CLAIMS

1. A cold rolled and pre-hardened martensitic steel strip for flapper valve reeds in compressors, wherein the steel strip has:

a) a composition consisting of, in weight %,:

C	0.9 - 1.1
Si	0.1 - 0.5
Mn	0.2 - 0.8
Cr	0.05 – 0.3
V	0.05 - 0.20
Nb	0.02 - 0.09
optionally	
Mo	0.15 – 0.40
N	0.01 - 0.15
Al	≤ 0.05
Ti	≤ 0.02
Zr	≤ 0.02
Ta	≤ 0.02
B	≤ 0.01
Ca	≤ 0.009
REM	≤ 0.2

Fe and impurities balance,

b) a matrix comprising tempered martensite,

c) a tensile strength of, 1600 – 2400 MPa, preferably 1760 -1960 MPa,

d) a thickness of 0.07- 3.5 mm and a width of 7 - 450 mm.

2. A strip according to claim 1 fulfilling at least one of the following requirements:

a) a composition consisting of in weight %:

C	0.9 – 1.1
Si	0.2 - 0.4
Mn	0.3 - 0.6
Cr	0.1 – 0.2
V	0.07 - 0.15
Nb	0.03 - 0.07

optionally

Mo	0.25 – 0.35
Al	≤ 0.01

wherein the impurity contents of P and S fulfils the following requirements

P	≤ 0.02
S	≤ 0.006

b) a matrix comprising at least 85 volume % tempered martensite,

c) a thickness of 0.1 - 1.5 mm.

3. A strip according to claim 1 or 2 wherein the strip has a thickness of up to 0.2 mm and fulfils at least one of the following requirements:

a tensile strength (R_m) of 2000-2300 MPa,

a yield strength ($R_{P0.2}$) of 1740-2200 MPa,

a ductility A50 of 3-6 %,

wherein all values are in accordance with ISO 6892.

4. A strip according to any of the preceding claims, fulfilling at least one of the following requirements:

a) a composition consisting of in weight %:

C	0.95 – 1.05
Si	0.25 - 0.35
Mn	0.3 - 0.6
Cr	0.1 – 0.2
V	0.07 - 0.15
Nb	0.03 - 0.07
Mo	0.25 – 0.35
Al	≤ 0.01

b) a matrix consisting at least 90 volume % tempered martensite..

5. A strip according to any of claims 1 and 2 wherein the strip has a thickness of 0.1 – 1.0 mm.

6. A strip according to any of the preceding claims wherein the amount of (V+0.5Nb) is equal to or greater than 0.10 % and equal to or less than 0.16%.

7. A strip according to any of the preceding claims wherein the matrix comprises up to 8 vol. % carbides, wherein the area fraction of carbides is measured by image analysis based optical microscopy @x1000 magnification.

8. A strip according to any of the preceding claims wherein matrix consist of tempered martensite and an area fraction 4.5 – 7.5 % carbides with a range of mean carbide diameters of 0.60 to 0.85 µm, measured by image analysis based optical microscopy @x1000 magnification, wherein the diameter is expressed as the equivalent circular diameter and the mean value is the arithmetical mean value.

9. A strip according to any of the preceding claims wherein the strip has reverse bending fatigue strength of at least 950 MPa.

10. A strip according to any of the preceding claims wherein the strip has reverse bending fatigue strength of at least 1000 MPa.

11. A strip according to any of the preceding claims wherein the strip has reverse bending fatigue strength of at least 1040 MPa.

12. A strip according to any of the preceding claims wherein the amount of retained austenite is less than or equal to 10%, preferably less than or equal to 5%, more preferably is less than or equal to 3% and most preferable is zero when measured by XRD according to ASTM E975-13.