



BOOST YOUR
PLASTIC INJECTION
PROCESSES

voestalpine eifeler Coatings
www.eifeler.com/northamerica

voestalpine

ONE STEP AHEAD.

TOP END TECHNOLOGY AND CUSTOMER SERVICE APPROACH. YOU DESERVE IT!

voestalpine eifeler Coatings offers a real customer oriented PVD coating portfolio for the plastic injection molding industry. Whether you are having abrasion, adhesion, corrosion or fatigue fretting wear issues, eifeler has a solution for your plastic application.

BENEFITS YOU WANT TO HAVE:

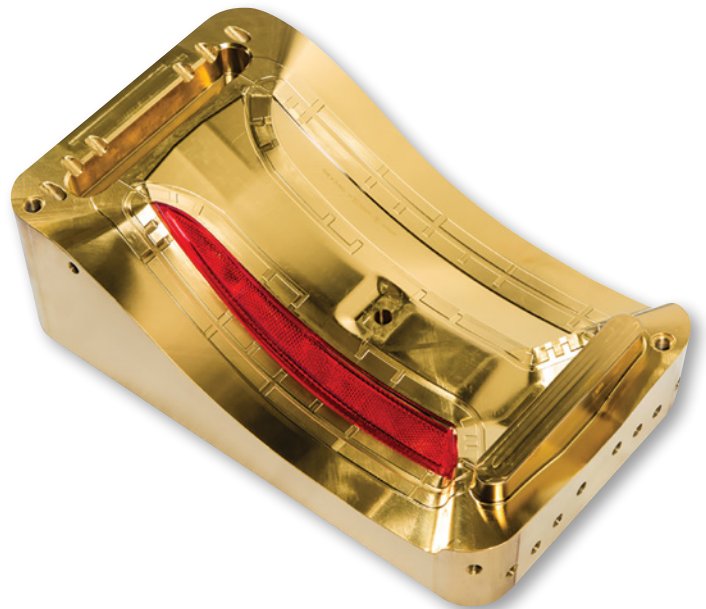
- » High lubricity.
- » High hardness.
- » Protection against corrosion.
- » Protection against heat.
- » Improves plastic flow.
- » Prevents sticking.
- » Improve mold release/part ejection.
- » Protection against gas venting issues.
- » Preserve surface finish.
- » Prevents galling and preserves delicate shut-offs.
- » Increased tool life, reduction in wastage resulting in low cost per components.
- » Reduced mold maintenance frequency provides less machine downtime, thus, higher productivity and real cost reduction.
- » A team oriented to deliver on time and provide quality assurance.

With eifeler PVD and DLC coatings you can protect your:

- » Mold cavities & cores.
- » Slides, lifters, core pulls, rotating cores.
- » Core pins.
- » Ejector pins, sleeves and blades.
- » Hot runner system valve gate pins.
- » Spruce bushings and gates inserts.

PVD COATINGS FOR PLASTICS

- » **EXXTRAL® ultrafine:** Abrasion, corrosion resistance and demolding.
- » **TiN ultrafine:** For ultra smooth surfaces when clear resins are used.
- » **CARBON-X®:** Outstanding wear resistance with superb lubricity.
- » **SUCASLIDE®:** Matchless lubricity when enhanced part release is desired.
- » **CrN/CrCN:** Corrosion resistance combined with high hardness and adhesive wear resistance.
- » **MOLDADUR®-P:** Scratch protection for sensitive surfaces.
- » **DUPLEX TIGRAL®:** Abrasion resistance and high thermal resistivity.



OUR COATINGS

PVD Coating	TiN Ultrafine available	TiCN Ultrafine available	CrN/CrCN	EXXTRAL® Ultrafine available	TIGRAL®
Coating Material	TiN	TiCN	CrN/CrCN	ALTiN (stacked)	AlCrTiN
Microhardness (HV) _{0.05}	2300 ± 300	3500 ± 500	2000 ± 200/2300 ± 200	3300 ± 300	3300 ± 300
Friction Coeff. Against Steel (Dry)	0.6	0.2	0.3-0.4/0.2-0.3	0.7	0.6
Coating Thicknesses ¹⁾ μm	2-4	1-4	1-6/2-6	2-5	3-8
Thermal Threshold	500°C/900°F	400°C/750°F	600°C/1100°F	800°C/1470°F	900°C/1650°F
Color	gold	blue gray	slate gray/silver gray	anthracite	dark gray
Key Characteristics	standard, all-purpose coating	very high hardness, high adhesive strength, wear resistance	low stress/good adhesion, high toughness and corrosion resistance	high hardness, very good oxidation resistance	high hardness, high oxidation resistance, superior abrasion

Applications

- | | | | | |
|--|--|--|--|--|
| <ul style="list-style-type: none"> » sticking, for ultra smooth surfaces when clear resins are used » for tools which are exposed to a high level of abrasive wear of e.g.; mineral filled organic materials » most plastic materials | <ul style="list-style-type: none"> » improve toughness, low friction coefficient, high heat conductivity, sticking » for ultra smooth surfaces, for tools which are exposed to a high level of abrasive wear of e.g.; mineral filled organic materials » most plastic materials | <ul style="list-style-type: none"> » tools which are subject to corrosive and abrasive wear, e.g. through aggressive and hard filling materials » sticking, improved demolding » most plastic materials | <ul style="list-style-type: none"> » greater resistance to abrasive wear » corrosion resistance and demolding » most plastic materials + >30% glass filled materials | <ul style="list-style-type: none"> » greater resistance to abrasive wear » high thermal resistivity » most plastic materials + >30% glass filled materials |
|--|--|--|--|--|

PVD Coating	MOLDADUR®-P	DLC: SUCASLIDE®	DLC: CARBON-X®
Coating Material	Special Plasma Coating	a-C:Me	a-C:H
Microhardness (HV) _{0.05}	1200 ± 200	1000 ± 1200	2400 ± 400
Friction Coeff. Against Steel (Dry)		0.05-0.10	0.05-0.15
Coating Thickness ¹⁾ μm		1.5-2.5	1.5-2.5
Thermal Threshold		400°C/750°F	325°C/617°F
Color		black	dark gray
Key Characteristics	high layer adhesion and excellent protection against abrasive wear	good adhesive strength, very hard, very low friction coefficient, very dense and smooth coating structure, biocompatible	high hardness, very good oxidation resistance

Applications

- | | | |
|---|---|--|
| <ul style="list-style-type: none"> » creates a scratch-resistant surface without altering the surface quality and while preserving the visual appearance » wear protection for sensitive surfaces » most plastic materials | <ul style="list-style-type: none"> » outstanding wear resistance and low friction of equipment when lubricants cannot be used, dry operations » mold surfaces, sliders and ejectors or valve pins, moving elements » mainly recommended for: PB, PE and PP | <ul style="list-style-type: none"> » suitable when enhanced part release is desired » moving elements, dry operations » mainly recommended for: PB, PE and PP |
|---|---|--|

1) depends on size of tools, for micro tools also smaller thicknesses necessary.

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