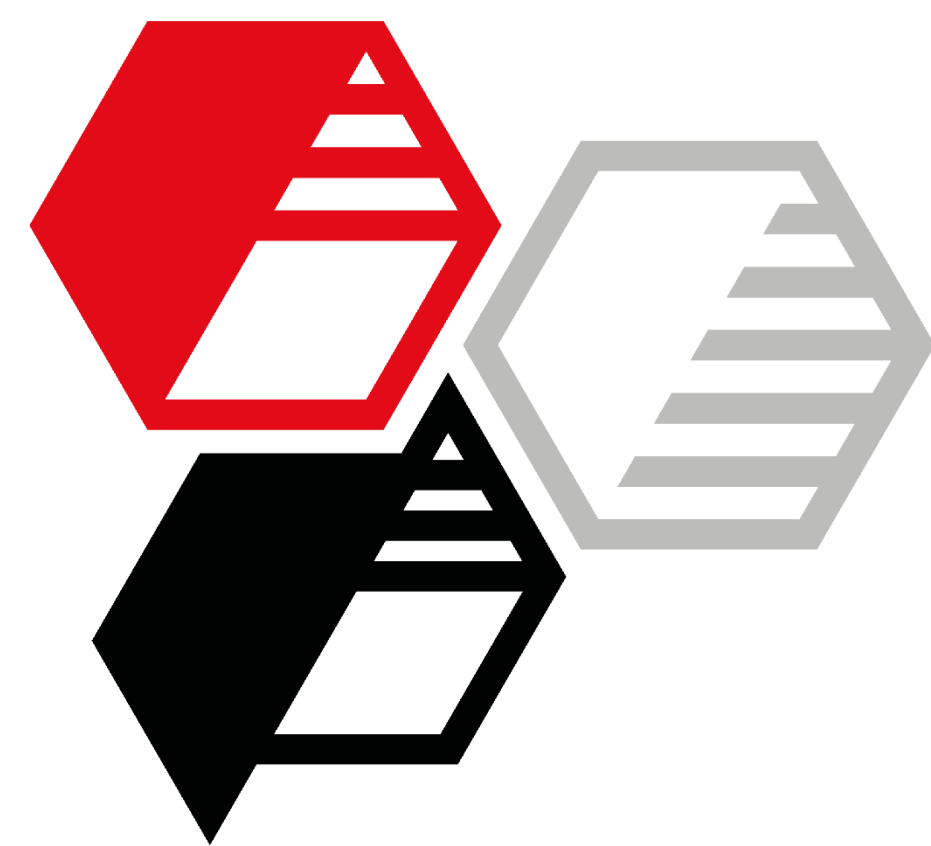
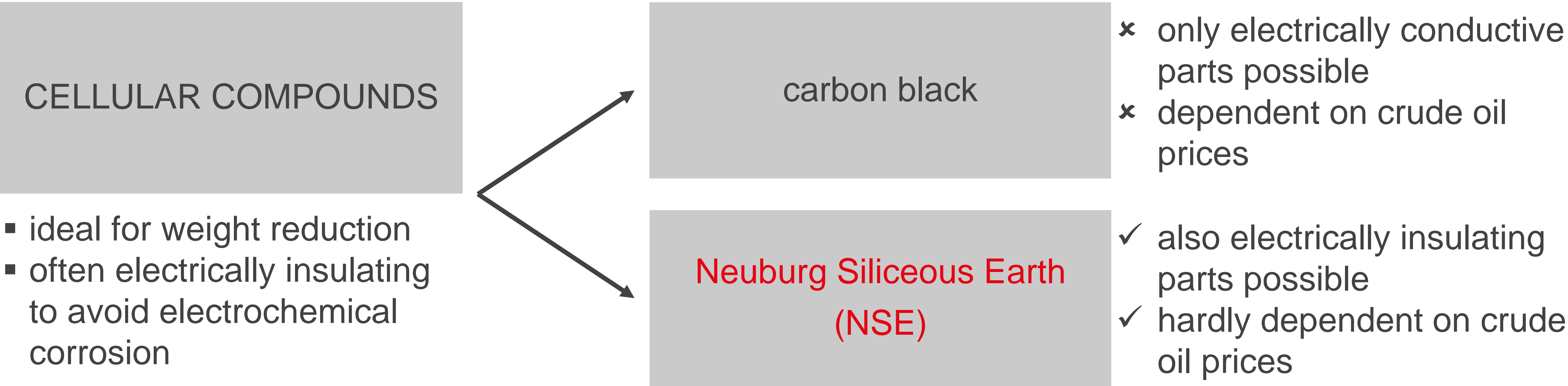


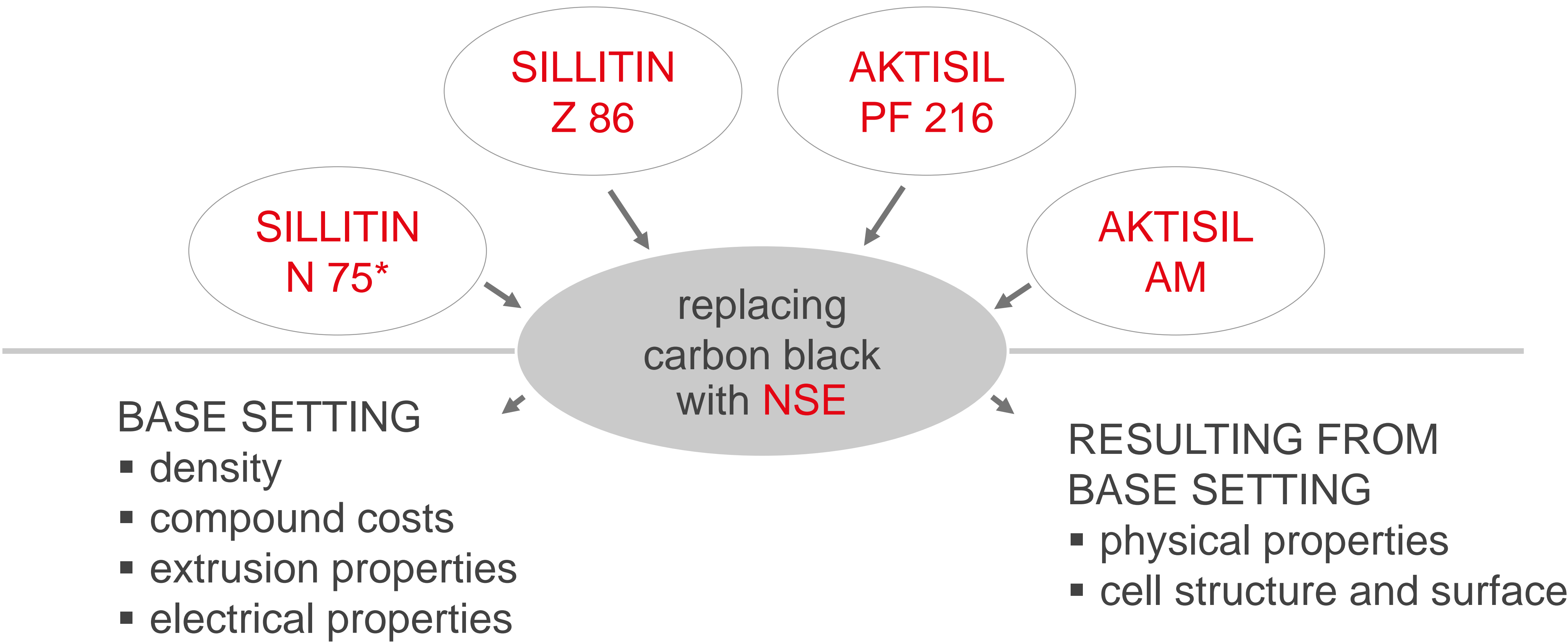
Partial replacement of carbon black with Neuburg Siliceous Earth in cellular, hard EPDM cpds. for weight and cost savings



