Relation between pretreatment - paint system - expected lifetime

4008

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EXPECTED LIFETIME OF COATING SYSTEMS

In order to select and justify a coating system, it is extremely important for the specifying engineer to have data available describing the expected service life. The service life of a coating is related to the degree of surface pretreatment and the exposure conditions the coating is subjected to. Only in this way it will be possible to estimate real costs of a coating system. The service life should not be mixed up with guarantee.

SURFACE PRETREATMENT: This includes the pretreatment of old, sound, adhering coatings the pretreatment of corroded areas and of blistered, cracked or deteriorated coatings as well as the pretreatment of non-painted or shopprimed steel. Pretreatment by means of blastcleaning or by means of mechanical tools should be carried out according to internationally accepted standards such as the ISO standard 8501-01, the Japanese standard SPSS-1975, the German standard DIN 55928, part four, the British standard BS 4232 or the American standard SSPC-Vis 1. A description of specified surface pretreatment standards is given in information sheet 1490.

APPLICATION AND APPLICATION CONDITIONS: The pretreated surface should be kept in a condition that it is not contaminated again. So special measures have to be taken if the work is to be executed in a polluted or humid atmosphere. A real problem can be that build coats can not be applied by airless spray for whatever reason. However the application of primers by brush will often be advantageous due to better penetration and wetting of the surface with the primer.

The use of rollers for the application of primers can have drawbacks like uneven or too low dft or holidays. The right kind of roller should be used and application should be done with sufficient pressure. Special attention should be given to the application of paint by roller onto large surfaces under windy conditions. In that case the paint must contain a large amount of slow evaporating solvents and should be ordered accordingly.
Attention should also be given to sharp edges and complex shaped structures because experience shows that the dft on such spots is only 30% of the dft on flat surfaces, so repeated stripe coating is necessary.

COATINGS: To select a correct maintenance coating system knowledge of the performance of the previous coating system is essential. One should also know what type of paint is still present on intact areas. An analysis of existing exposure conditions is also very important, especially when the old coating system did not perform as had been expected. Upgrading of an existing coating system can only be considered when the intact coatings are still adhering well and are not degraded to the extent that they cannot provide a sound base for the maintenance coating system. If there is any doubt it is recommended to check this by treating a small area as a test patch.

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ATMOSPHERIC EXPOSURE

I Interior dry
II Interior wet
III Rural
IV Industrial + Coastal
V Industrial (Abrasion or Impact)

EP = Epoxy
PUR = Polyurethane
HS = High Solids

System	Surface Preparation	min. dft µm	Expected life time in years I	II	III	IV	V
2 coat alkyd	SSPS-Pt2	85	8				
3 coat alkyd	SSPS-Pt2	120	10	3	3		
	SSPS-Pt3	120	10	5	5		
4 coat alkyd	SSPS-Pt2	150		5	5	3	
	SSPS-Pt3	150		7	7	5	
2 coat recoatable EP/PUR	SSPS-Pt2	90	10	5			
3 coat recoatable EP/PUR	SSPS-Pt2	150	11	6			
	SSPS-Pt3	150	12	9	9	7	
	ISO-Sa2½	150		10	10	8	
3 coat modified HS epoxy	SSPS-Pt2	195		8	8	6	
3 coat surface tolerant	SSPS-Pt2	225		8	8	6	
EP/PUR	SSPS-Pt3	225		11	11	9	
	ISO-Sa2½	225		12	12	10	
2 coat epoxy tar	SSPS-Pt2	300		5	5	4	
	ISO-Sa2	300		6	6	5	
	SSPS-Pt3	300		8	8	7	
	ISO-Sa2½	300		8	8	7	
1 coat flint reinforced epoxy	ISO-Sa2½	3000					8
2 coat glassflake epoxy	ISO-Sa2½	475				8	5
2 coat waterborne acrylic	ISO-Sa2½	100	8				
3 coat waterborne acrylic	ISO-Sa2½	150	10	5	5		

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HIGH TEMPERATURE AND IMMERSION EXPOSURE

VI Heat
VII Water
VIII Chemicals
IX Hydro Carbons
X Waste water/slurry

mod = modified

System	Surface Preparation	min. dft µm	Expected life time in years VI	VII	VIII	IX	X
3 coat high solids epoxy	ISO-Sa2½	375		10			
2 coat epoxy tar	SPSS-Pt2 ISO-Sa2	300		4			
	SPSS-Pt3 ISO-Sa2½	300		7		8	
3 coat epoxy tar	ISO-Sa2½	400		9		7	7
2 coat high solids epoxy	SPSS-Pt2 ISO-Sa2	300		4			
	SPSS-Pt3 ISO-Sa2½	300		7	7	7	
	ISO-Sa2½	350		8	8	10	7
	SPSS-Pt2 ISO-Sa2	450		4			
	SPSS-Pt3 ISO-Sa2½	450		9			
2 coat mod.solvent free epoxy	SPSS-Pt3 ISO-Sa2½	300		8			
3 coat phenolic epoxy	ISO-Sa3	300		9	9	10	
1 coat solvent free epoxy	ISO-Sa2½	400		6	8		
1 coat CSF phenolic epoxy	ISO-Sa2½	400		9	9	10	
1 coat zinc silicate	ISO-Sa2½	75			8		
4 coat alkyd aluminium 175°C	SPSS-Pt3 ISO-Sa2½	110	3				
3 coat epoxy 200°C	SPSS-Pt3 ISO-Sa2½	180	3-4				
1 coat silicone 450°C	ISO-Sa2½	115*	3-4				
2 coat silicate 500°C	ISO-Sa2½	115	3-5				

* including a.c. layer

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