

MKM CrAl 4 / MKM CrAl 6

(Modified 1.4725 / 1.4767)

MKM CrAl4 and MKM CrAl 6 are super oxidation resistant, aluminium-containing ferritic chromium steels alloyed with rare earth elements which improve oxidation resistance. Due to the high contents of aluminium and chromium in combination with rare earth elements (Cer, Hafnium, Lanthanum, Yttrium, etc. ...), MKM CrAl 4 and MKM CrAl 6 alloys possess good high temperature stability.

Main applications for these foils are metallic substrate for catalytic converters and diesel particle filters in automotive exhaust systems (Passengers cars, truck, buses, motorcycles, boats etc.) as well as for heating elements for hot plates. The radiant heating elements are an important part of the cooking systems (ceran field in each Household).

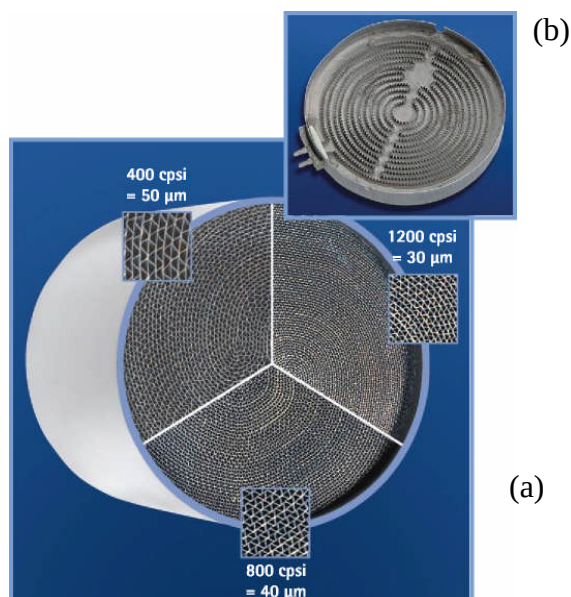


Figure 1 – Applications:

(a) Metallic substrate for catalytic converters and diesel particle filters in automotive exhaust systems

(b) Ceran field in Household

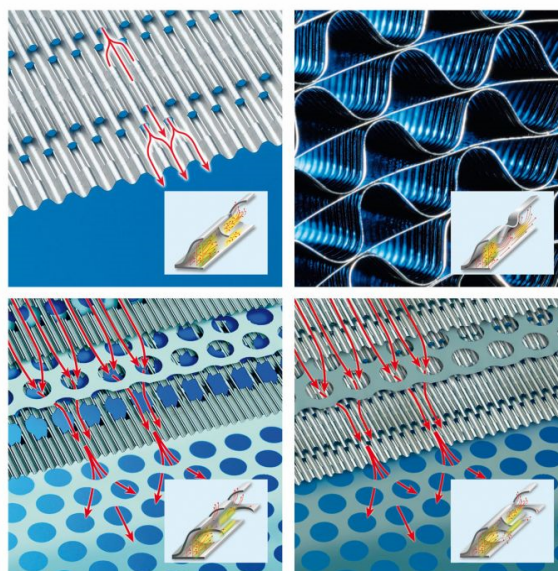


Figure 2 –“Turbulent” catalysts with structured steel foils for increasing efficiency

Dimensions and delivery conditions

Alloys	Thickness [mm]	Width [mm]	Delivery conditions
MKM CrAl 4	0,020 – 0,030	max. 300	Cold rolled /
MKM CrAl 6	0,030 – 0,040	max. 370	Bright-annealed
	> 0,040	max. 480	

Table 1 - Dimensions and delivery conditions

Chemical composition

Alloys	C	Si	Al	Cr	Rare Earth	Fe
MKM CrAl 4	max. 0,05	max. 0,3	3,7-4,3	~17,5	0,05-0,10	balance
MKM CrAl 6	max. 0,03	max. 0,3	5,5-6,0	~21,0	0,06-0,12	balance

Table 2 - Chemical composition (wt. %)

Typical Microstructure (ASTM 7-9)