Status quo



Objective

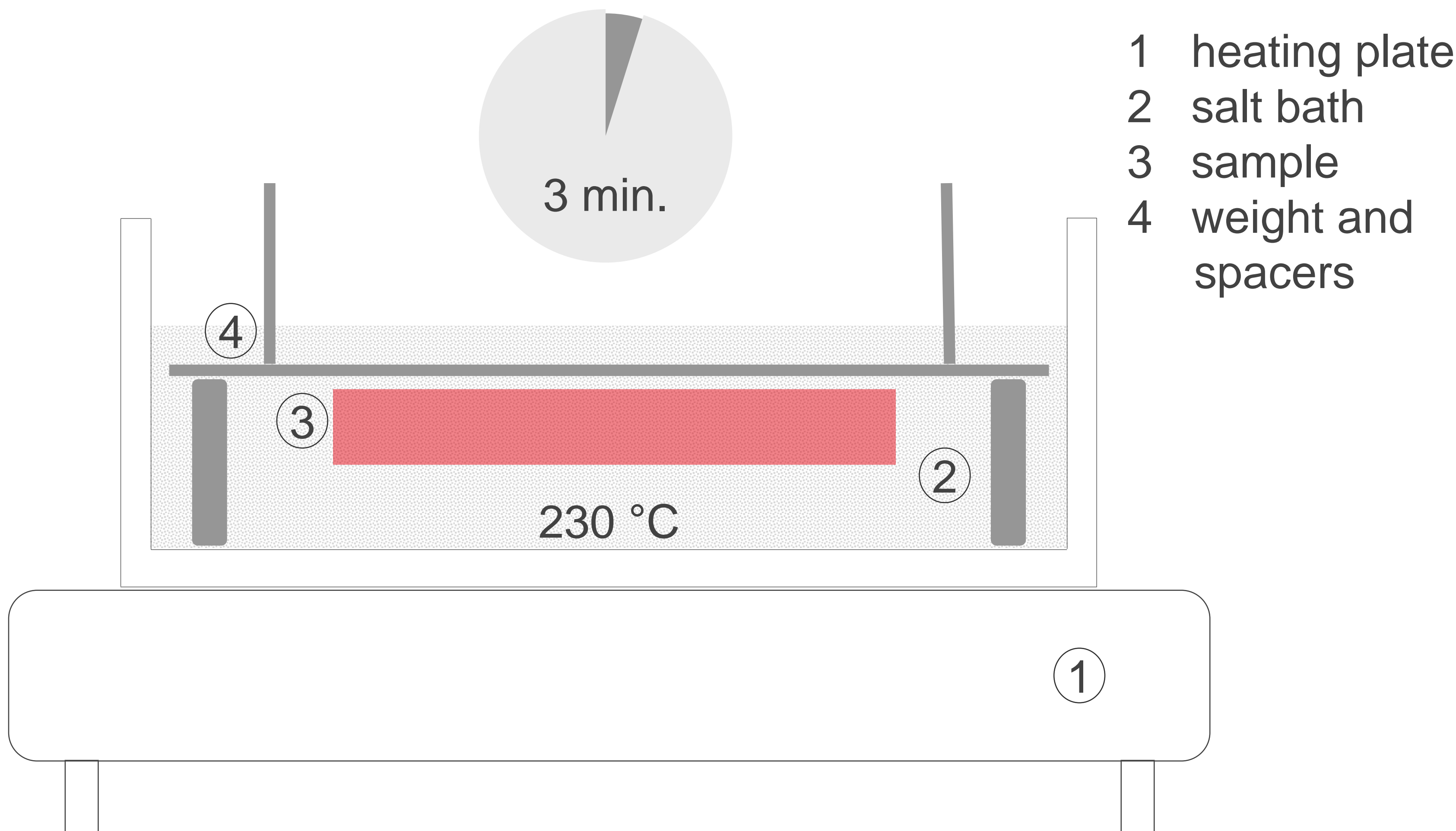


*The tests were carried out with Sillitin N 82. This product is no longer available. Recommended: Sillitin N 75.

