

# DATA BULLETIN

## *Sulfur analysis in rubber*

With elemental analysis, it is possible to determine the exact hardness degree of vulcanized rubber for which the sulfur proportion is essential. Elastomers that contain sulfur cross-linkages by vulcanization ensure high fatigue resistance and a low wear rate for rubber of all types that are exposed to mechanical stress. To determine the sulfur concentration in rubber, a sample is combusted with the help of catalyst oxygen. The released sulfur dioxide is measured by an integrated thermal conductivity detector and measured as a percentage. With the Elementar analyzer, it is possible to provide high data quality for a variety of substances relevant to the production, or recycling, of rubber products.

All samples were run in triplicate on the vario MARO cube. The solid samples were wrapped in tin foil and the liquid organosilane was sealed in tin capsules. Due to the low sample weights, an analytical (6-position) balance was used.

SAMPLE	SAMPLE SIZE [mg]	S [%]	abs. STD [%]
rubber 1	35	1.767	0.019
rubber 2	35	3.840	0.036
vulcanizing agent (poly-tert-butylphenol disulfide)	10	30.46	0.028
insoluble sulfur 80%	3	82.37	0.078
organosilane (Bis(triethoxysilylpropyl)tetrasulfide)	10	23.42	0.045

All samples were analyzed to high precision with good results. The wide range of sulfur contents, from low sulfur in finished product to high sulfur in vulcanizing agents, represented no difficulty to the analyzer. The ability to analyze feedstock and final products with one instrument makes the vario MACRO cube a versatile, reliable, economic solution for maintaining quality in rubber production or recycling.

### INSTRUMENT:

vario MACRO cube

### DETAILS:

mode: S

sample: 3-35 mg



**Elementar Analysensysteme GmbH**  
Elementar-Straße 1  
63505 Langenselbold (Germany)  
phone: +49 (0) 6184 9393-0  
info@elementar.de | www.elementar.de

