



Caucho Moderno - Equilibrio y Sostenibilidad

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D.O.G. Deutsche Oelfabrik

Introduction: Who is
D.O.G.? →

D.O.G. Deutsche Oelfabrik

Customer-focused additive manufacturer

A family-owned company with a focus on R&D and quality

Producing rubber additives since 1902

80 employees

Production in Hamburg and Marschacht, Germany



Introduction: What is
Factice →

Origin of the Term “Factice”

French „Caoutchouc Factice“ = Artificial Rubber

AKA Vulcanized Vegetable Oils (VVO)



Appearance of Factice

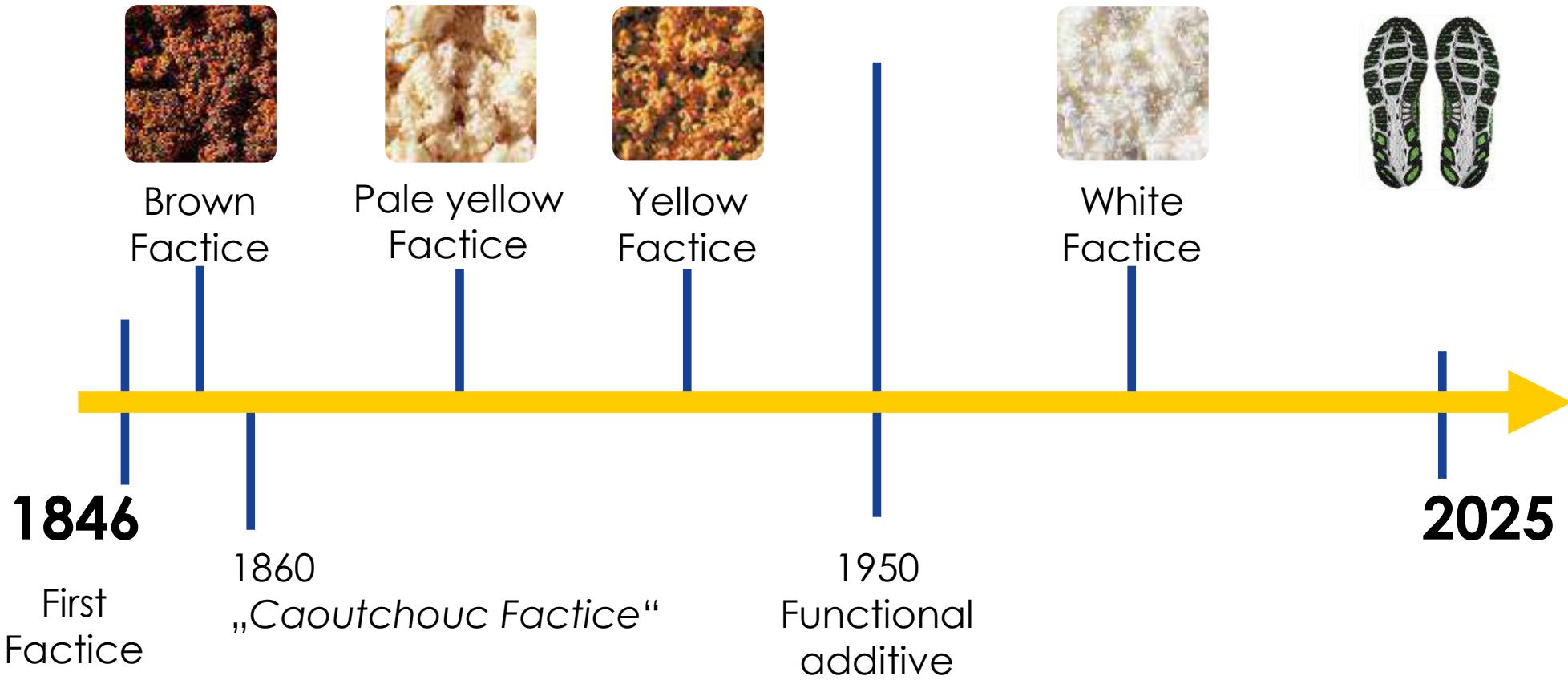
4 Colours

- Brown
- Yellow
- Pale yellow
- White / transparent in product



History of Factice →

History



Application Areas and
Composition →

Application of Factice

Extruded parts

Foamed rubber

Calandared sheets

Shoe soles

Roller covers

Erasers



Composition

Type	Brown	Yellow	Pale Yellow	White
Renewables	75–90 %	82–90 %	75–93 %	>85 %
Sulfur	10–25 %	10–18 %	3–13 %	0 %
Appearance	brown	lighter	very light	colorless
Applications	roller coverings microcellular rubber profiles	printing blankets BfR/FDA articles	eraser textile coating calendered sheets	light compounds shoe soles