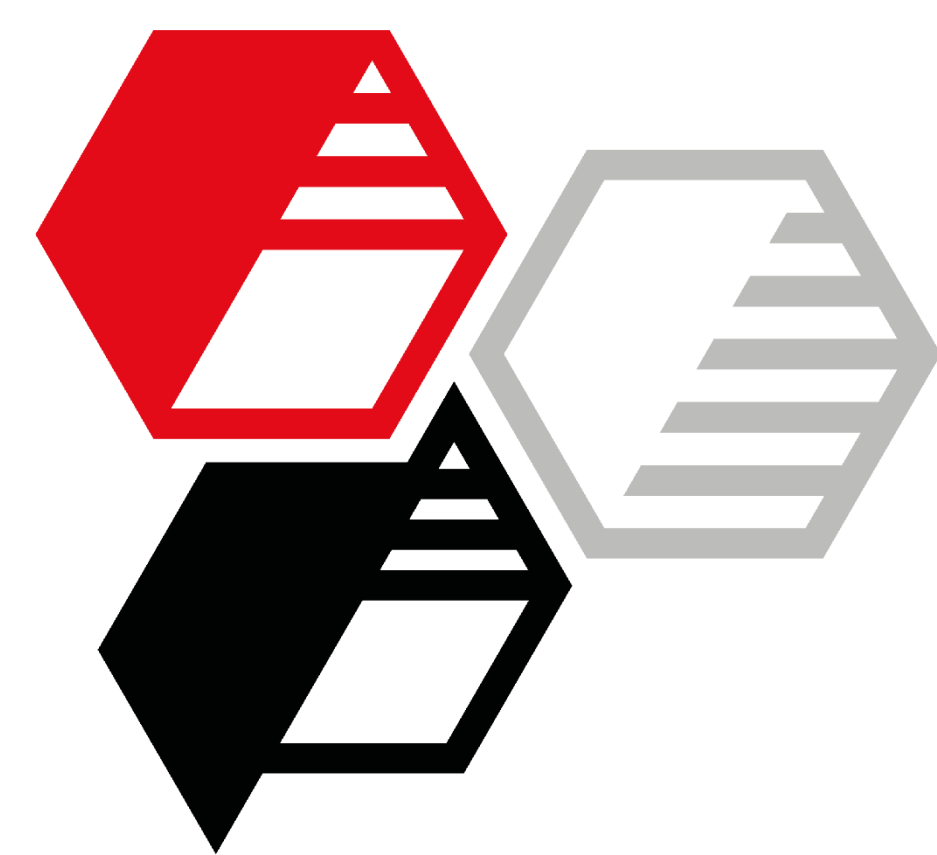
Formulation and curing in salt bath

Ingredients	phr
Keltan 8550C	100
Carbon Black N 550	as indicated
NSE	as indicated
Process Oil P 460	20
Zinkoxyd aktiv	5
Stearic acid	1
Kezadol GR	2.25
PEG 4000	2
Rhenogran DPG-80	1.1
Rhenogran MBT-80	2
Rhenogran ZBEC-70	2
Rhenogran TP-50	4
Rhenogran S-80	1.9
Rhenogran CLD-80	1
Expancel 950 DU 80	varied ¹
¹ dosage of Expancel 950 DU 80: 2 % based on total compound (5.05 / 6.65 / 7.45 phr)	

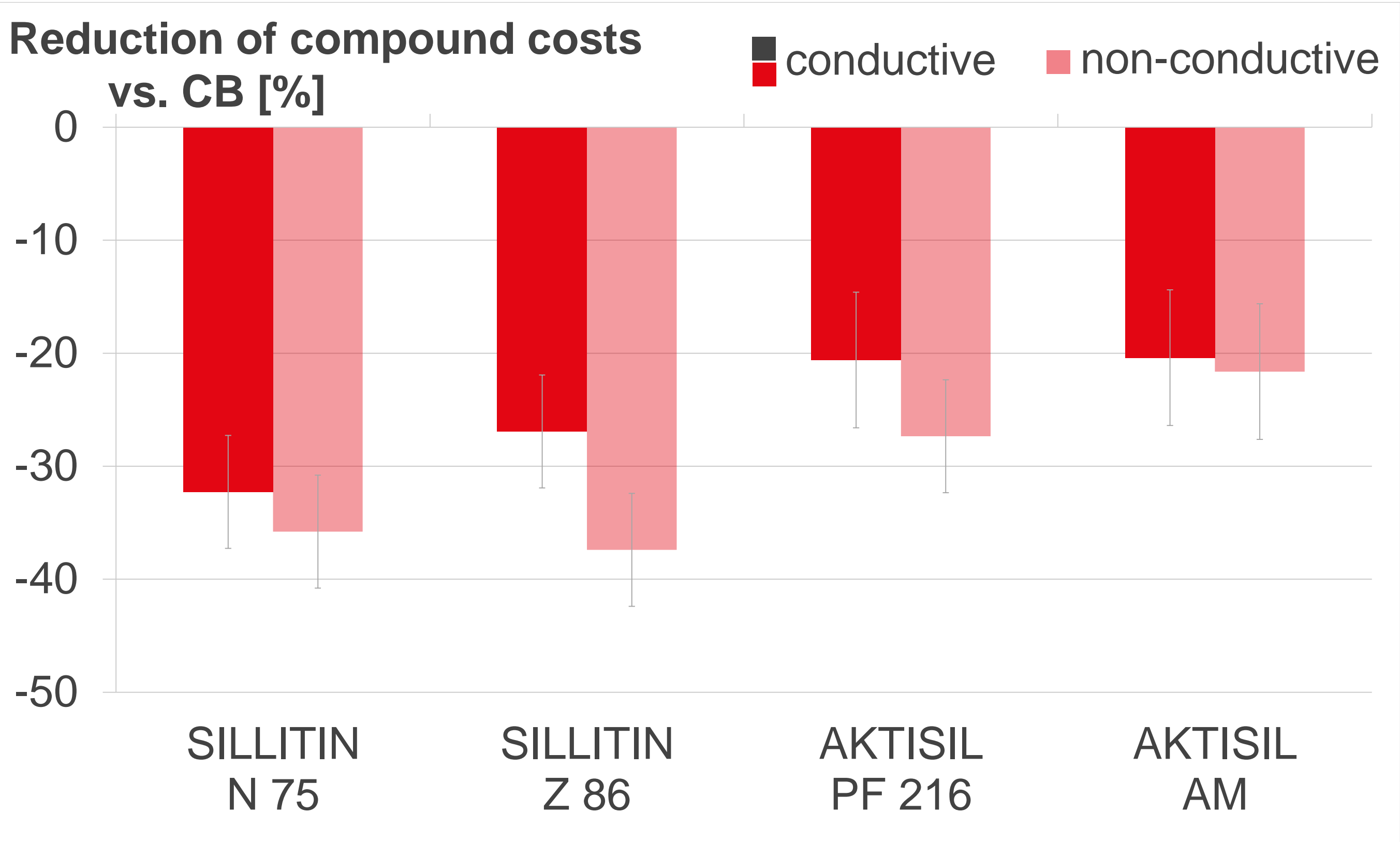
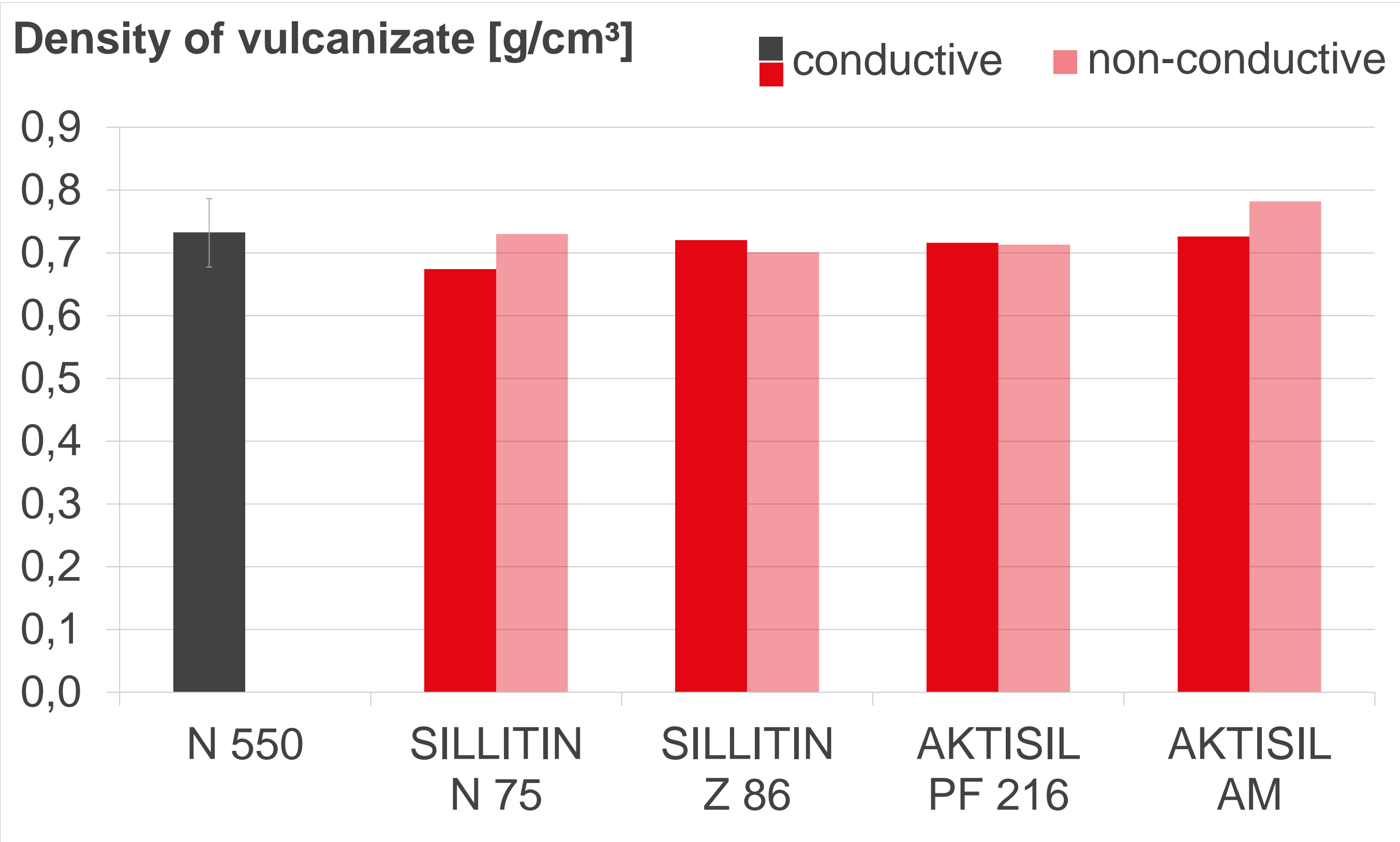
in phr	el. conductive filled with CB	el. conductive replacing CB	non-conductive replacing CB
N 550 [vol.%]	28	16	11
N 550	110	70	50
NSE	-	120	180



Partial replacement of carbon black with Neuburg Siliceous Earth in cellular, hard EPDM cpds. for weight and cost savings



Results – base setting



Density comparable despite increased filler content

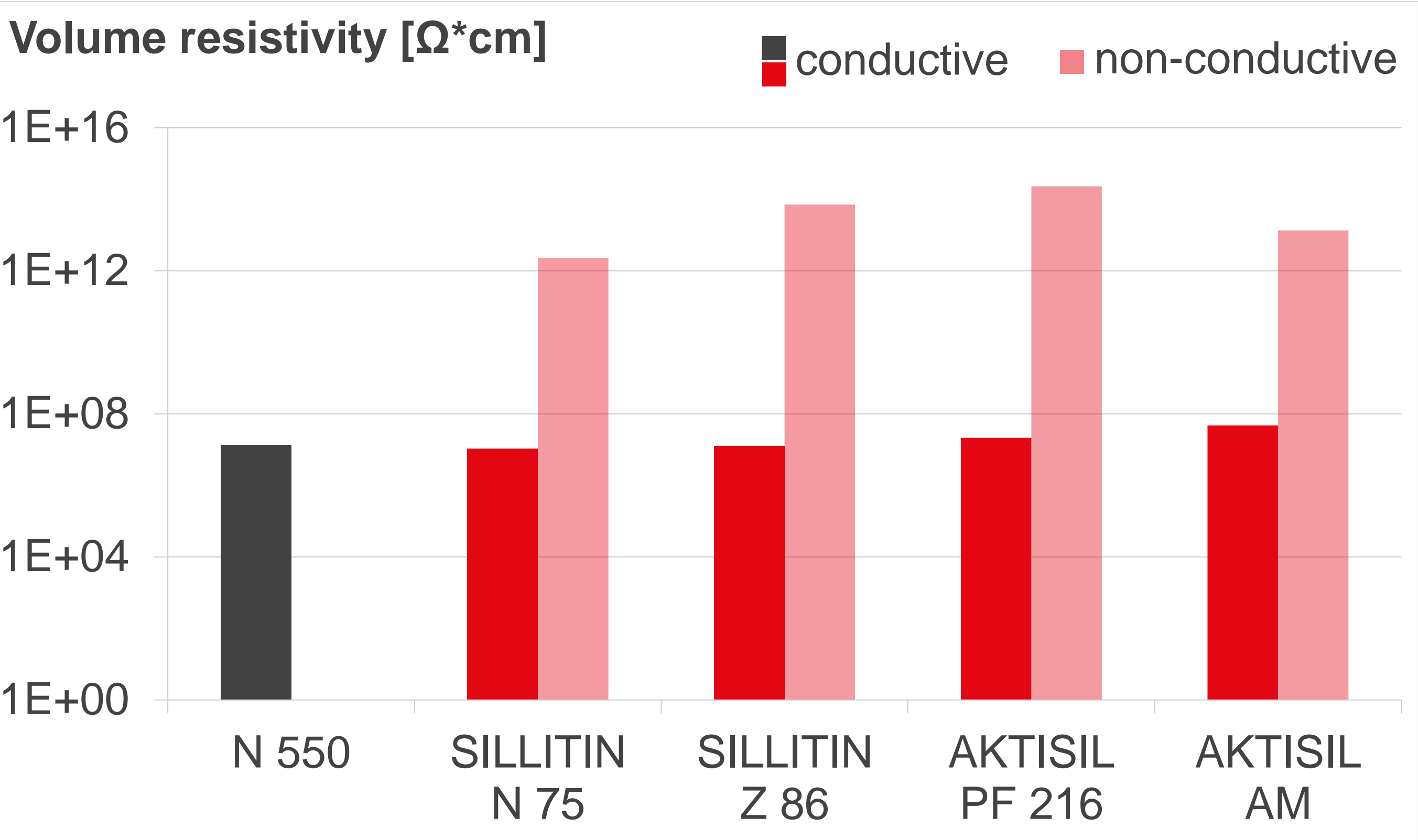
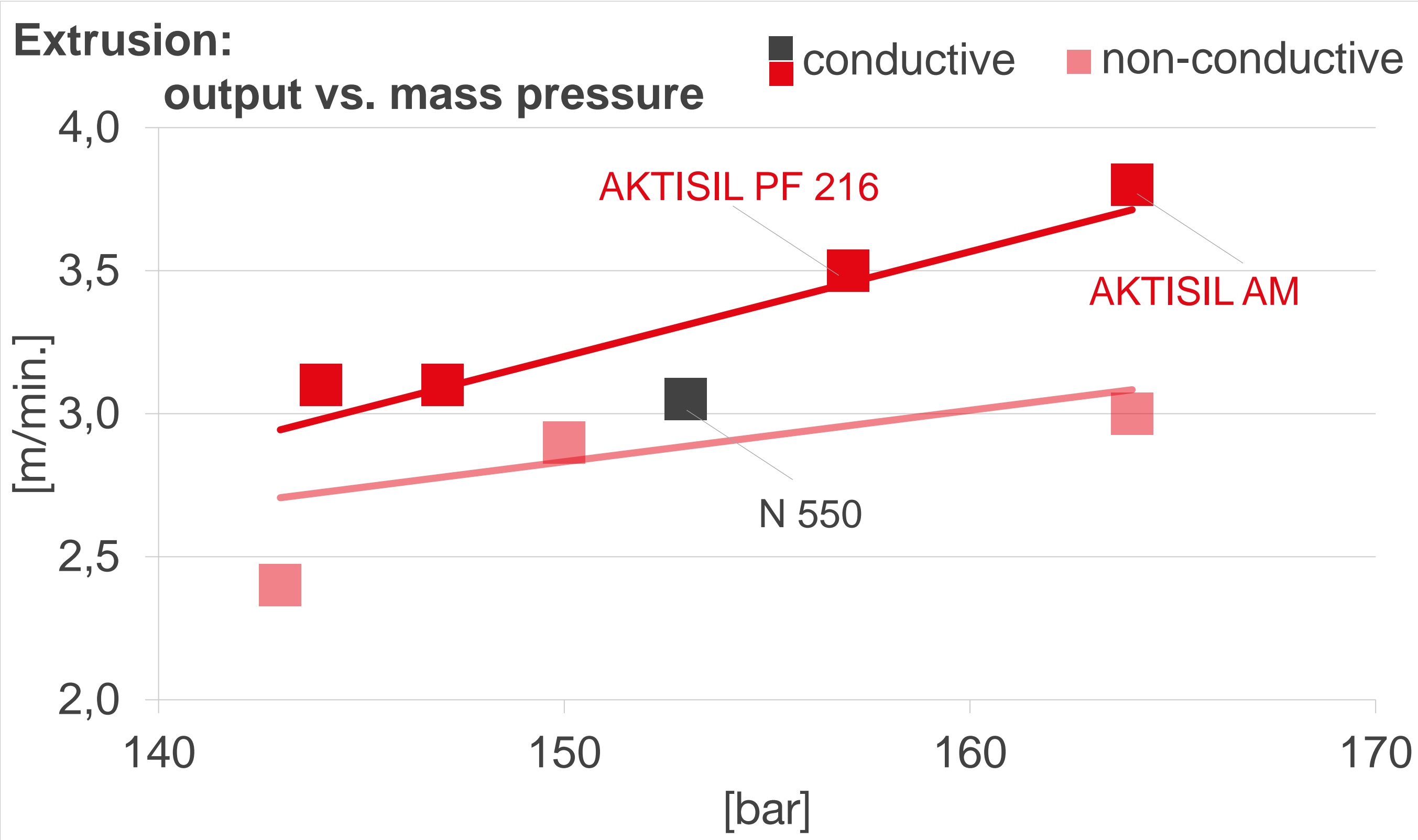
Compound costs significantly reduced

