Cemented Carbide Grades and Physical Properties

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Carbide Grade old	Carbide Grade new	WC Grain Size	Binder	Binder Content % w/w	Density g/cm³	Hardness HV30	Hardness HRa	Transverse Rupture Strength** N/mm²	Pressure Resistance** N/mm²	Fracture Toughness*** N/mm². m$^{1/2}$	Special Properties
–	RX3-UF *	ultrafine	Cobalt	3	15.2	2150	95.0	3200	6500	8.0	
RX8UF-NG	RX8-UF	ultrafine	Cobalt	8	14.5	1860	93.2	4100	6300	8.5	
RX12UF-NG	RX12-UF			12	14.2	1650	92.2	4400	6000	9.5	
RX3-NG	RX3 *	submicron	Cobalt	3.3	15.2	2000	94.0	3400	6500	7.8	
RX6-NG	RX6			6	14.8	1820	93.1	3800	6400	8.5	
RX7-NG	RX7			7.5	14.7	1740	92.7	4100	6300	9.0	
RX10-NG	RX10			10	14.4	1600	91.9	4300	6000	9.8	
RX15-NG	RX15			15	14.0	1390	90.3	4500	5500	12.5	
RF13	RF13	fine	Cobalt	6.5	14.8	1690	92.5	3600	5700	9.2	
RF24	RF24			12	14.3	1390	90.3	4200	5200	11.2	
RF40	RF40			20	13.5	1090	87.3	4000	4200	18.0	
RF54	RF54 *			27	12.9	890	84.7	3800	3800	>20	
RM13	RM13	medium	Cobalt	6.5	14.8	1590	91.9	3600	5500	9.5	
RM16	RM17			8.5	14.6	1500	91.2	3800	5300	10.4	
RM22	RM22			11	14.4	1390	90.3	4000	5000	11.8	
RM30	RM30			15	14.0	1230	88.7	4200	4500	14.5	
–	RM40			20	13.5	980	85.9	4100	4000	19.0	
–	RM50			25	13.1	870	84.5	4000	3600	>22	
RCR17	RCR17	medium	Cobalt	8.5	14.5	1550	91.6	3700	5400	10.0	EDM grades with corrosion inhibitor
RCR24	RCR24			12	14.2	1380	90.3	3900	5000	13.0	
RCR30	RCR30			15	13.9	1260	89.1	4100	4500	17.5	
RB14	–	coarse	Cobalt	7	14.8	1430	90.7	3600	5000	10.0	Coarse grain material of high toughness
RB10	RB20			10	14.5	1300	89.5	3800	4600	12.5	
RB15-H	RB30			15	14.0	1080	87.2	4000	4000	18.5	
RB20-H	RB44			22	13.4	890	84.7	3800	3500	>20	
–	RB50 *			25	13.1	840	84.2	3800	3200	>22	
RCS12	RCS12	submicron	Nickel	6	14.8	1770	92.9	3400	6000	8.1	corrosion-resistant (non-magnetisable on request)
RCS17	RCS17			8.5	14.5	1650	92.2	4000	5800	8.5	
RCS24	RCS24			12	14.2	1420	90.6	4200	5300	10.2	
RCN	RCF16	fine		8	14.5	1600	91.9	3900	5500	8.3	
RCF24	RCF24			12	14.2	1350	90.0	4200	5000	11.0	
RCFN22	RCFN22 *			11	14.2	1600	91.9	2100	4500	8.0	corrosion-resistant, non-magnetisable
RCM30	RCM30 *	medium		15	14.0	1100	87.3	3800	4000	13.0	corrosion-resistant
RXE20	RXE20 *	submicron	Iron/Nickel/Cobalt	10	14.1	1600	91.9	3200	5500	10.8	alternative binde (high toughness)
RXE40	RXE40 *			20	13.1	1250	88.9	3600	4000	18.5	

* On request | ** Approximate value | *** The measured values K1c depend on the geometry and the preparation of the sample and may differ from the values obtained by different methods. Technical modifications are reseved.

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ISO K / ISO G – Hartmetall ESTECH AG

> K10	RF13
> K20	RM13
> K30	RM17
> K40	RM22, RF24
> G10	RM17
> G20	RM22, RF24
> G30	RM30
> G40	RF40

> K10-F	RX6
> K20-F	RX7
> K30-F	RX10

> **Achtung** Die Standard-ISO-Codes sind für Hartmetalle der Korngrössen fein bis medium entwickelt worden und entsprechen nicht mehr dem heutigen Stand der Technik. Die Sortenwahl sollte deshalb immer anhand der Anwendungsdaten des Kunden erfolgen.

> **Attention** The standard ISO codes define grain sizes from fine to medium and do not represent the today's state of the art in cemented carbides. The selection of the optimum carbide grade should therefore always be done based on application data of the customer.

> **Attention** Les codes ISO standards du métal dur se réfèrent à la taille des grains fine à moyenne et ne représentent plus la technology actuelle du métal dur. Le choix de la nuance optimale du métal dur doit toujours être pris basé sur les dates de l'utilisation du client.