Advantages of Factice

Enables **faster extrusion**

Reduced die swell

Higher uniformity of pores

Dimensional stability of uncured compounds

Modified surface: Smooth and matt

Excellent **processability and compatibility**

Degassing for non-porous articles

No blooming makes it suitable for sensitive areas like rubber-metal bonding

Plasticizer absorption and **retention**



Example for Utilizing Factice

Raw batch prior to vulcanization

Component	phr
NR-Batch	162
Accelerator blend (EG 3 MF)	2.5
Sulfur	1.5
Factice	0-10

Control Compound
without Factice

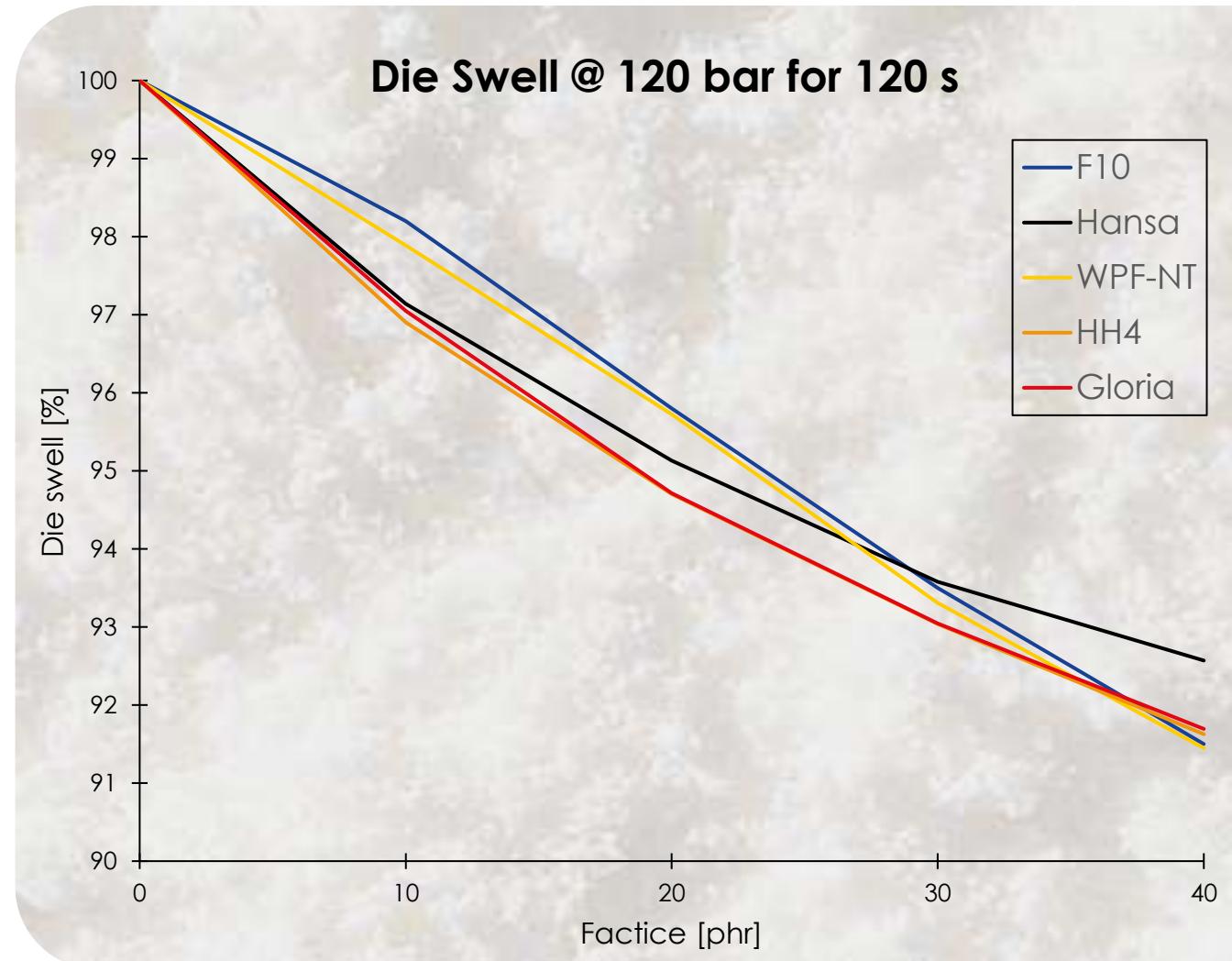
Sample with Factice



Effect of Factice

Component	phr
SBR 1502	60
NR SMR CV 60	40
CaCO ₃	65
SiO ₂	15
Carbon Black	1
Stearic acid	1
Factice	0-40

