

**oerlikon**  
balzers

# **BALITHERM PRIMEFORM** **for large plastic moulds**

A brand new surface treatment  
for all sizes of moulds



# BALITHERM PRIMEFORM – easy to repair independent of the surface

As an expert, you know that mirror-polished, laser/chemically textured and all polished surfaces are exposed to wear and scratches during production, in mould maintenance or when handled incorrectly. Repairing them takes time and reduces your productivity.

Oerlikon Balzers has now developed solutions for all possible applications, whatever the size of the mould. No matter what surface you have, protect it with one of the new BALITHERM® PRIMEFORM solutions.

## Standard

- low temperature
- non-critical surfaces
- critical steel grades for tempering
- for non mirror-polished surfaces

## High-Hardness

- high temperature
- for all normal tool steel grades
- not for mirror-polished or textured surfaces

## High-Quality

- low temperature
- for all surfaces and steel grades
- suitable for mirror-polished and textured surfaces

The INAURA systems have a loading capacity of 10 x 3 metres and 40 tonnes. The fully automated process ensures a stable and controlled wear-protection treatment procedure. The combination of hydrogen, nitrogen and electricity means that INAURA operates entirely without poisonous gases or chemicals.

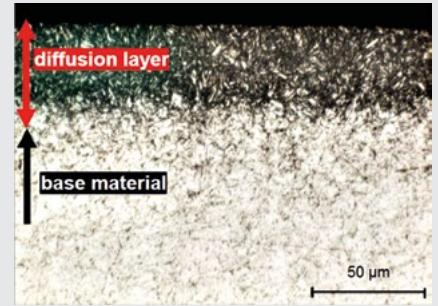


**NEW**  
**High-Quality &  
High-Hardness  
treatment!**

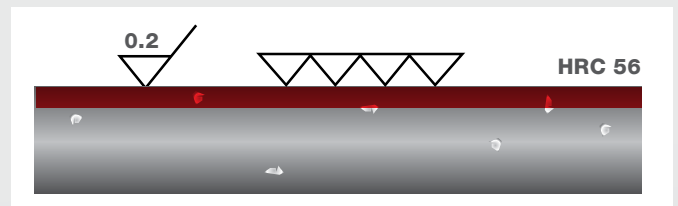
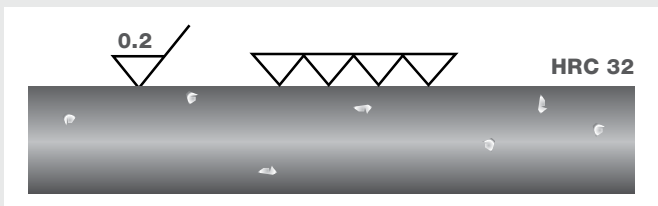
# Take your efficiency to the next level with our new **BALITHERM PRIMEFORM** solutions!

BALITHERM® PRIMEFORM is a plasma-assisted thermochemical process where the workpiece acts as a cathode. Ion bombardment is holding to the workpiece heats up, cleans the surface, provides active nitrogen and produces a gradient hardened diffusion layer.

BALITHERM® PRIMEFORM is a process specifically developed for plastic injection and compression moulds.



## BALITHERM PRIMEFORM – frozen porosity



### Without BALITHERM® PRIMEFORM

- P20 steel has natural porosity which will become evident during polishing across the entire section of the material.

### With BALITHERM® PRIMEFORM

- BALITHERM® PRIMEFORM does not reduce the porosity, but it prevents the build-up of new porosity and "freezes" the mould in its initial condition (as approved by the customer).
- Re-polishing and mould maintenance will not create any porosity during operation.

