

PRODUCT LIST

FRITS AND BONDS FOR GRINDING WHEELS

EMO FRITE D.O.O.
Bežigrajska cesta 18
3000 Celje
SLOVENIA

T: +386 35 412 261
E: info@emo-frite.si
www.emo-frite.si

SCAN
ME!



Products worthy of your confidence

FRITS | GLAZES | FRITS FOR GLASS
VITRIFIED BONDS IN GRINDING WHEELS
ENAMELS

Ceramic Frits and Vitrified Bonds for Grinding Wheels

This catalogue presents our standard frits for vitreous and resin bonds for traditional grinding wheels and ready-made vitrified bonds for Al₂O₃, CBN, SiC and diamond abrasive grains in grinding wheels. They are suitable for temperatures ranging from 950°C to 1300°C.

The ceramic bonds are based on inorganic materials, such as frits, feldspars, kaolin, different clays etc. They present the agglomeration of abrasive grains - the connective material, which connects the abrasive grains in one totality and pore. The fluxing behavior of

the frits during melting is of great significance and it must be suitable for the particular use. The surface tension of the frits used, is equally important in securing good bond as fluxing behavior.

Frits for ceramic bonds in grinding wheels are developed according to **the needs and preferences of individual customers** because of the specificity of each product.

Frits for grinding wheels are available in granulate or powder form. Milling fineness is in average 1-3% rest on a 63 µm sieve.

Table 1: Frits for the production of grinding wheels

Product	ζ	TEC (linear)	SNT T	SFT T	HS T	FS T	Applica tion	Chemical Composition														
								Al ₂ O ₃	Si O ₂	B ₂ O ₃	M g O	Ca O	Ba O	Li ₂ O	Na ₂ O	K ₂ O	P ₂ O ₅	Zn O	Pb O	Ti O ₂	F	
R-2030	2,4	76,3	600	675	765	870	A	-	+	30-40	-	-	-	-	+	-	-	-	-	-	-	-
R-2031	2,4	134,9	660	820	1160	1300	A	+	+	<10	+	+	-	-	+	+	+	-	-	-	-	-
R-2032	2,4	50,2	710	860	1150	1330	C,B	+	+	>25	+	-	-	+	-	-	-	-	-	-	-	-
R-2034	2,5	116,2	560	670	750	850	C	+	+	>30	-	+	-	-	+	+	-	-	-	-	-	-
R-2035	2,4	104	600	670	750	820	A	+	+	>30	-	-	-	-	+	+	-	-	-	-	-	-
R-2054	2,4	167,7	440	520	600	660	A, C, R	+	+	20-30	+	+	+	+	+	+	-	-	-	-	-	-
R-2058	2,5	117	545	635	700	800	R	+	+	20-30	+	-	-	-	+	+	-	-	-	-	-	-
R-2060	2,4	112,1	470	555	620	670	D	+	+	20-30	+	-	-	-	+	+	-	+	-	-	-	-
R-2081	2,1	45,3	650	780	1200	1300	C,B	+	+	20-30	-	+	-	-	+	-	-	-	-	-	-	-
R-2095	2,3	95,2	580	680	780	880	A	+	+	25-30	-	-	-	-	+	+	-	-	-	-	-	-
R-2096	2,3	64,2	590	720	830	940	C	-	+	>35	-	+	-	-	+	-	-	-	-	-	-	-
R-2097	2,4	76,8	670	810	980	-	A	+	+	5-10	-	+	-	-	+	-	-	-	-	-	-	-
R-2098	2,3	83,7	610	760	980	1050	C	+	+	20-30	-	-	-	-	+	+	-	-	-	-	-	-
R-2704	2,5	92	570	670	770	950	A, C	+	+	>10	-	-	-	-	+	+	-	-	-	-	+	+
K21A009	2,4	81	640	720	820	880	A	+	+	20-30	-	+	-	-	+	+	-	-	-	-	-	-
K21A010	-	104,7	530	590	800	820	A	+	+	20-30	+	+	-	-	+	+	-	-	-	-	-	-