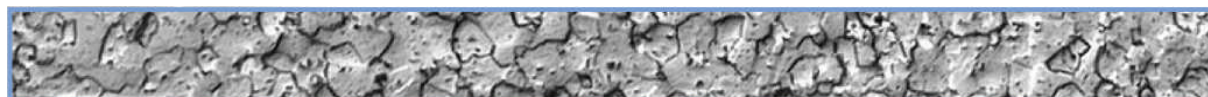


Figure 1 - Typical microstructure

Mechanical Properties (Typical values)

Condition	Thickness [µm]	Yield strength [MPa]	Tensile strength [MPa]	Elongation [%]
Cold rolled	50	>800	<1300	<1,5
Bright-annealed	50	>450	<750	~20

Table 3 - Mechanical properties (typical values)

Tensile, yield strength and elongation at elevated temperature (50µm thick values)

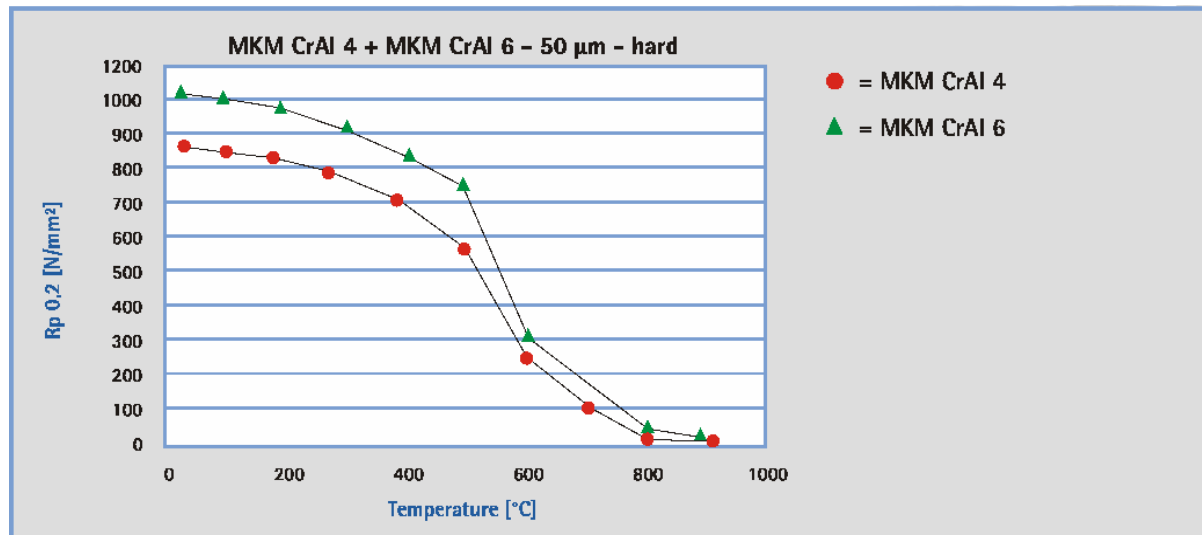


Figure 2 - Yield strength

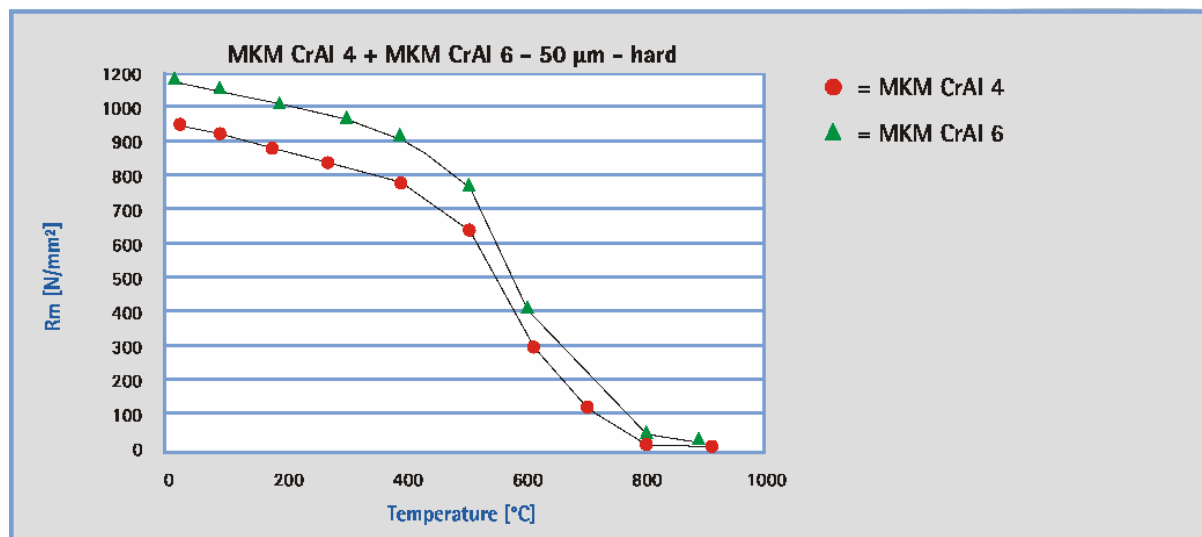


