

## SLOTOPAS ZE 160

Black Passivation SLOTOPAS ZE 160 is a black passivating process for post-treatment of zinc-iron layers with 0.7 - 0.9 % iron in the alloy. Black, **chromium(VI)-free** passivation layers are produced in this process. In order to achieve an uniform black appearance as well as to improve the corrosion protection effect the passivation layer must be post-treated with a corresponding sealant of our SLOTOFIN series.

Concentrations and operating conditions		
		Range
Make-up concentrate		
SLOTOPAS ZE 161	[ml/l]	160 - 250
Make-up concentrate		
SLOTOPAS ZE 162	[ml/l]	75 - 125
Treatment time	[sec.]	60 - 90
Operating temperature	[°C]	18 - 25
pH-range		1,8 - 2,2
Drying temperature	[°C]	80 - 100

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## SLOTOPAS HK 20 (DISP)

Concentrations and operating conditions		
		Range
Passivation Concentrate		
SLOTOPAS HK 21	[ml/l]	100 - 250
Treatment time	[sec.]	45 - 120
Operating temperature	[°C]	40 - 60
pH-range		1,8 - 2,2



The Thick Layer Passivation SLOTOPAS HK 20 is a **chromium(VI) free** passivating process for electro-deposited zinc-iron alloy coatings with 0.3 - 0.6 % iron in the alloy. Conversion layers deposited by immersion show a weak blue-green iridescent appearance. The achievable corrosion resistance is excellent and is quite comparable with the protecting effect of a yellow chromating electrolyte based on Cr(VI). Tempering of surfaces passivated in

SLOTOPAS HK 20 up to temperatures of 80 - 90 °C doesn't affect the quality of the corrosion resistance, in contrast to yellow chromated (Cr(VI)) surfaces. On the contrary, temperatures of about 100 °C even improve the corrosion resistance. Additional sealing with a product of our SLOTOFIN series gives a uniform transparent and attractive appearance of the surface finish with an additional increase of the corrosion protection.

## Passivations for Zinc and Zinc-Iron

Wide range set!

- blue passivations (DÜSP)
- iridescent passivations (DISP)
- yellow passivations
- black passivations





## SLOTOPAS PA 1030 (DÜSP)

The Passivation SLOTOPAS PA 1030 produces a blue-violet uniform protection layer. The passivation is a one-step process for passivating both, rack- and barrel parts. The Passivation SLOTOPAS PA 1030 contains chromium(III) compounds and fluoride but is **free from cobalt**. The Passivation SLOTOPAS PA 1030 has a wide range of tolerance regarding concentration and immersion time and can be easily monitored and corrected. If Passivation SLOTOPAS PA 1030 is operated correctly, the passivation has a long service life.

Concentrations and operating conditions		Range
Concentrate SLOTOPAS PA 1031 [ml/l]		35 - 60
Treatment time [sec.]		20 - 60
Operating temperature [°C]		18 - 25
pH-range		1,8 - 2,2

Regarding iron impurities the service life of the passivation can be extended by the addition of an inhibitor.

## SLOTOPAS Z 20 blue (DÜSP)

Thin Layer Passivation SLOTOPAS Z 20 blue contains fluoride, cobalt and an inhibitor for iron but is **free of Cr(VI)**. The passivation forms on zinc plated surfaces an intense blue-violet conversion layer with good corrosion resistance behaviour. A loss of the colour when tempering with higher temperatures (200 - 210 °C) like applied for hydrogen de-embrittlement are less but the corrosion protection decreases. Tests have proven that 2 - 3 hours of tempering at 150 °C does not affect the corrosion resistance. Thin Layer Passivation SLOTOPAS Z 20 blue can alternatively be made-up and operated ETH-free with the

Concentrations and operating conditions		Range
Concentrate		
SLOTOPAS Z 21 blue [ml/l]		25 - 50
Treatment time [sec.]		30 - 90
Operating temperature [°C]		15 - 25
pH-range		1,8 - 2,2

Concentrate SLOTOPAS Z 22 blue. Then, the respective inhibitor for iron must be added separately.



## SLOTOPAS PC 1200 (DISP)

Passivation SLOTOPAS PC 1200 produces **chromium(VI)-free** passivation layers on electrodeposited zinc layers. It can be operated at moderate operating temperatures in the range of 25 - 35 °C. The conversion layer generated by immersion shows on zinc surfaces a bluish-yellowish-greenish appearance.

Concentrations and operating conditions		Range
Concentrate SLOTOPAS PC 1201 [ml/l]		90 - 150
Treatment time [sec.]		60 - 120
Operating temperature [°C]		25 - 35
pH-range		1,8 - 2,2



## SLOTOPAS HK 10 (DISP)

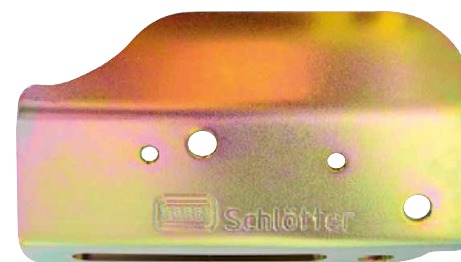
Thick Layer Passivation SLOTOPAS HK 10 is a **chromium-free** passivating process for electroplated zinc and zinc-iron alloy coatings. The conversion layer generated by immersion shows a weakly bluish-yellowish-greenish appearance while on zinc-iron alloy coatings the conversion layer appears intensively yellowish-greenish. Passivation SLOTOPAS HK 10 can alternatively be made-up and operated ETH-free with Passivation Concentrate SLOTOPAS HK 13. Then, the respective inhibitor for Iron must be added separately.

Concentrations and operating conditions		Range
Passivation Concentrate		
SLOTOPAS HK 11 [ml/l]		100 - 250
Treatment time [sec.]		45 - 120
Operating temperature [°C]		40 - 50
pH-range		1,8 - 2,2

## SLOTOPAS PC 1210 (DISP)

Passivation SLOTOPAS PC 1210 produces **chromium(VI)-free** passivation layers on electrodeposited zinc coatings. It can be operated at moderate operating temperatures in the range of 25 - 35 °C. The conversion layer generated by immersion shows a yellowish-reddish/greenish appearance on zinc surfaces. An additional sealing with a product of our SLOTOFIN series gives an uniform and attractive appearance of the surface finish with an additional increase of the corrosion protection. In this way the colouration of the part will be significantly weakened.

Concentrations and operating conditions		Range
Concentrate SLOTOPAS PC 1211 [ml/l]		90 - 150
Treatment time [sec.]		45 - 120
Operating temperature [°C]		25 - 30
pH-range		1,8 - 2,1



## SLOTOPAS G 10 (DISP)

Concentrations and operating conditions		Range
Concentrate SLOTOPAS G 11 [ml/l]		180 - 250
Treatment time [sec.]		30 - 170
Operating temperature [°C]		40 - 60
pH-range		1,8 - 2,3

Yellow Passivation SLOTOPAS G 10 is a **chromium(VI)-free** passivating process for electroplated zinc coatings. The conversion layer generated by immersion shows on zinc surfaces a yellow-green appearance. The achievable corrosion resistance is excellent and by all means comparable with the protecting effect of a chromium(VI)-containing yellow chromating. Tests on serial parts confirm that the required corrosion resistance according to DIN 50979 is comfortably achieved respectively also significantly exceeded if the

## SLOTOPAS Z 60

Black Passivation SLOTOPAS Z 60 is a passivating process basing on chromium(III) compounds that produces black conversion layers on alkaline zinc coated parts. In combination with a sealing they show a good corrosion protection. For post-treatment we recommend a sealer of our SLOTOFIN series. This has two positive effects: The achievable corrosion protection will be increased. A more uniform and brighter appearance can be obtained. The black passivation is suitable for barrel applications.

## SLOTOPAS PF 1060

Passivation SLOTOPAS PF 1060 is a **chromium(VI)-free** for black passivation used for electrodeposited alkaline zinc coatings. It produces a uniform black conversion layer which shows a good corrosion protection in combination with a sealant. For post-treatment we recommend a sealer of our SLOTOFIN series. This has two positive effects: The achievable corrosion protection will be increased. A more uniform and brighter appearance can be obtained.



system is operated correctly. As most passivations the corrosion protection improves from drying temperatures up to 120 °C. Surfaces treated with Yellow Passivation SLOTOPAS G 10 compared to yellow chromated zinc surfaces (chromium(VI)-containing) didn't show the effect to lose their good corrosion protection during raising of the thermal load (starting at 80 °C). Like with most passivations drying temperatures of up to 120 °C improve the corrosion protection. In this way the colouration of the component will slightly change.

Concentrations and operating conditions		Range
Additive SLOTOPAS Z 61 [ml/l]		100 - 150
Additive SLOTOPAS Z 62 [ml/l]		60 - 100
Treatment time [sec.]		60 - 90
Operating temperature [°C]		18 - 25
pH-range		1,8 - 2,2



Concentrations and operating conditions		Range
Additive SLOTOPAS PF 1061 [ml/l]		50 - 75
Additive SLOTOPAS PF 1062 [ml/l]		15 - 80
Treatment time [sec.]		60 - 120
Operating temperature [°C]		18 - 25
pH-range		1,8 - 2,2

The Passivation SLOTOPAS PF 1060 contains trivalent chrome compounds and is **free from Cr(VI) and fluorides**.