- with all NSE-grades
- esp. in non-conductive variants

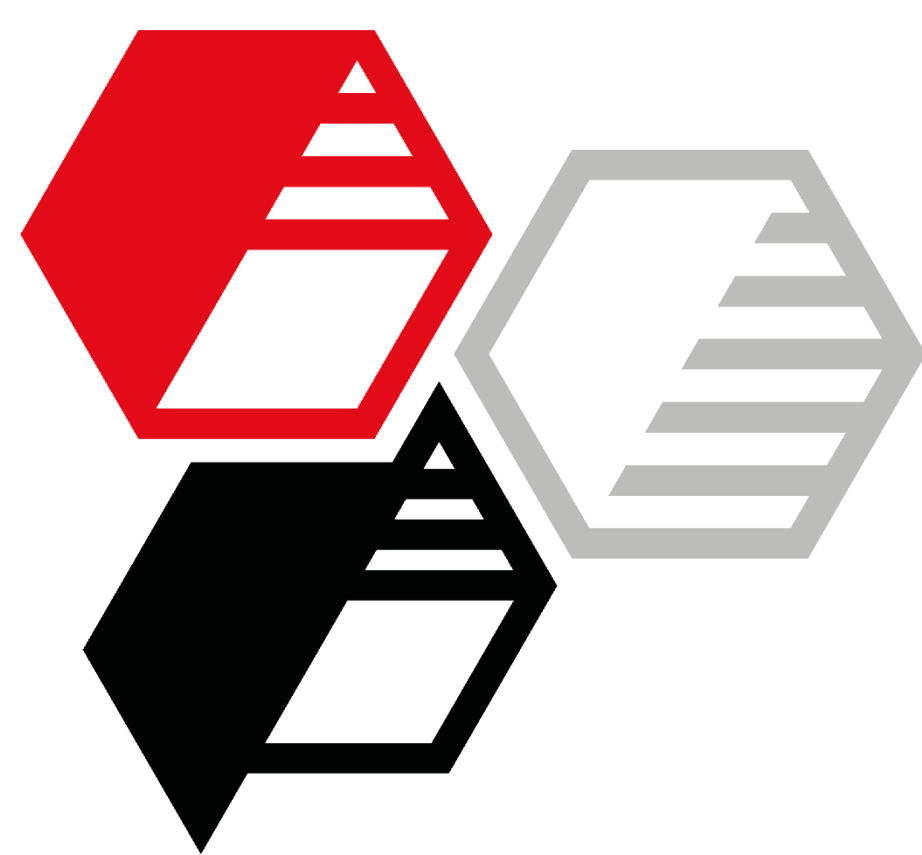
- Output comparable along with reduced pressure
- Output increased with AKTISIL grades in conductive variants

Electrical resistance significantly increased

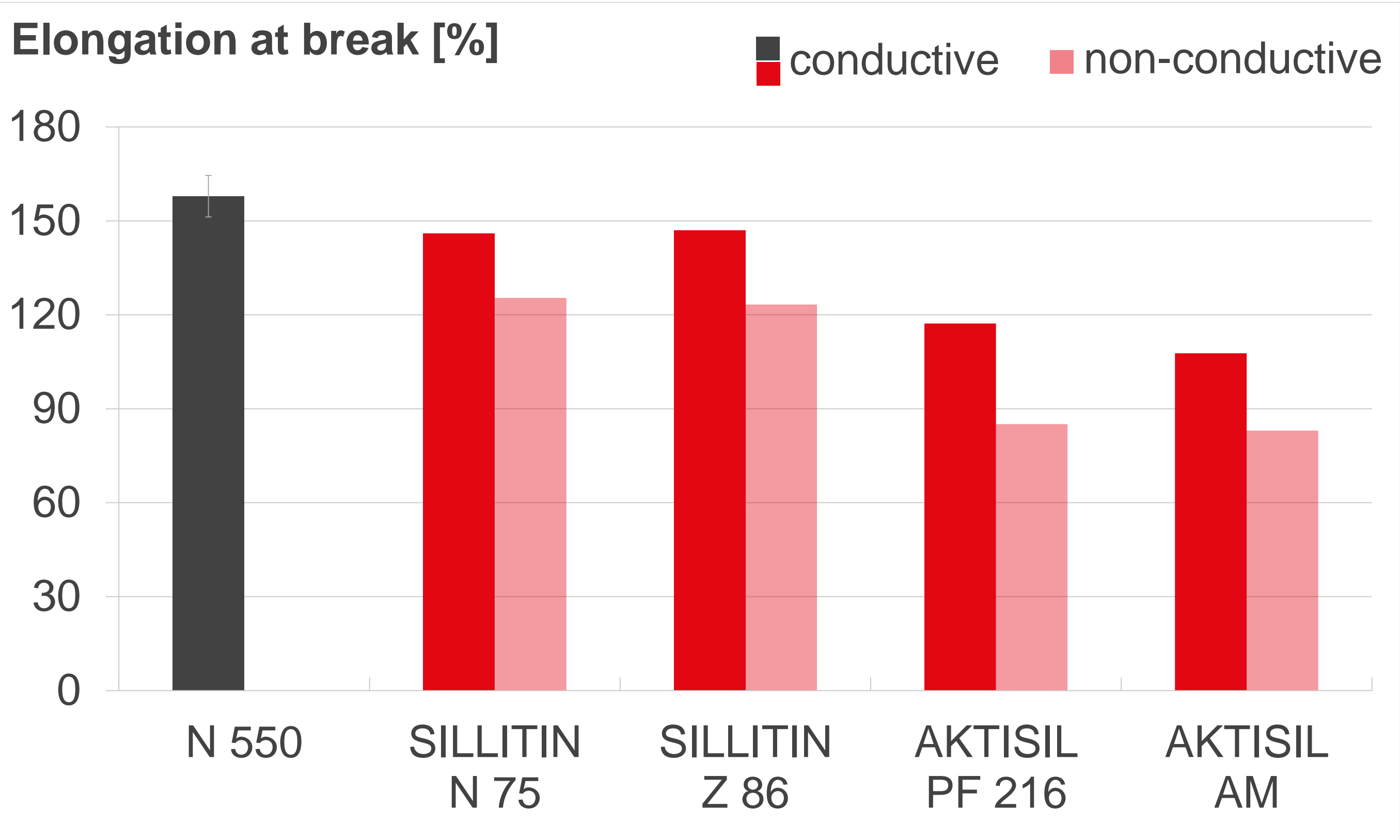
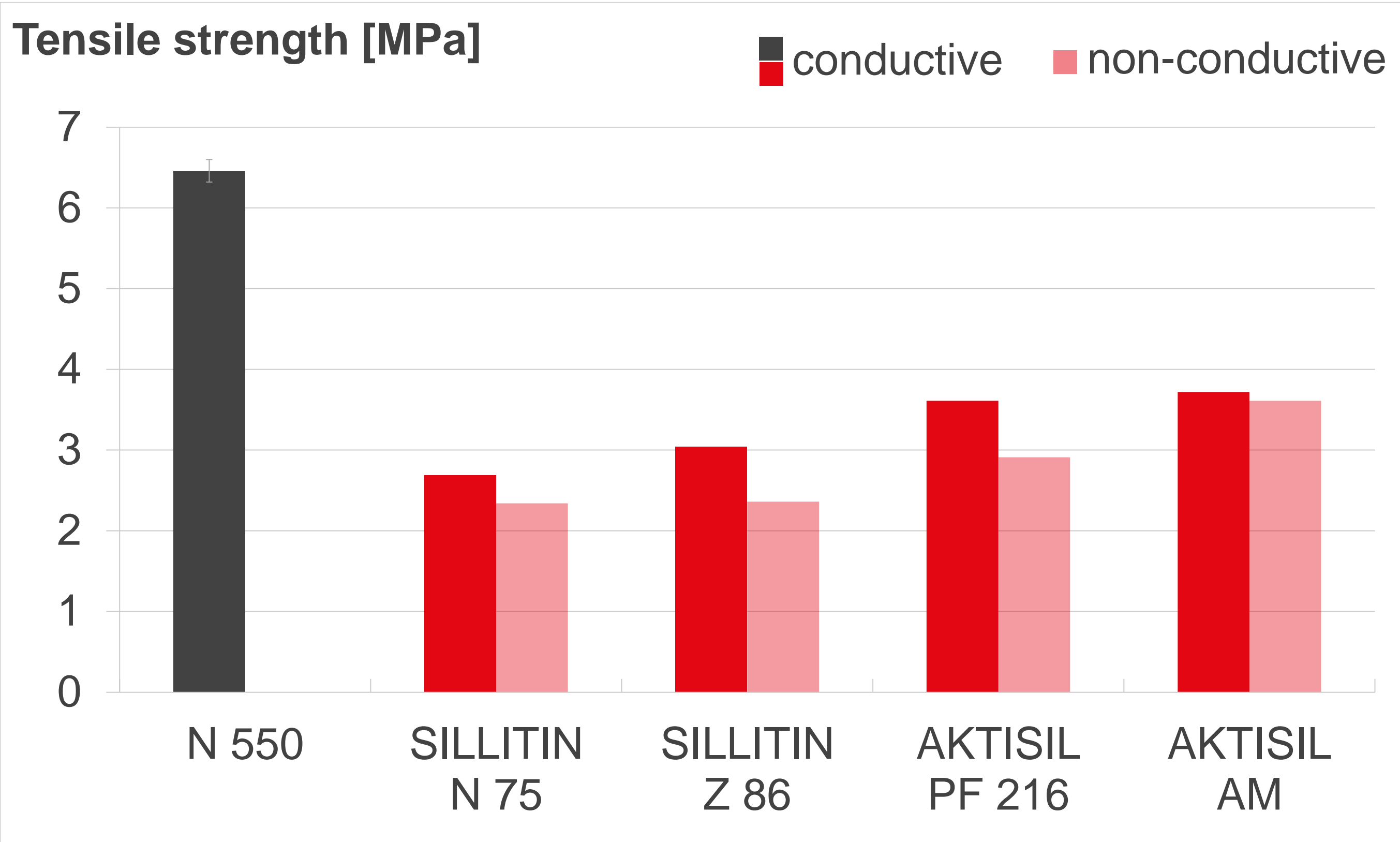
- with increased NSE-content



Partial replacement of carbon black with Neuburg Siliceous Earth in cellular, hard EPDM cpds. for weight and cost savings