Figure 3 - Tensile strength

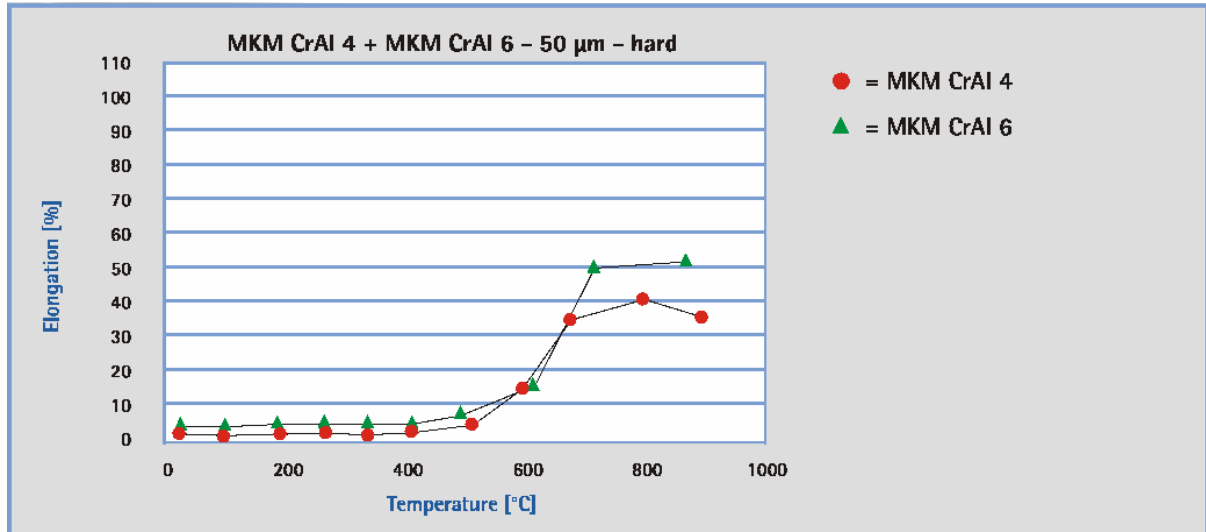


Figure 4 - Elongation

Physical Properties

Melting point approx. 1500°C

Density 7,15 – 7,18 g/m³

Temperature T [°C]	Electrical resistivity strength [µΩcm]	Thermal conductivity [10 ³ W/m°C]	Coefficient of thermal expansion RT – T [10 ⁻⁶ /K]
25	142	0,016	11
100	143	---	12
300	146	---	12
600	154	0,023	13
900	159	0,032	14
1200	---	0,037	15

Table 4 - Physical properties (Typical values for MKM CrAl4 + MKM CrAl 6)

