BALINIT CROMA: Maximum performance for plastics processing.

The innovative wear protection solution for more productivity and efficiency.
With BALINIT CROMA, your plastics processing will be in top form.

Whether injection molding, extrusion or blow molding: Only forming tool surfaces of the best quality ensure optimal productivity and efficiency in manufacturing processes. Take advantage of the BALINIT® CROMA and BALINIT® CROMA PLUS wear protection solutions from Oerlikon Balzers, a worldwide technological leader in the field of hard coatings. They offer you the precise advantages that are essential for reliability and success in your plastics processing.

<table>
<thead>
<tr>
<th>Extremely coating hardness</th>
<th>Multi-layer structure</th>
<th>Low coefficient of friction</th>
<th>First-class surface properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-level protection from abrasive wear</td>
<td>Significantly less corrosion due to a chemically saturated, dense multi-layer structure</td>
<td>The molding materials show very good sliding behaviour on the tool surfaces</td>
<td>Excellent adhesion</td>
</tr>
<tr>
<td>Protection from wear due to cleaning processes and tool damage</td>
<td></td>
<td></td>
<td>Surfaces with low reactivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Significant reduction of deposits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reduction of tool costs due to longer tool service lives</th>
<th>Reduction of product and piece costs through decreased machine downtimes and improved tool surface quality</th>
<th>Reduction of maintenance costs through decreased servicing and cleaning requirements</th>
</tr>
</thead>
</table>

BALINIT® CROMA and BALINIT® CROMA PLUS: Increased productivity, economy and manufacturing process reliability
Top performance data for added value.

**BALINIT® CROMA PLUS for plastic window frames**

**Tool**
Vacuum calibration unit

**Workpiece**
PVC window frames

**Challenge**
Untreated: Glass fibres and TiO₂ cause abrasion on the edges of the vacuum grooves as well as on the flat sliding surface; this leads to scratches on the profile and stick-slip effects

**The solution: BALINIT® CROMA PLUS**
- High-level abrasion and scratch resistance
- Increased coating service life by up to 6,000 miles / 9,600 kilometres
- Oxide coating produces 30% better material flow
- Reduction of sticking
- Higher productivity and manufacturing process reliability

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>BALINIT® CROMA</th>
<th>BALINIT® CROMA PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro hardness (HV 0.05)</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>Coefficient of friction (dry against steel)</td>
<td>0.3 – 0.5</td>
<td>0.3 – 0.5</td>
</tr>
<tr>
<td>Coating thickness (μm)</td>
<td>4 – 10</td>
<td>4 – 10</td>
</tr>
<tr>
<td>Coating material / coating structure</td>
<td>CrN (multi-layer)</td>
<td>CrN+OX (multi-layer with top layer)</td>
</tr>
<tr>
<td>Maximum service temperature (°C)</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Coating temperature (°C)</td>
<td>250 – 450</td>
<td>250 – 450</td>
</tr>
<tr>
<td>Corrosion protection</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Intrinsic roughness</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Colour</td>
<td>Silver-grey</td>
<td>Rainbow</td>
</tr>
</tbody>
</table>

Coatings also available in the DUPLEX series.

All data is understood to represent guideline values. Exact values are dependent on the respective substrate, the geometry and the surface finish.

**BALINIT® CROMA PLUS for plastic films**

**Tool**
Spiral mandrel die

**Workpiece**
HDPE packaging film

**Challenge**
Quality issues in the films due to local plastic spots sticking to the surface, abrasive cleaning causing wear and scratches, surface gets dull and rougher after ~1 year process

**The solution: BALINIT® CROMA PLUS**
- Greater production efficiency and reliability
- Significantly reduced or even eliminated sticking
- Excellent scratch protection
- No chemical interaction – no visual change of BALINIT® CROMA PLUS

**CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>BALINIT® CROMA</th>
<th>BALINIT® CROMA PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro hardness (HV 0.05)</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>Coefficient of friction (dry against steel)</td>
<td>0.3 – 0.5</td>
<td>0.3 – 0.5</td>
</tr>
<tr>
<td>Coating thickness (μm)</td>
<td>4 – 10</td>
<td>4 – 10</td>
</tr>
<tr>
<td>Coating material / coating structure</td>
<td>CrN (multi-layer)</td>
<td>CrN+OX (multi-layer with top layer)</td>
</tr>
<tr>
<td>Maximum service temperature (°C)</td>
<td>700</td>
<td>700</td>
</tr>
<tr>
<td>Coating temperature (°C)</td>
<td>250 – 450</td>
<td>250 – 450</td>
</tr>
<tr>
<td>Corrosion protection</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Intrinsic roughness</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Colour</td>
<td>Silver-grey</td>
<td>Rainbow</td>
</tr>
</tbody>
</table>

Persuasive coating properties!
Benefit from the high-performance coatings BALINIT CROMA and BALINIT CROMA PLUS. Contact us now!

