CLAIMS

1. A hot work tool steel for high pressure die casting, wherein the steel is obtainable by Electro Slag Remelting and comprises the following elements in weight %:

C	0.28 – 0.39
Si	0.05 – 0.35
Mn	0.1 – 0.8
Cr	5.4 – 6.0
Ni	≤ 0.4
Mo	1.8 – 2.5
V	0.6 – 1.1
Al	0.001 – 0.03
N	0.001 – 0.01
S	≤ 0.004
P	≤ 0.05
Cu	≤ 0.5
Co	≤ 0.5
W	≤ 1
Nb	≤ 0.03

balance Fe apart from impurities.

2. The hot work tool steel for high pressure die casting as defined in claim 1, wherein the hot work tool steel comprises one or more of the following elements in weight %:

C	0.33 – 0.37
Si	0.15 – 0.3
Mn	0.4 – 0.6
Cr	5.5 – 5.7
Ni	≤ 0.25
Mo	2.0 – 2.2
V	0.75 – 0.85
Al	0.001 – 0.02

N	0.001 – 0.009
S	≤ 0.001
P	≤ 0.010
Cu	≤ 0.12
Co	≤ 0.1
W	≤ 0.1
Nb	≤ 0.005

3. The hot work tool steel for high pressure die casting as defined in claim 1 or 2, wherein the hot work tool steel comprises one or more of the following elements in weight %:

C	0.34 – 0.36
Si	0.20 - 0.28
Mn	0.45 – 0.55
Cr	5.53 – 5.68
Mo	2.05 – 2.15
Ni	≤ 0.15
V	0.77 – 0.83
N	0.001 - 0.005
P	≤ 0.008
S	≤ 0.0007
Cu	≤ 0.10

4. The hot work tool steel for high pressure die casting as defined in claim any of the preceding claims, wherein the content of Mo and V in the hot work tool steel is adjusted to fulfil the requirement Mo/V = 2.3-3.0, preferably 2.5-2.7.

5. The hot work tool steel for high pressure die casting as defined in any of the preceding claims, wherein the cleanliness fulfils the following maximum requirements with respect to micro-slag according to ASTM E45-97, Method A:

A	A	B	B	C	C	D	D
T	H	T	H	T	H	T	H
1.0	0	1.5	1.0	0	0	1.5	1.0

and/or wherein the cleanliness measured in by scanning electron microscopy on an area of 6000 mm^2 fulfils the following requirements:

the ECD of at least 50 % of the number of all oxide particles is ≤ 10 μm and at least 50 % of the number of all oxide particles have an ECD of ≤ 50 μm.

6. The hot work tool steel for high pressure die casting as defined in any of the preceding claims, wherein the cleanliness fulfils the following maximum requirements with respect to micro-slag according to ASTM E45-97, Method A:

A	A	B	B	C	C	D	D
T	H	T	H	T	H	T	H
0	0	1.0	0.5	0	0	1.0	0.5

and/or wherein the cleanliness measured in by scanning electron microscopy on an area of 6000 mm^2 fulfils the following requirements:

the ECD of at least 50 % of the number of all oxide particles is ≤ 10 μm and at least 50 % of the number of all oxide particles have an ECD of ≤ 50 μm.

7. The hot work tool steel for high pressure die casting as defined in any of the preceding claims, wherein the mean impact energy measured in the LT direction of 6 samples using a standard Charpy-V test in accordance with SS-EN ISO148-1/ASTM E23 is at least 15 J, wherein the cooling time in the temperature interval of 800 °C– 500 °C (t8/5) is 1000 s.

8. The hot work tool steel for high pressure die casting as defined in any of the preceding claims, wherein the steel is in the soft annealed condition, has a mean hardness of ≤ 230 $HBW_{10/3000,}$ has a thickness of at least 100 mm and wherein the maximum deviation from the mean Brinell hardness value in the thickness direction measured in accordance with

ASTM E10-01 is less than 10 %, preferably less than 5 %, and wherein the minimum distance of the centre of the indentation from the edge of the specimen or the edge of another indentation shall be at least two and a half times the diameter of the indentation and the maximum distance shall be no more than 4 times the diameter of the indentation.

9. The hot work tool steel for high pressure die casting as defined in any of the preceding claims, wherein the hot work tool steel is provided as big block and/or as a large mould for casting large structural parts, wherein the block and/or mould has a thickness of at least 200 mm, a length of at least 1000 mm and a width of at least 400 mm and/or the sum of the thickness, length and width of the block and/or of the mould is at least 2000 mm and/or wherein the block or mould has a weight of at least 5 tons, at least 10 tons, at least 15 tons at least 20 tons or at least 25 tons and/or wherein the block or mould has an ASTM Grain size of at least 7, preferably at least 8 more preferably at least 9.

10. A hardened and tempered hot work tool steel according to any one of claims 1-7 and 8, wherein the microstructure comprises at least 98 volume % tempered martensite, preferably after an austenitizing in the range of 1020 - 1070 °C followed by quenching, wherein the cooling time in the temperature interval of 800 °C– 500 °C (t8/5) is at least 1000 s, preferably at least 1248 s.