

WACKER

CREATING TOMORROW'S SOLUTIONS



GENIOPLAST®

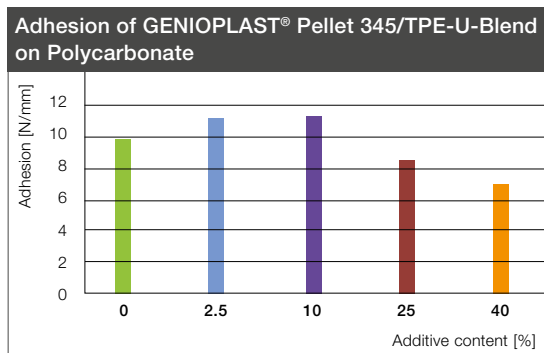
PLASTICS | PERFORMANCE ADDITIVES

DISCOVER A NEW KIND OF SOFTNESS

Case Study: Soft-Touch Thermoplastic Elastomers (TPEs)

GENIOPLAST® PELLET 345 IN SOFT-TOUCH TPEs

The trend toward softer materials for electronic appliances applications demands new material concepts due to the additional hurdles of faster processing speed combined with pleasant haptics and improved stain resistance. Adding GENIOPLAST® Pellet 345 into existing material solutions as thermoplastic polyurethanes allows for lower Shore A hardness TPE compounds with enhanced properties.



Benefits of Adding 2 – 5% of GENIOPLAST® Pellet 345

- Higher abrasion resistance
- Lower coefficient of friction
- Surface with higher hydrophobicity

Benefits of Adding 5 – 45% of GENIOPLAST® Pellet 345

- Lower Shore A hardness
- Improved haptics
- Higher abrasion resistance
- Lower density
- Surface with higher hydrophobicity
- Lower coefficient of friction

Properties of Aliphatic TPE-U with Various Levels of GENIOPLAST® Pellet 345

	Standard	Without Additive	With Additive				
Aliphatic TPU		100.00	97.50	95.00	90.00	75.00	55.00
GENIOPLAST® Pellet 345 [%]		0	2.5	5	10	25	45
Shore A	ISO 7619	83	83	82	80	70	62
Max. tensile strength [MPa]	ISO 527	28.9	26.9	24.3	26.6	16	8.1
Max. elongation [%]	ISO 527	782	823	779	932	811	692
Tear strength [N/mm]	ISO 34-1 B	82	70.7	71.1	54	62.3	46.8
Abrasion [mg/40 m]	ISO 4649	30	16.8	11.1	10	12	12.9
Density [g/cm³]	ISO 1183	1.11	1.11	1.1	1.1	1.08	1.07
MFI [g/10 min]	ISO 1133	10.1	9.6	9.4	8.6	8.1	3.9

GENIOPLAST® is a registered trademark of Wacker Chemie AG.



Material
TPE-U, TPE-A, TPE-E
compounds



Additive
GENIOPLAST® Pellet 345



Dosage
2 – 45%



Application
Surface modification

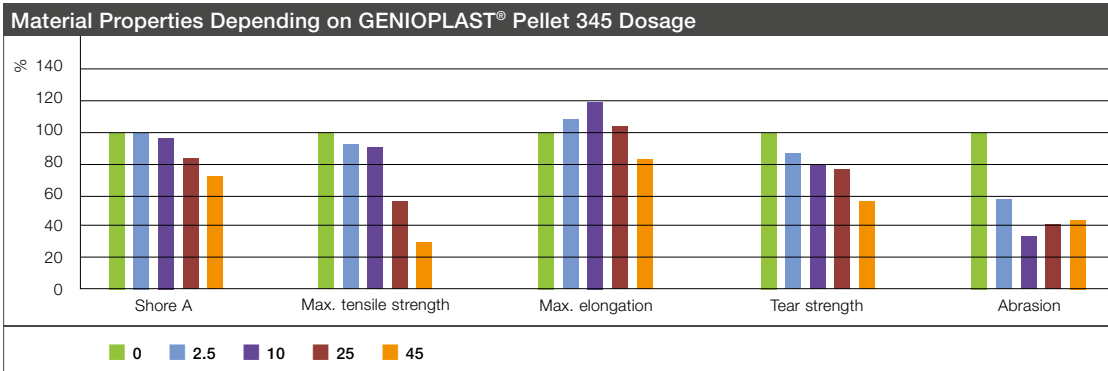


Key Benefits

- Lower Shore A hardness
- Higher abrasion resistance
- Lower coefficient of friction
- Improved haptics

At lower addition levels (below 5%), GENIOPLAST® Pellet 345 typically changes surface properties like lower coefficient of friction (CoF) and higher hydrophobicity, leading to materials with e.g. improved scratch and abrasion resistance. Bulk properties like tensile and tear strength do not change significantly. At higher loading levels (above 5%), GENIOPLAST® Pellet 345 starts to alter bulk prop-

erties as well, with more pronounced effects at progressively higher loadings. The known surface effects from the lower loading area plus the modulus and Shore A hardness of the products decrease significantly. Even so, mechanical properties like tear and tensile strength and interfacial cohesion are retained in the case of hard/soft combinations with polar thermoplastics like PC or PA.



GENIOPLAST® Pellet 345 Is Superior to Pure Silicones in Various Plastic Applications

Standard Silicone Additive in TPE-U

- No anchorage on, or compatibility with, organic polymer
- Separation, bleeding effects

GENIOPLAST® Pellet 345 in TPE-U

- Good compatibility with, and anchorage on, polymer
- No separation or bleeding effects
- Benefits include slip, softness and hydrophobicity



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