Steel grade	1.2738/1.2311/1.2312		
	P20+Ni/P20/P20+S -/-/-		
	BALITHERM® PRIMEFORM		
	Standard	High-Hardness	High-Quality
Polishability	++	-	+++
Weldability	+	+	++
Surface hardness	++	+++	++

Steel grade	1.2343/1.2344		
	H11/H13 SKD 6/SKD 61		
	BALITHERM® PRIMEFORM		
	Standard	High-Hardness	High-Quality
Polishability	++	-	+++
Weldability	+	+	++
Surface hardness	++	+++	++

Steel grade	1.4112/1.4122		
	440B/- -/-/-		
	BALITHERM® PRIMEFORM		
	Standard	High-Hardness	High-Quality
Polishability	++	-	+++
Weldability	+	+	++
Surface hardness	+	+++	++

Steel grade	1.859/1.8550/1.7735		
	-/-/A470 -/-/-		
	BALITHERM® PRIMEFORM		
	Standard	High-Hardness	High-Quality
Polishability	++	-	+++
Weldability	+	+	++
Surface hardness	+	+++	++

Service	BALITHERM® PRIMEFORM		
	Standard	High-Hardness	High-Quality
<b>Process temperature</b>	380°C	470°C	380°C
<b>HV Hardness</b> (depending on steel quality and geometry)	HV1 up to 1,200	HV1 up to 1,500	HV1 up to 1,200
<b>Benefits</b>			
Mould surface with compound layer increase the wear resistance		●	
Homogenous hardness increase for all mould geometries	●	●	●
High wear resistance against abrasive plastics; penetrates holes, pockets, ribs; consistently reduces residues caused by polymer outgassing	● <sup>***</sup>	●	● <sup>***</sup>
Excellent weldability even for mirror-polished surfaces	●		●
Extended mould service life (reduces parting line wear from glass-filled plastics)	3x longer	10x longer	3x longer
Corrosion resistance against PVC and acid-containing agents	●	●	●
BALITHERM® PRIMEFORM is a diffusion process with no flaking issue	●	●	●
No dimensional changes as with other well-known technologies	●	●	●
Prevents edge brittleness: no masking needed for mirror-polished surfaces			●
<b>Application examples</b>			
For all injection moulds and sheet moulding compound (SMC) tools	●	●	●
Suitable for textures with a depth less than 50 microns	●		●
Suitable for textures with a depth greater than 50 microns	● <sup>*</sup>		●
Technical polished surfaces up to 600 grain	● <sup>**</sup>	● <sup>*</sup>	●

\* Gloss adjustment necessary

\*\* Post-polishing necessary

\*\*\* Plastic materials up to 30% glass fibre



Headlights and rear lights

Bumpers

Bonnet

Dashboard

Panoramic roof

Grill

# BALITHERM PRIMEFORM for exteriors and interiors

BALITHERM® PRIMEFORM gives you higher-quality components, less mould maintenance and less downtime.

## Wear protection with BALITHERM PRIMEFORM – SMC moulding for lorries

### Objective for BALITHERM® PRIMEFORM:

Protect the mould from wear during the SMC moulding process as an alternative to hard chrome plating.

**Mould steel:** 1.2738

**Dimensions:** 1,780 x 1,170 x 560 mm

**Weight:** 4.8 + 5 tonnes (2 moulds in a batch)

**Injected plastic:** SMC technology

**Hardness before BALITHERM® PRIMEFORM:** 31 HRC

**Hardness after BALITHERM® PRIMEFORM:** 61 HRC = + 100 %

## Scratch resistance with BALITHERM PRIMEFORM – lorry sun visor



New MD®Xtra (1.2738 mould steel for large moulds from Finkl Steel (Schmolz + Bickenbach Group):

BALITHERM® PRIMEFORM treatment has a significant influence on the surface hardness of MD®Xtra. The surface hardness of MD®Xtra in all delivery conditions can be increased by over 100 % with no influence on the base hardness. Hardness values of up to 66 HRC have been demonstrated for MD®Xtra Super Hard.

### Objective for BALITHERM® PRIMEFORM:

Increase scratch and wear resistance.

**Mould steel:** 1.2738mod (HH)

**Dimensions:** 2,690 x 540 x 370 mm

**Weight:** 1,825 kg

**Injected plastic:** PMMA

**Hardness before BALITHERM® PRIMEFORM:** 31 HRC

**Hardness after BALITHERM® PRIMEFORM:** 61 HRC = + 100 %

This increased hardness provides superior resistance to abrasive wear during the injection of long glass fibre thermoplastics and makes mirror polishing easier. As an added benefit, the mould can be repaired and treated without stripping the surface treatment.



**Close to our customers – worldwide**



**Tap into our global network of coating centres to fully exploit the potential of your plastic injection moulds**

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