Results – resulting from base setting

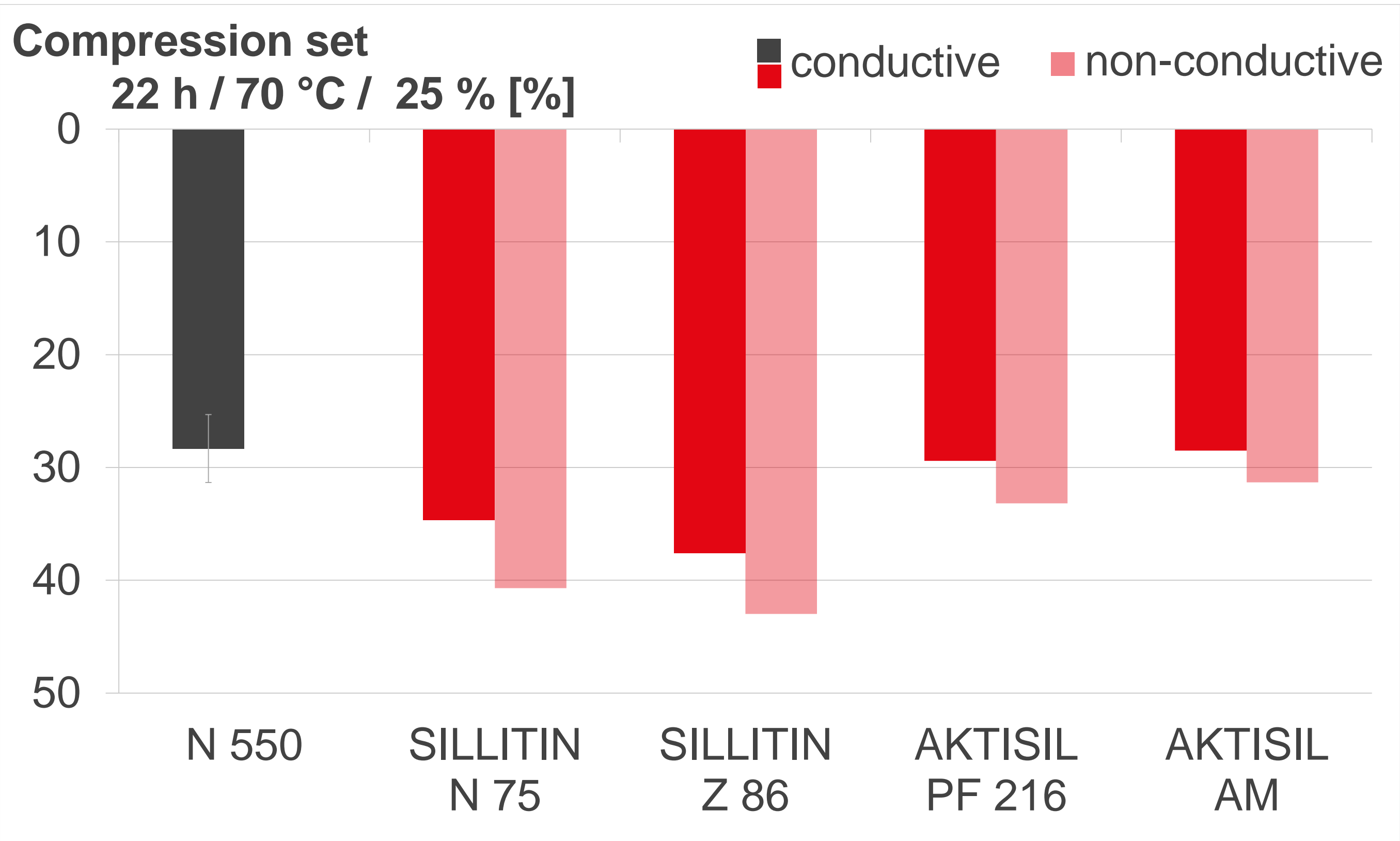
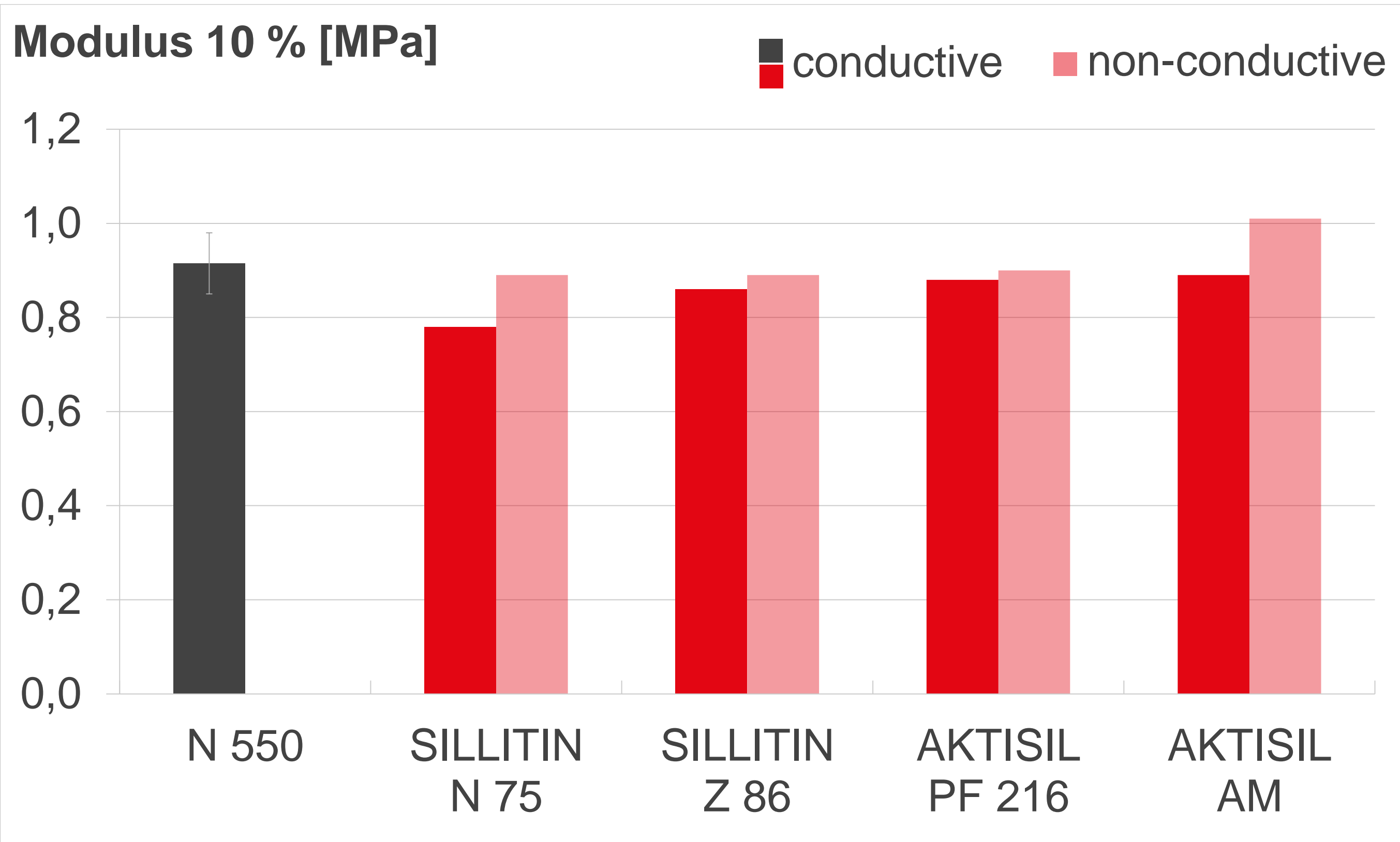


