

ALCOM® WP – WEAR PROTECT

Making sure things run smoothly



ALCOM® WEAR PROTECT represents a comprehensive portfolio of compounds with optimized low friction and abrasion properties. The plastics extend the life-span of parts subjected to mechanical loads and eliminate the need for additional lubrication.

Compounds in the ALCOM® WEAR PROTECT series are based on different thermoplastics (PA, PBT, PC, PC/ABS, POM, PPS etc.). The use of high-quality special fillers improves the tribological characteristics of the plastics in their final application, making them less susceptible to wear.

- **PTFE** that is subjected to friction forms a lubricating film between the two sliding components. This reduces the "stick-slip" phenomenon.
- **Silicone** forms a lubricating film on the surface. It reduces screeching noises and, in combination with other fillers, the coefficient of friction.
- **Molybdenum disulfide (MoS₂)** is used for improved sliding frictional behavior as a solid lubricant in partially crystallized plastics such as PA, POM.
- **Aramid** is extremely wear resistant and ensures a good sliding behavior in combination with other fillers.
- **Graphite** is particularly effective both in and under water. It works excellent as a sliding friction modifier.
- **Carbon fibers** increase stiffness and strength. They act as a sliding friction modification and dissipate any electric charges that are built up by friction.
- **Special fillers** for non-reinforced plastics, are alternatives to PTFE or molybdenum disulfide because they are characterized with better mechanical properties and low deposits in the tool.

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ALCOM® WEAR PROTECT: advantages at a glance

- Reduced wear
- Improved sliding friction behavior
- Longer lifespan
- Smoother running, lower development of noise
- Improved emergency running characteristics
- Lower energy consumption
- Allows complex part geometries
- Weight reduction