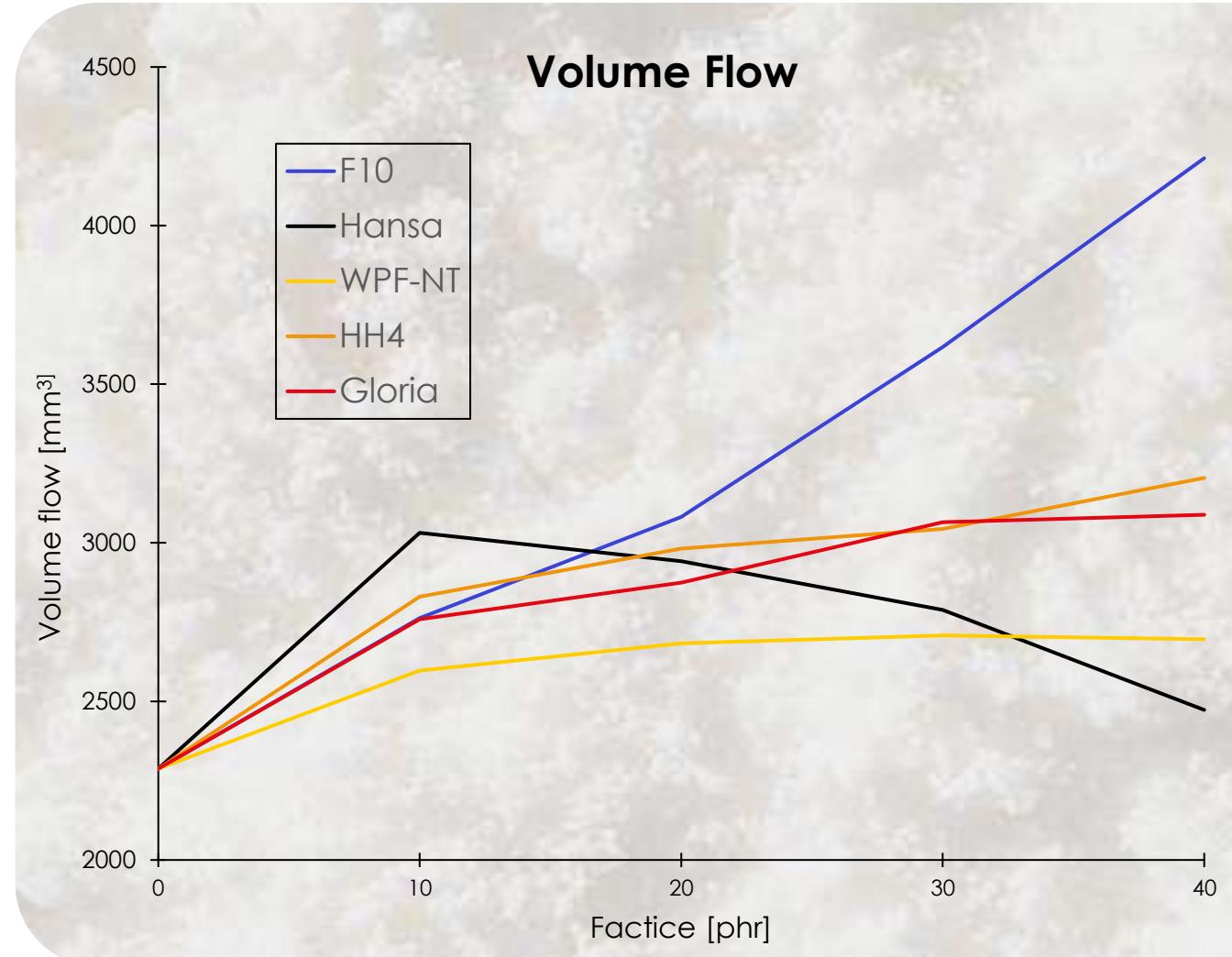
Internal mixer 35 L, mixing time 5 min



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