

## Annexure -V

### Tatra painting process:

#### Benefits of CED:

The method of cataphoretic painting (hereafter referred to as CPL) is one of the state-of-the-art technologies of surface treatment of metal products with organic coatings.

Nowadays, the cataphoretic surface treatment has a unique and perspective place in the field of surface treatment with organic coatings.

The benefits of CPL:

- high resistance to corrosion at low coating thickness (approx. 25  $\mu\text{m}$ , 1 000 hrs salt mist)
- high penetration - protection of cavities and inaccessible parts of products
- continuous reproducibility
- short painting time - 150 - 250 s
- high yield (efficiency) - over 99 %
- the environment and safety - demineralized water as the major solvent, VOC content below 2 %



PPG POWERCRON 6200HE system:

- the latest development stage of lead-free epoxy coatings PPG INDUSTRIES of the sixth generation
- wide adaptability of layer thickness - possibility of thickness coating up to 40  $\mu\text{m}$
- improved coverage of edges
- black hue - required for the Automotive cooperations
- qualified paint system as per ČOS 801001 - paint systems for land military equipment

The technology of zinc-phosphating is now the most improved pretreatment before painting of metal and aluminium parts.

It has a major impact on the resulting corrosion resistance and adhesion of the CPL paint.

Zinc-phosphate surface treatment = high resistance to corrosion

Specific stages of chemical pretreatment:

- Degreasing, rinsing, activation, Zn-phosphate, multi-stage rinsing system (demineralized water)



## Tatra Process for CED painting:

### CHEMICAL PRETREATMENT - PAINTSHOP - TATRA TRUCKS a.s. Kopřivnice

batch no.	product/filling		determination of		work mode	max. value				
1	DEGREASING	Chemfillet 10000	process:	spray	temp.	50 - 60 °C				
			Time (sec):	165	pH	> 12	10 - 13			
			Pressure (bar)	1,5	free alkalinity	4 - 8	3,5 - 9			
			ND: Cl.100M	180 kg	total alkalinity	8 - 28	7,5 - 32			
			ND: Cl.171/12	18 kg						
bath volume		9000 l	concentration:	20 kg / m <sup>3</sup> 2 kg / m <sup>3</sup>	anal.check 2x per shift;	recommended replacement 2x per 45 shifts				
2	RINSE	utility water	process:	spray application	temp.	5 - 25 °C				
			Time (sec):	60	pH	8.0 - 10	depending on the inlet water quality			
			Pressure (bar)	1,5	conductivity	max. 500 µS/cm				
bath volume		6000 l	(anal.check 2x per shift)		replacement 2x per month					
3	ACTIVATION	RINSE Conditioner 010	process:	spray	temp.	5 - 25 °C				
			Time (sec):	60	pH	8,5 - 9,5	7,85 - 11			
			Pressure (bar)	1,5	total alkalinity	2 - 8	2 - 9			
			concentration:	1,5 kg/m <sup>3</sup>	conductivity					
			bath volume		6000 l	ND:	1 kg 50% per 100	(anal.check 2x per shift)	rec. replacement 2 x month	
4	Zn-PHOSPHATING	Chemfos 700 A / AI / AA	process:	spray	temp.	48 - 51				
			concentration	40 kg/m <sup>3</sup>	VK	0,5 - 1,1	0,35 - 1,3			
			ND/ 700A	360 kg	CK	15 - 28	14 - 30			
			Chemfil Butter	concentration	17 kg/m <sup>3</sup>					
			NO <sub>2</sub> accelerator	Chemfos Additive Liquid	ND/ Buffer	153 kg	coating weight	1 - 1,5 g/m <sup>2</sup>	up to 1,5 g/m <sup>2</sup>	
			bath volume		9,000 l	concentration	0,5 kg/m <sup>3</sup>	accelerator score	1 - 1,5 gas points	0,8 - 1,6
			pressure[bar ]:		165 - 180 1,5	ND/Liquid	4,5 kg	accelerator dosage:		150 - 250 ml/ min
		Chemfos 700 R-K	refilling		(anal.check 2x per shift)	cleaning 1x per 3 months				
5	RINSE	demineral.	process:	spray	temp.	5 - 25 °C				
			Time (sec):	60	pH	max. 5	3 - 8			
			Pressure (bar)	1,5	conductivity	max. 400 µS/cm	max. 500 µS/cm			
bath volume		6000 l	(anal.check 2x per shift)		replacement 2x per month					
6	RINSE	demineral.	process:	spray	temp.	5 - 25 °C				
			Time (sec):	60	pH	min. 5	5,5 - 10			
			Pressure (bar)	1,5	conductivity	30 µS/cm	max. 50 µS/cm			
bath volume		6000 l	(anal.check 2x per shift)		replacement 1x per month					
7	DRIP		pH	5,5 - 7,5	DEMINERAL. WATER	pH	min. 6,0			
			conductivity	max 70 µS/cm		conductivity	max 10 µS / cm			

### Basic parameters:

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Tank dimensions (l x w x h): 4 000 x 3900 x 2850 mm

Tank volume: 55 000 L

Tank temperature: 33°C

Exclusion time:  
according to the required layer thickness -  
ranging from 180 to 270 s, CPL thickness  
is min. 20 µm

Exclusion voltage: 220 - 330 V

Firing temperature: 155 - 175 °C/30 min.



### Max. dimensions of part for coating:

Max. dimensions of parts subject to coating (l x w x h): 2 865 x 2 500 x 1 800 mm

Max. weight of parts (including suspensions): 800 kg



- Provides sufficient protection already with a layer of 18-35 µm, exceptionally it can be over 40 µm.
- Very good coverage on edges.
- Resistance of 1000 hrs in salt mist.

## Analytical checking of the CPL bath:


