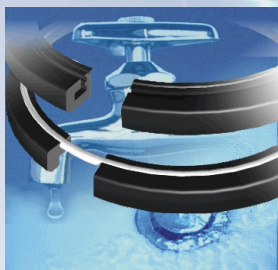


Finding solutions is our business....

.... And we're pretty good at it

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Business case
Resolve 036



Impurities in raw rubber and (un)vulcanized rubber profiles How to determine them?

A number of practical problems can occur in rubber processing, and you may be all too familiar with some of them. They relate to either the rubber itself, e.g. discoloration of rubber in crumb or bale form, or to the processed material, e.g. irregularities on the surface of extrusion profiles or blooming, leading to unwanted surface appearance effects. When you are at a loss how to solve such problems, we are sure we can help you right away. We are able to combine extensive rubber product and process knowledge with our extensive toolbox to resolve your problems.

Rubber discoloration

Suppose that your raw rubber in crumb or in bale is discolored from time to time. This can be due to reaction products of the antioxidants or a reaction between catalyst residues and the ingredients used. We at Resolve can help you to find the origin. With our analytical techniques (additive analysis, X-ray fluorescence, FT-IR and UV spectroscopy) we can positively identify the species responsible for discoloration.

Rubber profile irregularities (gels)

Another well-known problem is the presence of unwanted irregularities in rubber profiles. After extrusion of these profiles, ingredients such as antioxidants, accelerators, fillers, gels, undispersed polymer, release agents etc. can lead to unwanted and unexpected phenomena. At Resolve, we have the expertise to determine the nature of these impurities using microscopy techniques such as FT-IR microscopy,

Raman microscopy or micro-XRF:

- If the impurity is a polymer, it is important to distinguish between a gel (cross-linked rubber) and an undispersed (non-cross-linked) polymer.
- In the case of a blend, it is important to know which polymer is responsible for the formation of gel or undispersed polymer.
- Where the impurity is not a polymer, it is important to know which filler or accelerator is responsible.
- Sometimes external impurities are found, such as glass beads and teflon or cotton fibers.

Blooming effects

Sometimes, the surface of rubber products is marred by what is known as blooming. We can determine the nature of this process using surface techniques such as attenuated total reflectance (ATR) FT-IR, FT-IR microscopy or micro-XRF.

DSM Resolve, your partner in problem solving

With our extensive product and process knowledge of a wide variety of rubbers, in particular EP(D)M, and our comprehensive in-house toolbox of standard (FT-IR, DSC, TGA, XRF) and advanced techniques (NMR, Raman, pyrolysis-GC), we can tell you exactly how to get rid of unwanted impurities in your products. Do not hesitate to contact us when you encounter such problems.