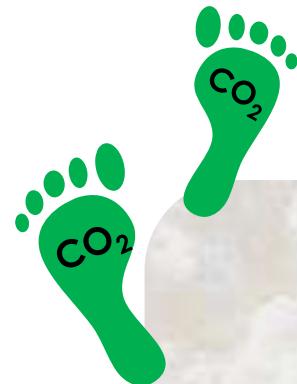
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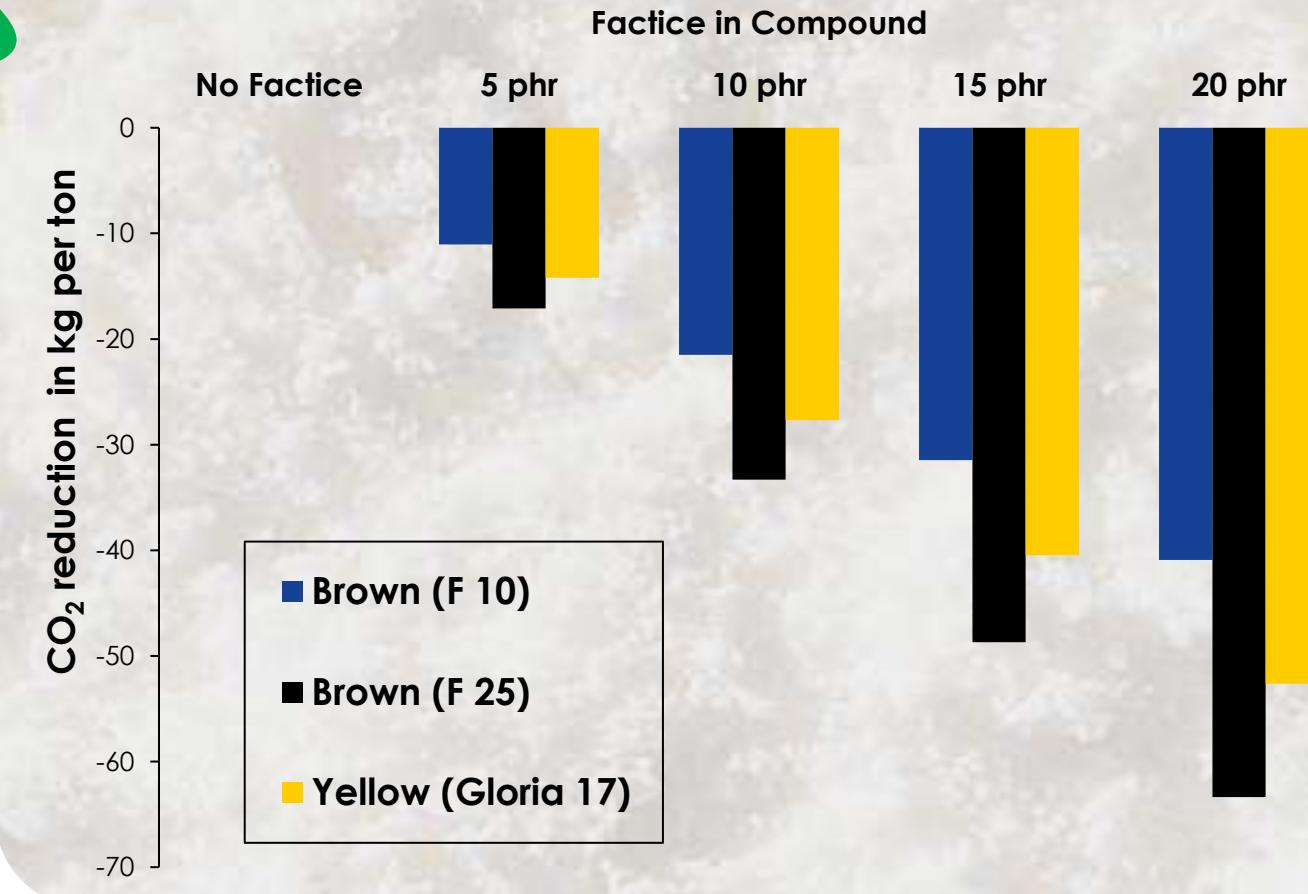
Sustainability of
Factice →