Product	ζ	TEC (linear)	SNT T	SFT T	HS T	FS T	Applica tion	Chemical Composition													
								Al ₂ O ₃	Si O ₂	B ₂ O ₃	M g O	Ca O	Ba O	Li ₂ O	Na ₂ O	K ₂ O	P ₂ O ₅	Zn O	Pb O	Ti O ₂	F
K21A011	-	87,4	510	600	700	750	A	+	+	30-40	-	-	-	+	+	-	-	-	-	-	-
K21A012	-	92,1	560	640	840	900	A	+	+	15-20	+	+	-	+	+	-	-	-	-	-	-
K21S001	2,5	86	680	760	1020	1100	R	+	+	-	0-5	10-15	-	-	10-15	<0,5	-	-	-	-	-

ζ = Density

TEC = Linear thermal expansion coefficient
alpha (20-400°C) x 10⁻⁷

SNT T = Sintering Temperature °C

SFT T = Softening Temperature °C

HS T = Hemisphere Temperature °C

FS T = Fusion Temperature °C

Application = A – Corundum, (alumina Al₂O₃)

B – Cubic boron nitride (CBN)

C – Silicium carbide (SiC)

D – Diamond

R – Resin

Bonds for Grinding Tools

The bond should reach high body strength that cause wheel to work at maximal peripheral velocity (rpm). It is necessary to set up the instrument hardness in wide limits that means to releasing and vacating the grain in the moment of its blunting. The

instrument structure is other important parameter; it is porosity of ceramic mass. It improves a cooling agent income and the grinded material output.

Table 1: Ready to Use Vitrified Bonds

Product	TEC	Sintering T °C	Softening T °C	Hemisphere T °C	Application	Temperature °C
V06D03	107	550	690	750	D	650 °C
V06D28	51,4	680	855	1315	D	600 – 650 °C
V06D29	55,6	680	870	1325	D	600 – 650 °C
V07A07	96,3	595	675	745	A	700 °C
V07A14	103,5	610	700	765	A	700 - 750 °C
V07A19	91,4	610	689	795	A	700 - 800 °C
V07C26	85,1	655	765	825	C	750- 800 °C
V07C27	64,0	665	765	825	C	750- 800 °C
V08A18	84,5	610	765	885	A	800-900°C
V08B08	79,3	660	745	880	B	800-900°C
V08B22	105,6	655	725	860	B	800-850°C
V08C15	60,3	775	875	1205	C	800-900°C
V09A01	81,9	670	750	830	A	900°C
V09A02	72,4	790	1010	1295	A	900-1000°C
V09C04	62,4	885	1075	1315	C	900-1150°C
V09C09	57,1	835	1055	1285	C	900-1100°C
V09C11	58	780	870	1320	C	900-1100°C
V10A10	69,3	1015	1095	1120	A	1000-1100°C
V10A11	59	640	760	980	A	1000-1100°C
V10C13	-	820	1200	1400	C	1000-1150°C

Product	TEC	Sintering T °C	Softening T °C	Hemisphere T °C	Application	Temperature °C
V11A01	46,3	1040	1175	1260	A	1100°C
V11A02	73,7	780	840	950	Ceramic low temperature bond	
V11A03 blue	70,5	760	820	980	A	1100°C
V11C23	66	1080	1195	1355	C	1100-1150°C
V12A05	67	1050	1140	1350	A	1200-1250°C
V12A06	52	800	1020	1270	A	1200-1250°C
V12A07 blue	48,4	790	980	1240	A	1200-1250°C
V12A16	58,1	1020	1160	1290	A	1200-1250°C
V12A17	63,5	1000	1120	1210	A	1200-1250°C
V12A18 blue	71,1	960	1060	1240	A	1250°C
V12A21	58,7	1150	1200	1320	A	1250°C
V12A24	64,2	960	1040	1175	A	1250°C
V12A25	74,2	965	1095	1200	A	1250°C
V12C12	57,1	1130	1245	1390	C	1200-1250°C
V12C20	59,3	1120	1265	1140	C	1200-1250 °C
V12C25	57,2	1185	1355	1445	C	1200-1250 °C
V13A72	-	-	-	-	A	1300 °C
V14C01	-	1130	1255	-	C	1400 - 1450 °C
V14C02	-	1185	1300	1470	C	1400 °C
V14C03	55,3	1140	1355	1470	C	1400 °C

TEC = thermal expansion coefficient
 $\alpha (20-400^{\circ}\text{C}) \times 10^{-7}$

Application = A – Corundum, (alumina Al_2O_3)
 B – Cubic boron nitride (CBN)
 C – Silicium carbide (SiC)
 D – Diamond
 R – Resin