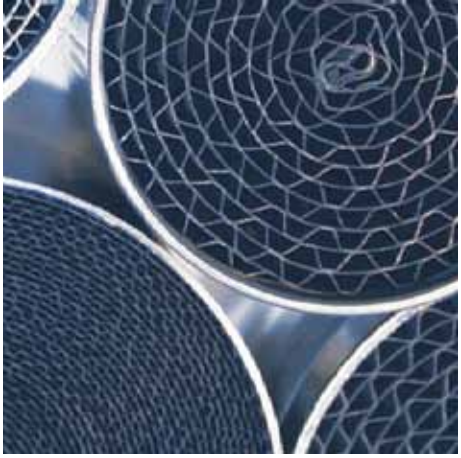
METALLIC KATALYST SUBSTRATE

CrAl-4
CrAl-6



Oxidation Resistant Stainless Steel Foil with high temperature strength for Metallic Catalyst Substrate

MK Metallfolien GmbH is supplying super oxidation resistant, aluminium-containing ferritic chromium steel alloyed with rare earth elements which improves 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 alloy possesses good high temperature stability.

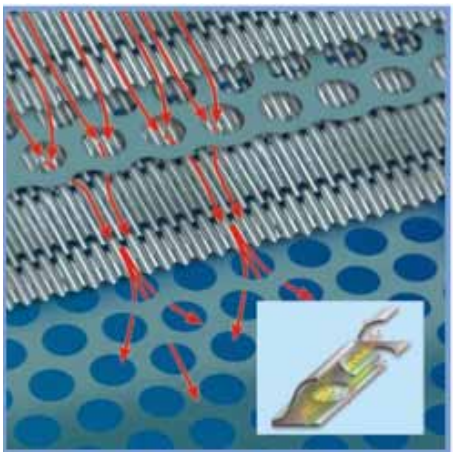
For these alloys MK Metallfolien has developed an economical rolled foil production technology by converting reroll strip to superfoil down to 15 µm thickness.

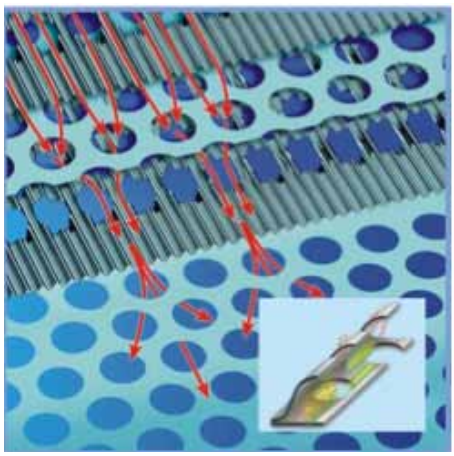
Main applications for these foils are metallic substrate for catalytic converts and diesel particle filters in automotive exhaust systems (Passengers cars, truck, buses, motor-cycles, boots etc.) as well as for heating elements for hot plates. The radiant heating elements are an important part oft the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

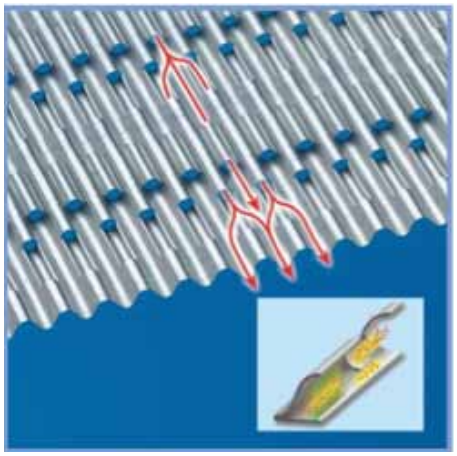
Characteristic Features

MKM CrAl 4 and MKM CrAl 6 are ferritic chromium steel with additions of more than 4 alt. 5.5 % aluminium and up to 0.12 % rare earth elements.

The high aluminium content in combination with precisely adjusted additions of rare earth elements permit applications under severe conditions of up to 1,200 °C for MKM CrAl 6 and up to 1,000 °C for MKM CrAl 4. The reason for this is a well adhering Al_2O_3–layer.







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MK METALLFOLIEN

CHEMICAL COMPOSITION (MASS %)

	C	Si	Al	Cr	Rare Earth Elements	Fe
MKM CrAl 4	max. 0.05	~ 0.3	3.5–4.5	~ 17.5	0.02–0.10	balance
MKM CrAl 6	max. 0.05	~ 0.3	5.5–6	~ 20	0.06–0.12	balance

MECHANICAL PROPERTIES (TYPICAL VALUES)

Condition	Thickness [µm]	yield strength [N/mm²]	tensile strength [N/mm²]	Elongation [%]
hard	50	> 800	< 1,300	< 1.5
BA/soft	50	> 450	< 750	~ 20

TYPICAL VALUES FOR MKM CrAL 4 + MKM CrAL 6

Temperature (T) [°C]	Electrical resistivity strength [µΩcm]	Thermal conductivity [10^3 W/m°C]	Coefficient of thermal expansion between RT and 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
1,200	–	0.037	15