Headquarters Balzers
Oerlikon Balzers Coating AG
Balzers Technology and Service Centre
Iramali 18
LI-9496 Balzers
T +423 388 7500
www.oerlikon.com/balzers

Liechtenstein
Oerlikon Balzers Coating AG
Beschichtungszentrum
Iramali 18
LI-9496 Balzers
T +423 388 5701
www.oerlikon.com/balzers/lv

Belgium
Oerlikon Balzers Coating Benelux N.V./S.A.
Schurhovenweg 4050
B-3600 Sint-Truiden
T +32 1169 30 40
www.oerlikon.com/balzers/be

Brazil
Oerlikon Balzers Revestimentos Metálicos Ltda
Rua Balzers, 250
Parque Industrial
Jundiai-SP 13213-084
T +55 11 2152 0464
www.oerlikon.com/balzers/br

China
Oerlikon Balzers Coating (Suzhou) Co., Ltd
No.9 Chang Yang Street
Suzhou Industry Park
Suzhou 215024
China
T +86 512 67620369
www.oerlikon.com/balzers/cn

Korea
Oerlikon Balzers Coating Korea Co., Ltd.
49, Hansan-gil, Chongbuk-myeon,
Pyeongtaek,
Gyeonggi-do, Korea, 451-833
T +82 31 680 9900
www.oerlikon.com/balzers/kr

Austria
Oerlikon Balzers Coating Austria GmbH
Burgstallweg 27
A-8605 Kapfenberg
T +43 38 62 34144
www.oerlikon.com/balzers/at

Switzerland
Oerlikon Balzers Coating SA, Brügg
Erlenstrasse 39
CH-2555 Brügg
T +41 323 65 74 74
www.oerlikon.com/balzers/ch

USA
Oerlikon Balzers Coating USA, Inc.
1475 E. Woodfield Rd.
Suite 201
Schaumburg, IL 60173
United States
T +1 847 619-5541
www.oerlikon.com/balzers/us

Our worldwide coating centre network addresses are listed at: www.oerlikon.com/balzers

[165x452] Germany
Oerlikon Balzers Coating Germany GmbH
Am Ockenheimer Graben 41
D-55411 Bingen
T +49 67 21 7 93-0
www.oerlikon.com/balzers/de

Luxembourg
Oerlikon Balzers Coating Luxembourg s.a.r.l.
Route de Bascharage
Zone Industrielle Hasneboesch
4513 Niederan
Luxembourg
T +352 265 80891
www.oerlikon.com/balzers/be

France
Oerlikon Balzers Coating France SAS
P.A. des 3 Noyers
16 avenue James de Rothschild
F-77184 Fontenay-s-en-Brie
France
T +33 1 64 12 49 00 www.oerlikon.com/balzers/fr

USA
Oerlikon Balzers Coating USA, Inc.
1475 E. Woodfield Rd.
Suite 201
Schaumburg, IL 60173
United States
T +1 847 619-5541
www.oerlikon.com/balzers/us

Our worldwide coating centre network addresses are listed at: www.oerlikon.com/balzers

[165x443] Italy
Oerlikon Balzers Coating Italy S.p.A.
Via Volturro 37
20861 Brugherio
Italy
T +39 039 289 901
www.oerlikon.com/balzers/it

[440x452] Brazil
Oerlikon Balzers Revestimentos Metálicos Ltda
Rua Balzers, 250
Parque Industrial
Jundiai-SP 13213-084
T +55 11 2152 0464
www.oerlikon.com/balzers/br

[165x434] Mexico
Oerlikon Balzers Coating México S.A. de C.V.
Acceso III No. 304 y 306
Colonia Industrial La Montaña C.P.
76150 Querétaro, Qro.
T +52 442 209 68 00
www.oerlikon.com/balzers/mx