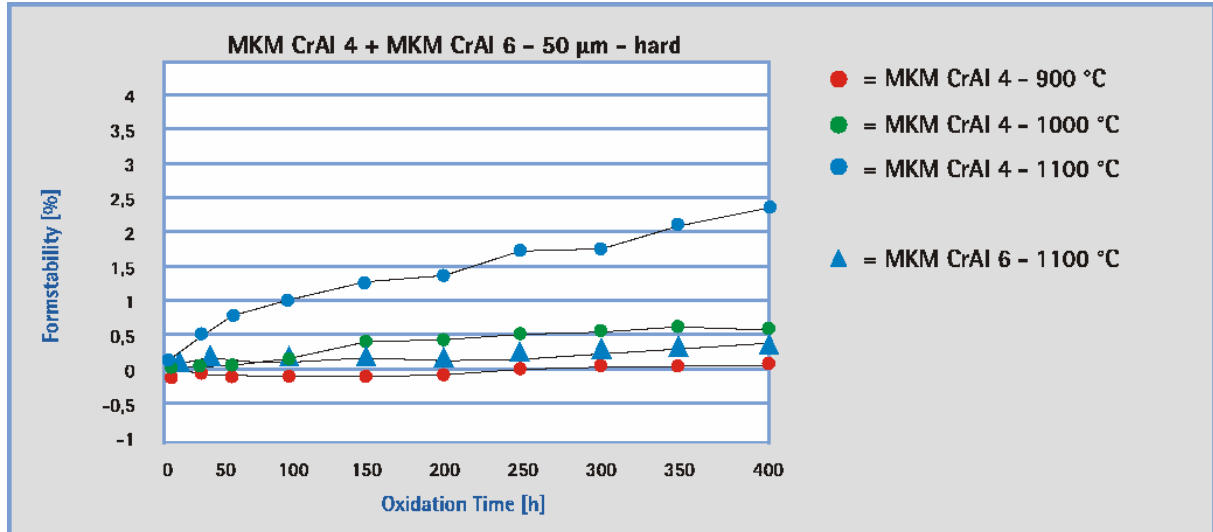


Figure 5 - Formstability

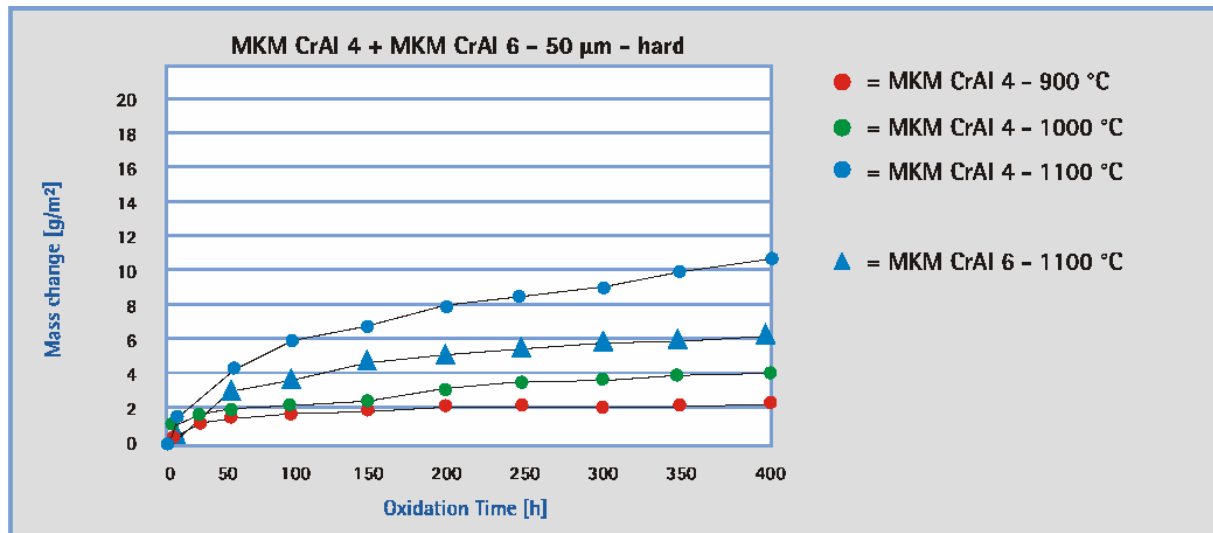


Figure 6 - Oxidation behavior

(The data contained in this sheet is based on information from our own and other organisations; although every effort has been made to ensure its accuracy, no guarantee or warranty is given or implied as to fitness for specific applications).