life, therefore, it is evident for HSBR to be regarded as a sustainable material for rubber products. Asahi Kasei is trying to find suitable applications for HSBR other than tire tread, taking advantage of these unique advantageous characteristics. One another the unique application for HSBR is in a tire sidewall. The

‘sidewall’ is the part of the tire that can be seen when you look at a tire from the sides when it is mounted on a vehicle. In other words, it is the part that is most exposed to ultraviolet rays (UV) and ozone, thereby demanding exceptionally high ozone resistance. Furthermore, it is known as the part of the tire that is constantly subjected to cyclic stress (flexing) during driving. Therefore, Asahi believes in HSBR, as it shows good ozone resistance and fatigue resistance, which could eventually reduce the frequency & need of tire replacements due to sidewall degradation.

Q6. What is the commercial status of the technology or product?

Our HSBR is now being used and tested by many tire manufactures’ worldwide and has received positive feedback. Our grades with strategically different functionalization technologies have developed, catering to tire tread and sidewall applications.

Q7. Please describe the contribution of the technology or product to sustainability

When Asahi Kasei's HSBR is applied to sidewall compound, it could reduce the frequency & need of the tire replacements due to sidewall degradation.

Q8. Scope for further enhancements to the technology or product

The next goal is to improve the fuel efficiency of the tire, when HSBR is used for tire tread and sidewalls.

Q9. Any further comments to further highlight the contribution of this development project to environmental sustainabilty?

Asahi Kasei's HSBR may further contribute to longer rubber product life due to its chemically stable structure and excellent fatigue resistance.

Many thanks for completing the E4S entry form. You can add notes here and email further supporting information to ERJ Editor: praleigh@eurorubberjournal.com

This development is relaed to my last post in last year