

DIN EN 13236:2011-02 (E)

Safety requirements for superabrasive products

Contents		Page
Foreword		4
Introduction		6
1	Scope	7
2	Normative references	7
3	Terms, definitions and symbols	7
3.1	General	7
3.2	Grinding machines	7
3.3	Grinding method	8
3.4	Type of application	8
3.5	Symbols	10
3.6	Other symbols	11
4	List of significant hazards	11
5	Safety requirements	11
5.1	General requirements	11
5.2	Requirements for precision superabrasive grinding and cutting-off wheels	12
5.3	Requirements for non-precision cutting-off wheels	13
5.4	Requirements for diamond wires	20
5.5	Requirements for mounted points	21
5.6	Requirements for other superabrasive products for non-precision grinding	21
5.7	Marking	22
6	Verification of the safety requirements	22
6.1	Verification of the general requirements	22
6.2	Verification of the strength requirements	23
6.3	Verification of marking	28
6.4	Verification of the requirements for blotters	28
7	Information for use	28
Annex A (normative)	Marking	30
A.1	Content of the marking	30
A.2	Execution of the marking	33
Annex B (normative)	Colour codes	34
Annex C (informative)	Mounted points	35
C.1	Example of calculation of the maximum permissible speed of rotation	35
C.2	Example for the application of the calculation method	38
Annex D (normative)	Reconditioning of cutting-off wheels according to 5.3.6.4	42
D.1	Preconditions for reconditioning	42
D.2	Additional marking requirements	43

Annex E (informative) Speed conversion table	44
Bibliography	47
Figures Figure 1 -- Position of cuts and openings in steel blanks	17
Figure 2 -- Example of cut-outs and openings	18
Figure 3 -- Segmented cutting-off wheels: Dimensions of segment height X1	23
Figure 4 -- Example of a bending test device for segmented cutting-off wheels	24
Figure 5 -- Cutting-off wheels with continuous rim: Dimensions of segment height X1	25
Figure 6 -- Example of a bending test device for cutting-off wheels with continuous rim	25
Figure 7 -- Example of a shearing force test device	26
Figure 8 -- Example of the test piece	28
Figure 9 -- Example of a tensile test	28
Figure C.1 -- Volume division for mounted points with reduced spindle (ZYA)	36
Tables Table 1 -- Grinding method, type of machine, type of application	9
Table 2 -- Symbols	10
Table 3 -- Other symbols	11
Table 4 -- List of significant hazards	11
Table 5 -- Safety factors for precision superabrasive grinding and cutting-off wheels	12
Table 6 -- Maximum operating speeds as a function of the bond type	13
Table 7 -- Safety factors for non-precision cutting-off wheels	14
Table 8 -- Maximum operating speeds as a function of the bond type	14
Table 9 -- Dimensions of blanks for dry cutting-off	15
Table 10 -- Dimensions of blanks for wet cutting-off	16
Table 11 -- Bending strength b for cutting-off wheels for the use on hand-held cutting-off machines depending on segment height X1 and segment length L2	19
Table 12 -- Minimum bending moment Mb	19
Table 13 -- Safety factors for other superabrasive products for non-precision grinding	21
Table 14 -- Maximum operating speeds as a function of the bond type	22
Table A.1 -- Marking of superabrasive products	30
Table A.2 -- Restrictions of use (RE)	32
Table B.1 -- Colour codes and design of colour codes	34
Table C.1 -- Designation of the calculation quantities	37
Table C.2 -- Designation of mounted points	38

Table C.3 -- Characteristics for the calculation of maximum speeds of rotation	39
Table C.4 -- Mounted points, cylindrical shape, plain spindles (ZYN) vitrified bond (V)	40
Table C.5 -- Mounted points, cylindrical shape, reduced spindles (ZYA), vitrified bond (V)	40
Table C.6 -- Mounted points, cylindrical shape, plain spindle Schaft (ZYN), electroplated bond (G) ..	41
Table E.1 -- Speed conversion	44