DVS – DEUTSCHER VERBAND FÜR SCHWEISSEN UND VERWANDTE VERFAHREN E. V.

Instructions on the production of microsections and the evaluation of thermally sprayed coatings Examples of common sprayed coatings, produced with a variety of spraying processes, represented in cross sections

machines.

Appendix:

Examples of con.

See leaflet DVS 231

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preparation procedure should be

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ding and polishing processes on suita. 'e grinning and polishing

In order to ensure reproducible pre- ration results, all the details of specimen preparation, reluging the imen size, cutting method,

embedding method, grinding and polisning agents, number of

grinding and polishing cycles, c. pping pressures, grinding and

polishing times and of ler p ameters must be clearly adhered to.

prayed coatings, Table 1.

In order to ensure reproducible quality,

must therefore be carried out with semi-

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July 2013

This is a continuation of the instructions on the production of microsections in Leaflet DVS 2310-1 and of the comparison between professional and defective microsection preparations in DVS 2310-2, and includes micrographs produced in industrial plants, universities and metallography laboratories. The preparation instructions contained in the appendix to DVS 2310-3 are to be interpreted merely as a suggested solution for successful preparation. Alternative preparation methods can also lead to the same result.

The micrographs are intended to show common qualities of sprayed coatings that can be achieved with the different spraying methods. By adjusting the coating parameters such as gas type, amount of gas, grain fraction of powders, speed of movement, particle size and particle speed, it is possible to influence the quality of coating to a certain degree; the coating properties thus influenced include porosity, adhesion and dilution of particles. The qualities of coating represented should therefore be viewed only as examples.

Appendix

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Table 1. Examples of common sprayed coatings.											
Figure no.	Base material	Substrate	Topcoat	Spray process							
1	Steel, unalloyed	_	NiCrBSi	owde lar							
2	Brass	-	Мо	Wire ne							
3	Steel, unalloyed	_	Cr ₃ C ₂ -NiCr	HI DF							
4	Steel, unalloyed	_	WC/C- 1/12	TIVOF							
5	Steel, unalloyed	_	ZnAi	Arc							
6	Steel, unalloyed	-	13% Cr steel	Arc							
7	Steel, unalloyed	Ş	Alsizu	APS							
8	Steel, unalloyed		CrNiMo	APS							
9	Steel. unalloyed	NiCr 80 20	Al ₂ O ₃	APS							
10	Steel, unal' yed	NiCr 80/20	Al ₂ O ₃ /TiO ₂	APS							
11	Crl st		Cr ₂ O ₃	APS							
12	Ni basec	MCrAIY	ZrO ₂ +Y ₂ O ₃	VPS/APS							

public has been drawn up by a group of experienced specialists working in an honorary capacity and its consideration as an important source of information The user should always check to what extent the contents are applicable to his particular case and whether the version on hand is still valid. mende be accepted by the Deutscher Verband für Schweißen und verwandte Verfahren e.V., and those participating in the drawing up of the document.

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Figu-	Preparation instructions. Embedding: cold Grinding (300 rpm) S: SiC wet D: diamond						Polish (150 rpm)					Contrast etching agent	
	Par	Stage 1	Stage 2	Stage 3	Stage 4	Sta- ge 5	Sta- ge 6	Par	Stage 1	Stage 2	Stage 3	Stage 4	
1	s	180	-	-	-	_	-	D	6	3	1	OPS	nc
	KD	-	15	-	-	-	-	Т	нк	HS	KF	КТ	
	Z	flat	4	-	-	-	-	Z	5	5	5	1,5	
	Р	120	100	-	-	-	-	Р	80	80	80	50	
2	S	180	400	800	1200	2400	4000	D	3	1	OPS	OPS+	none
	D	-	-	-	-	-	-	Т	KF	KF	КТ	KI	
	Z	flat	2	2	2	2	2	Z	2,5	2	1	1]
	Р	150	100	100	100	100	100	Р	100	100	100	00	
3	S	220	320	500	-	-	-	D	3	OPS	-77	-	none
	D	-	-	-	30	30	-	Т	KF	КТ]
	Z	3	2	2	10	5	-	Z	1 2	0,5	-	-]
	Р	120	110	100	80	40	-	Р	70	30	-	-	
4	s	-	-	-	-	-	-	D	3	1	JPS	-	
	D	63	30	10	-	-	-	Т	KF	KF		-	
	Z	flat	6	6	-	-	-	Z	2 3	<i>-</i> 3	3	-	
	Р	220	220	220	-	-	-	Р	.20 . 150	120150	100	-	
5	S	320	-	-	-	-	-	D	6		1	-	none
	KD	-	15	-	-	-	-	Т		BW	KF	-	
	Z	flat	4	-	-	-	-	Z	5	5	5	-	
	Р	120	100	-	-	-		Р	80	80	80	-	
6	S	180	400	800	1200	-	- (D		1	OPS	OPS+ NAOH	none
	D	-	-	-	-	-		T	KF	KF	KT	КТ	
	Z	flat	2	2	2		<u>-</u> _		2,5	2	1	1	
	Р	150	130	120	100			م	100	100	100	100	
7	S	180	400	800	1200 +W	∠400 +W	1000	D	3	1	OPS	OPS+ NAOH	none
	D	-	-	-	-			Т	KF	KF	KT	КТ	
	Z	1	1	1	1	1	1	Z	3	3	1	1	
}	P S	120 180	120 400	120 800	1200	100	100 -	P D	100 3	100 1	90 OPS	90 OPS+	none
	D	_	-		_	-	-	Т	KF	KF	КТ	NAOH KT	1
	Z	– flat		2	-	-	-	Z	кг 2,5	۲. 2	1	1	
	P	150	2 130	120	100	_	-	P	100	2	100	100	1
9	г S	180	-		_	-	-	г D	3	100	OPS	_	none
5	D	_			1	-	-	Т	KF	KF	KT	- _	
	Z	3	4	4	4	-		Z	3	3	5	-	1
	P	150	180	180	180	-	-	P	150	150	120	- _	1
0	s	2 0	20	400	600	-		D	6	3	-	-	
-	D		-	-	_	_	_	Т	нк	нк	_	-	1
	7	at	1	1	1	_	_	Z	4 5	4 5	_	_	1
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