Best NSE-grade regarding tensile strength
○ AKTISIL AM in non-conductive variant

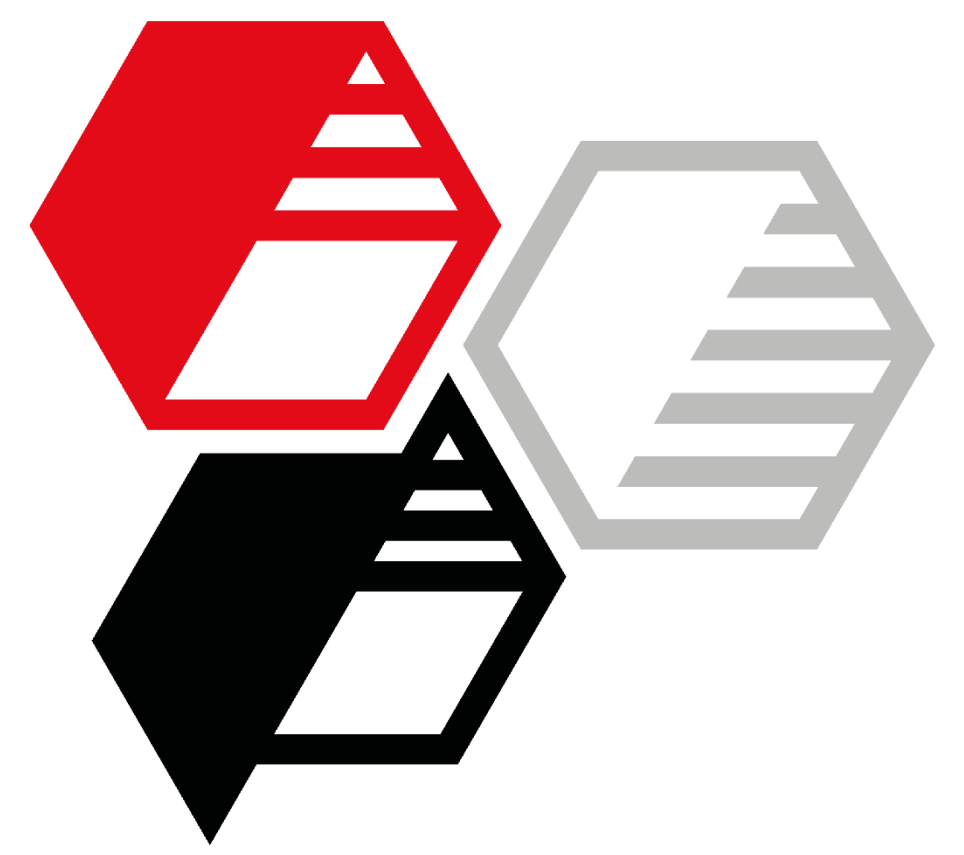
Elongation at break roughly comparable
○ with SILLITIN grades

Moduli at low deformations comparable
○ esp. with AKTISIL AM

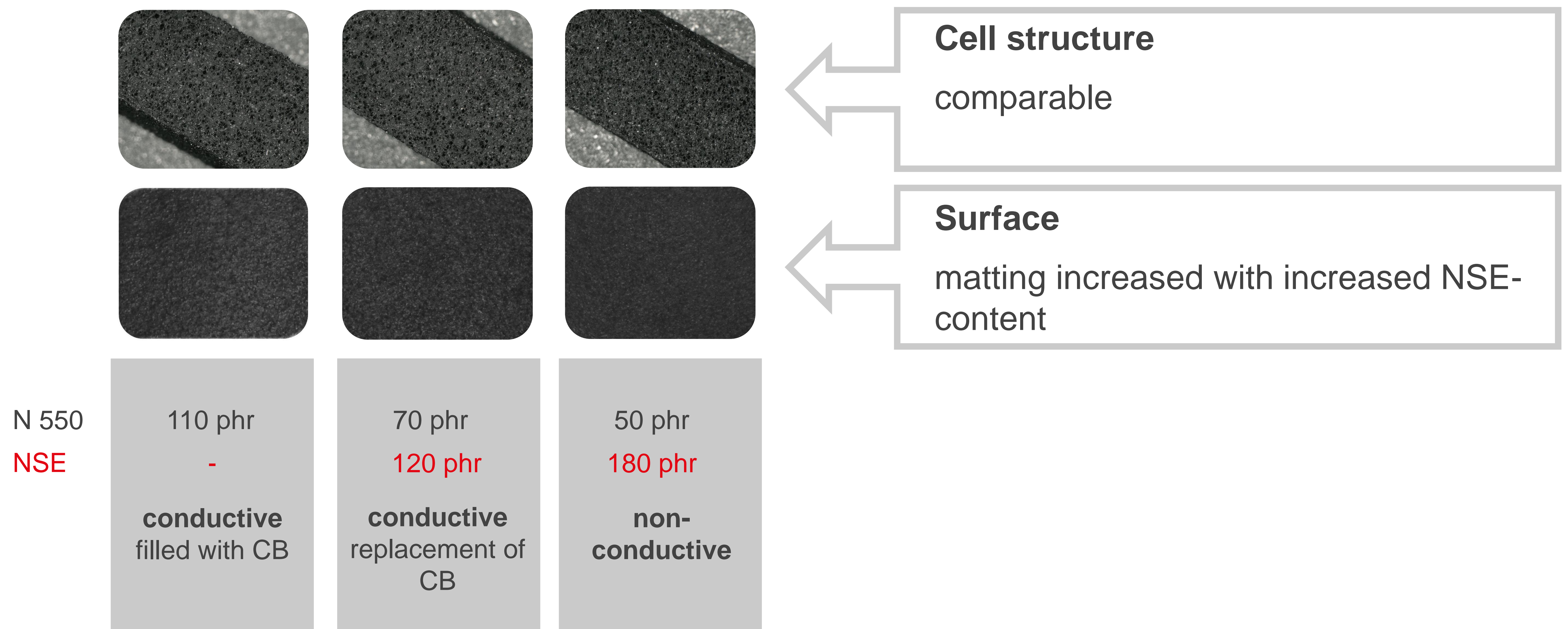
Compression set comparable
○ with AKTISIL grades



Partial replacement of carbon black with Neuburg Siliceous Earth in cellular, hard EPDM cpds. for weight and cost savings



Results – resulting from base setting



Summary

Replacing carbon black with **Neuburg Siliceous Earth** results in

unchanged properties

- Cell structures comparable
- Density comparable despite increased filler content
- Output comparable along with reduced mass pressure
- Elongation at break roughly comparable with **SILLITIN** grades
- Moduli at low deformations comparable, esp. with **AKTISIL AM**
- Compression set comparable with **AKTISIL** grades

+ additional benefits

conductive

- Surfaces more matte
- Output increased with **AKTISIL** grades
- Significant reduction of compound costs, even with **AKTISIL** grades

non-conductive

- Surfaces even more matte
- AKTISIL AM** for highest tensile strength among NSE-grades
- Significant increase in electrical resistance
- Significant reduction of compound costs, esp. with **SILLITIN** grades