TEMPERATURE RESISTANCE

	Temperature [T]
MKM CrAl 4	1,000°C
MKM CrAl 6	1,200°C

PHYSICAL PROPERTIES

Melting point approx. 1,500°C
Density 7.15 – 7.18 g/cm³

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Fig. 4 Oxidation behavior

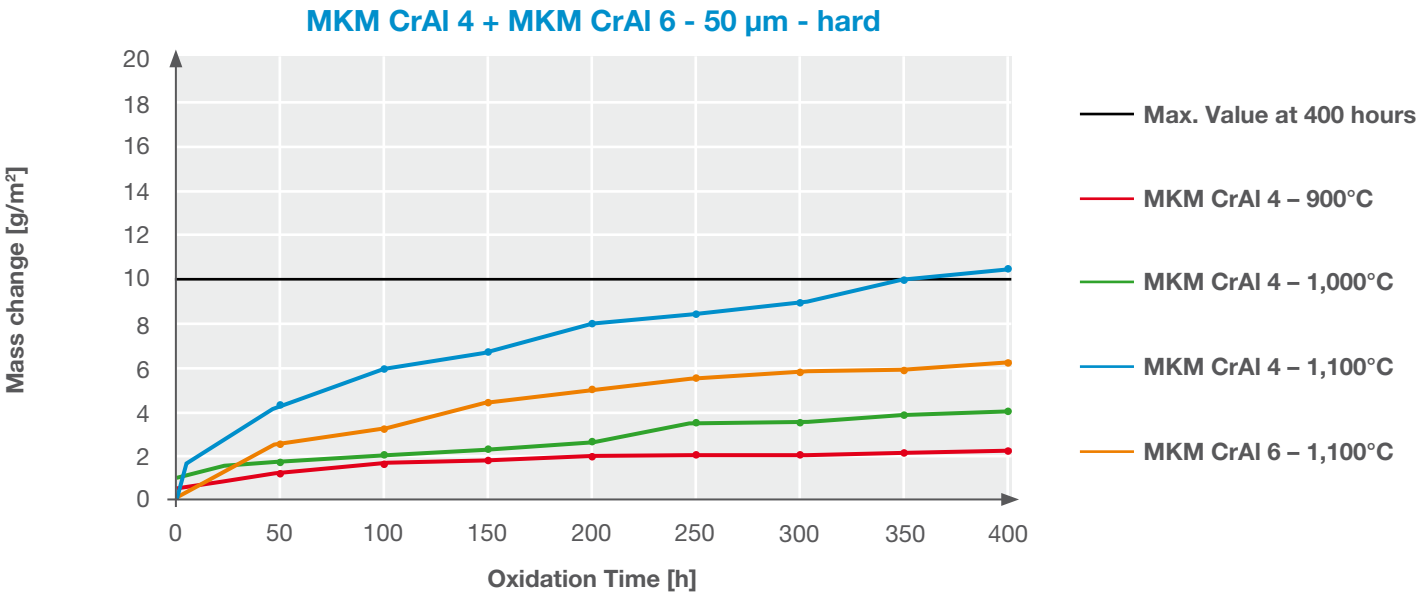
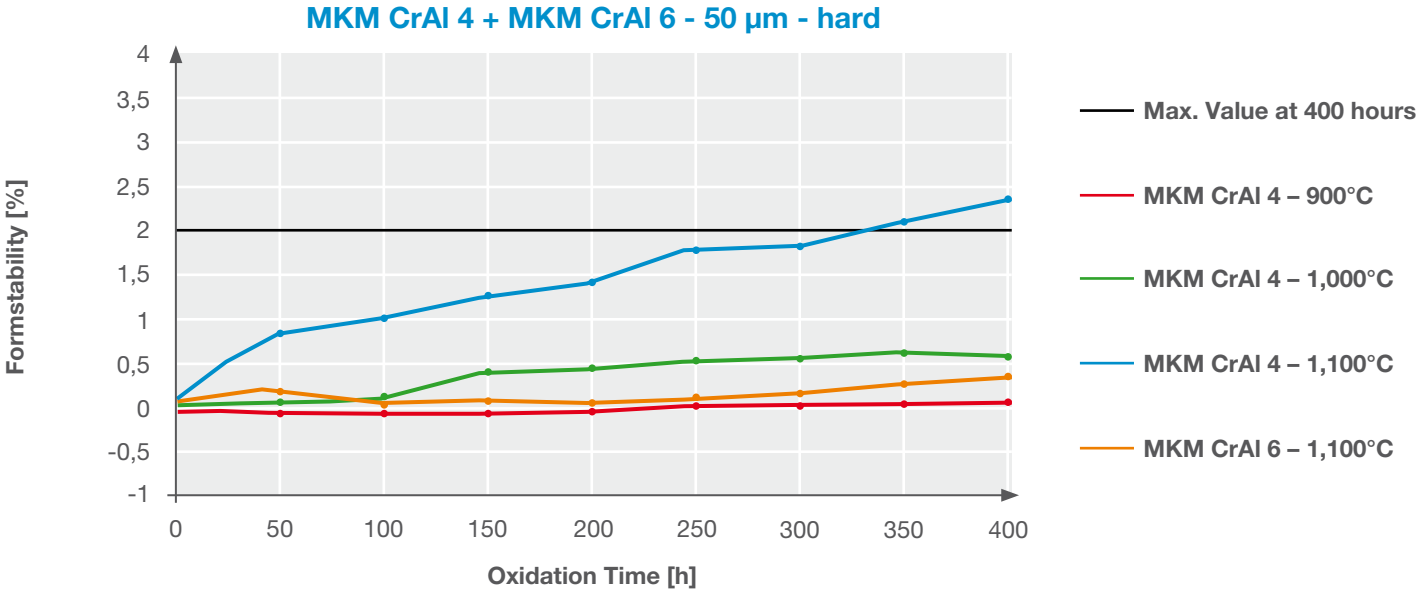


Fig. 5 Formstability [%]



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