Reduction of Product Carbon Footprint

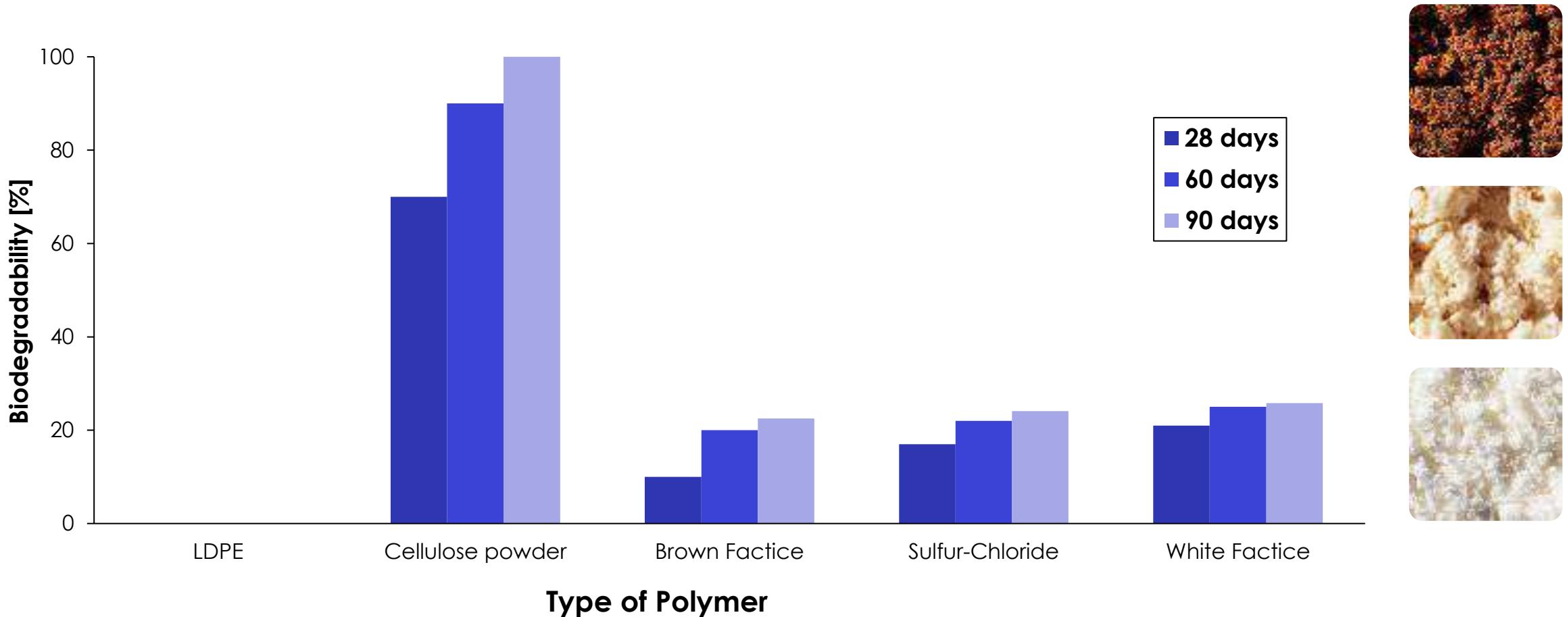
Component	phr
EPDM	100
Carbon black	75
Zinc oxide	5
Stearic acid	1
Accelerator blend (EG 3 MF)	2.5
Sulfur	1.5
Factice	0–20