Polymer	Material name	Fillers	Load pv product (MPa · m/s)	Linear wear rate w (µm/h)	Specific wear rate w _s (10 ⁻⁹ mm ³ /Nm)	Coefficient of static friction µ _s	Coefficient of sliding friction µ	Sample applications
PA66	PA66 non-reinforced	non-reinforced	5 · 1	60	2.52	0.54	0.92	
	ALCOM® PA66 910/1 AR5 NC	5 % aramid	5 · 1	8	0.4	0.38	0.68	Slide rails
	ALCOM® PA66 910/1 SLDS	Special modifier	5 · 1	26	1.5	0.37	0.6	Hinges
	ALCOM® PA66 910/1 PTFE20	20 % PTFE	5 · 1	25	1.4	0.18	0.25	Brackets/clips, sliding elements for roller blinds, gear wheel/worm wheel (precision engineering), round connectors
PA66 GF	PA66 GF30	30 % glass fibers	5 · 1	30.7	1.7	0.34	0.45	
	ALCOM® PA66 910/1 GF 30 PTFE 15	30 % glass fibers 15 % PTFE	5 · 1	19	1.08	0.32	0.4	Child protection switches, guide bushings for chair mechanisms, flanges, parts for sliding blocks in door closers & door hinges, slide controllers/timer switches
	ALCOM® PA66 910/1 GF 30 PTFE 15 SI 2	30 % glass fibers 15 % PTFE 2 % Silicon	5 · 1	21.9	1.22	0.19	0.39	Bearing bracket, air vent controls
	ALCOM® PA66 910/1 GF 30 MO 1	30 % glass fibers 1 % Molybdenum disulfide	5 · 1	30	1.6	0.3	0.42	Sliding elements, pistons
PA66 CF	ALCOM® PA66 910/1.1 CF10	10 % carbon fibers	5 · 1	5.9	0.33	0.31	0.26	Power drill mountings, adapters for domestic appliances
	ALCOM® PA66 910/1.1 AR10 CF10	10 % aramid 10 % carbon fibers	5 · 1	6.7	0.37	0.31	0.25	Bushings, slide rails
	ALCOM® PA66 910/1.1 CF10 PTFE10	10 % carbon fibers 10 % PTFE	5 · 1	6.6	0.37	0.3	0.25	Parts for sliding roof panel
	ALCOM® PA66 910/1.1 CF30 PTFE15	30 % carbon fibers 15 % PTFE	5 · 1	4.3	0.24	0.26	0.19	Springs for textile machinery, hair clippers, sliding carriages
POM	POM non-reinforced	non-reinforced	5 · 1	22	1.2	0.19	0.51	
	ALCOM® POM 770/1 AR10 PTFE10	10 % aramid 10 % PTFE	5 · 1	4.5	0.25	0.18	0.27	Bearing shells, washers, sleeves, slide bushings, slides for clutch and brake pedal
	ALCOM® POM 770/1 MO2	2 % Molybdenum disulfide	5 · 1	14	0.8	0.19	0.37	Gear wheels, sliding elements, seal retaining ring for ball valve, chair parts, Bowden pull wires (extruded hose)
	ALCOM® POM 770/1 PTFE 15	15 % PTFE	5 · 1	9	0.5	0.16	0.25	Hinge elements, control levers, locking disks, tappets, pump components, parts for windows blinds, gear wheels
	ALCOM® POM 770/1 SLBV	Special modifier	5 · 1	4.6	0.25	0.18	0.27	Hinge elements, slide rails
	ALCOM® POM 770/1 SI2	2 % Silicon	5 · 1	3.3	0.18	0.17	0.25	Bearing shells, bearing inserts
PBT	PBT non-reinforced	non-reinforced	5 · 1	266	15	0.2	0.54	
	ALCOM® PBT 700/1 PTFE20 NC	20 % PTFE	5 · 1	9.7	0.52	0.15	0.24	Friction disk
PBT GF	PBT GF 30	30 % glass fibers	5 · 1	61	3.4	0.34	0.35	
	ALCOM® PBT 700/1 GF20 PTFE15 BK0002-00	20 % glass fibers 15 % PTFE	5 · 1	19	1.1	0.21	0.28	Parts for door-closing systems
	ALCOM® PBT 700/1 GF30 PTFE15 BK0002-00	30 % glass fibers 15 % PTFE	5 · 1	27	1.5	0.23	0.3	Seat adjustment switches in passenger cars, pointers for industrial manometers
PC CF	PC non-reinforced	non-reinforced	3 · 1	> 100000	> 9260	0.49	> 0.49	
	ALCOM® PC 740/1.1 CF10	10 % carbon fibers	3 · 1	3	0.3	0.21	0.23	Spacer plates, fan wheels, housing parts for printing, conveyor technology and automatic teller machines
	ALCOM® PC 740/3162.1 CF10GF10TF10	10 % carbon fibers 10 % glass fibers 10 % PTFE	3 · 1	3.1	0.28	0.18	0.3	Wear plates, housing parts
PPS GF	TEDUR® L 9510-1	40 % glass fibers	5 · 1	494	27	0.27	0.46	
	TEDUR® L 9401-1	40 % glass fibers 5 % PTFE	5 · 1	14.8	0.82	0.27	0.36	Tappets, housing parts for engine compartments and mechanical engineering
	TEDUR® L 9424-1	45 % glass fibers 15 % Aramid/PTFE	5 · 1	17	0.92	0.23	0.32	Housing & piston for exhaust gas recirculation sensor
PPS CF	TEDUR® L 9400-3.2	15 % carbon fibers	5 · 1	3.3	0.18	0.21	0.46	Part for printing machinery, brackets for measurement devices
	TEDUR® L 9404-3.2	30 % carbon fibers	5 · 1	33	1.9	0.22	0.41	Bearing bushes, impellers, pump components

Additional products and information available on request. The measurements are provided based on the "block on ring" principle in line with the ASTM G 137 standard. The procedure is used to determine friction and wear on simple test pieces, taking into account existing fiber alignment. The test piece is tested at a defined force and speed as well as with defined needle bearing inner rings as an opposing body (referred to as the pv parameter and important for bearing applications). As a result, the frictional wear ("wear rate w") and the frictional resistance ("coefficient of sliding friction µ") are determined.

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