Carbon Footprint Reduction with Factice



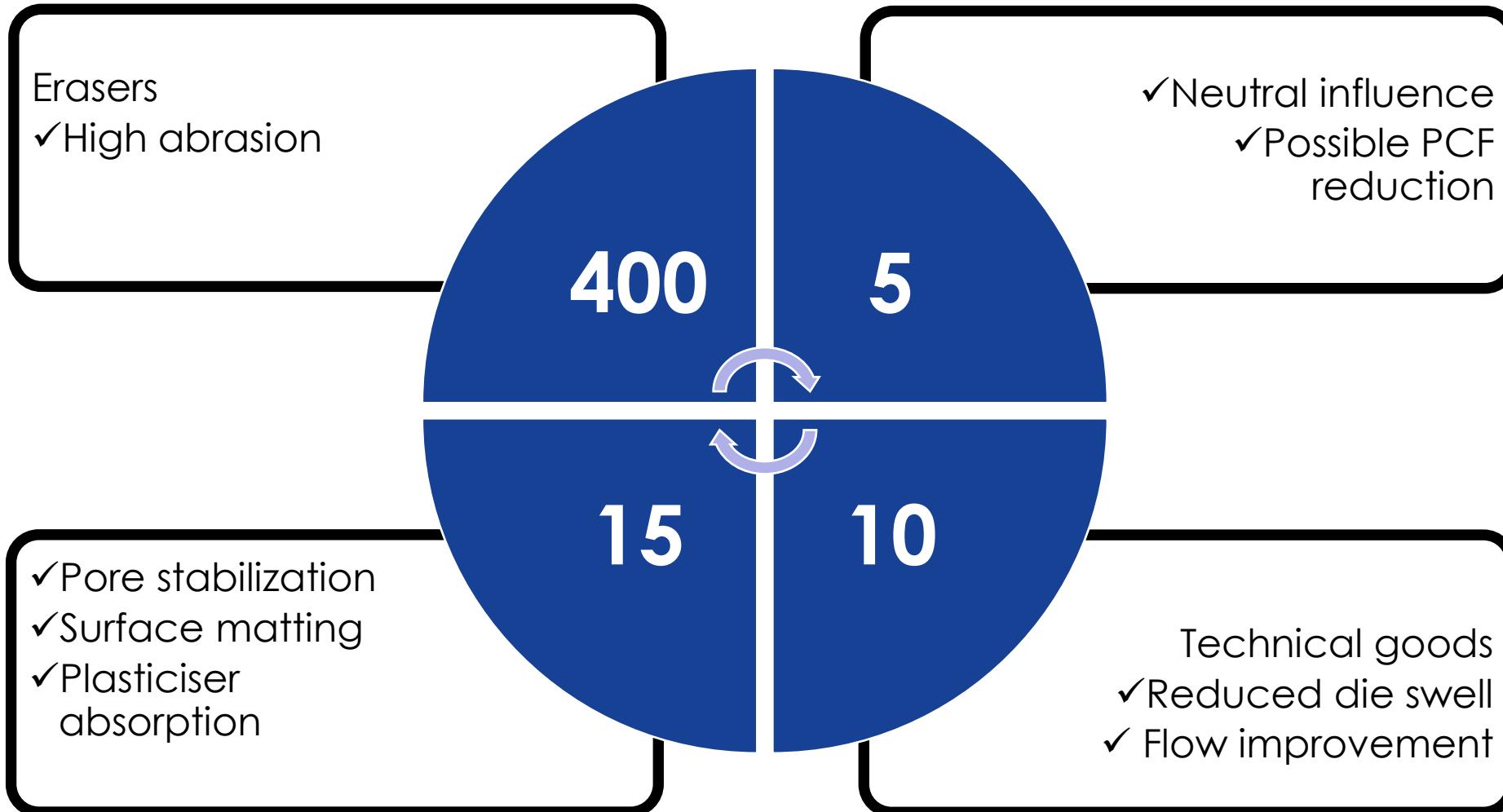
Biodegradability of Factices vs. Common Polymers



Burgstaller, M. et al. Gutachten zur Behandlung biologisch abbaubarer Kunststoffe. Umweltbundesamt **2018**; Erdal, N. B. et al. Degradation of Cellulose Derivatives in Laboratory, Man-Made, and Natural Environments. *Biomacromolecules* **2022**, 23 (7), 2713–2729; T. Becker et al., unpublished results according to ongoing study ISO 14851 **2024**; In cooperation with LAUS

Summary and
Perspective→

Use of Factice



Summary and Perspective

Factice changed: from substitute to **functional additive**

Composition: sulfur, sulfur chloride or peroxide cured oils

Renewable raw materials: vegetable oils

Low toxicity of raw materials + product

Many applications established in rubber: profiles, shoe soles, erasers, rollers, foamed goods and many more

Excellent compatibility in rubber

Potential **reduction of carbon footprint** in rubber products

Biodegradability of pure Factice in part



Further Possibilities

Some synthetic polymers like EPDM are already fully plant-based

Replacement products for toxic chemicals such as DBD (with the healthy Dispergum 36) or OTOS (better: Deovulc BG 223) for better worker safety

99 % plant-based process aids such as Deoflow 1055 show excellent performance in several polymers

Deostab N (76 % plant based) can replace a certain amount of accelerators in EPDM compounds

Stop by the Valex booth for more information





Thank you