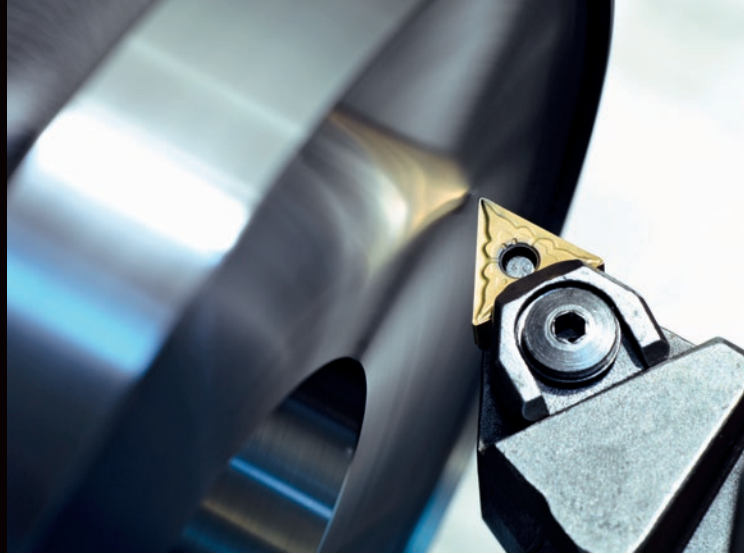


SuperVITAC®

A recommended solution for good chip fragmentation regardless of speeds used



SuperVITAC® is a mixed process combining a reduction of the abrasiveness of the oxides, to which sulphur has been added to guarantee optimal machinability in all cutting operations.

Areas of application

This variant can be used mainly for mechanical engineering applications for components such as cylinders, cams, large gears, printing machine cylinders...

Resulturized steels ($60 < S < 80 \cdot 10^{-3}\%$), with low carbon footprint

The SuperVITAC® process has been designed to allow an optimal improvement of the machinability. The targeted inclusion population, allows during high speed machining, a protection of the tools, by the deposition of a protective layer on the cutting tool. The life of the tools is then improved. The density of sulfides allows a strong fragmentation of the chips, and thus facilitates their release during machining operations.

SuperVITAC® steels are produced from a 100% electric arc furnace (EAF), in the ingot process route at the Fos-sur-Mer plant (13), which has one of the smallest carbon footprints in Europe ($< 450 \text{ kg CO}_2/\text{t}$).

Characteristics

- Resulturized steels
- Control of the inclusion population
- High reproducibility of machining

Advantages

- Very good machinability for almost all cutting conditions
- Increased tool life
- Good chip fragmentation

Benefits

- Faster machining with machinability gains of up to 50% compared to standard steels



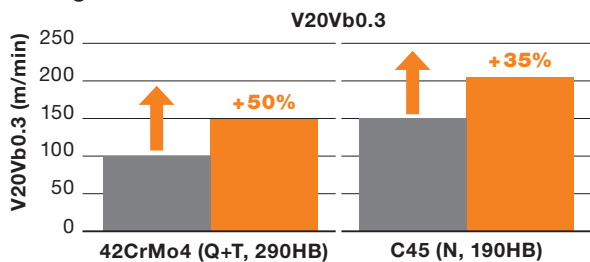
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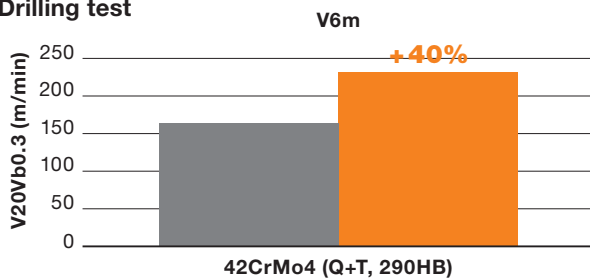


Improved performance for standard machining operations

Turning test



Drilling test



Turning and drilling performance measured on:



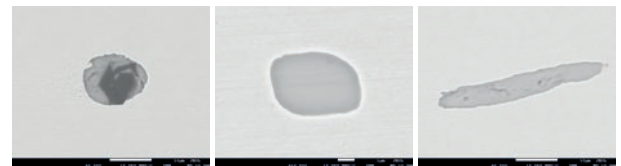
In industrial conditions

	16MnCr5 standard	16MnCr5 SuperVITAC®	Profit
Depth of cut (mm)	3.4	3.4	=
Feed rate (mm/tr)	0.4	0.45	+13%
Chip volume (kg/h)	147	229	+55%
Cutting speed (m/min)	230	320	+40%
Cutting time per piece	4.5	2.9	+35%

Results obtained on a 100 mm diameter bar, longitudinal turning operation on a FP structure at 170HB. We favour the cutting speed for the same number of machined items.

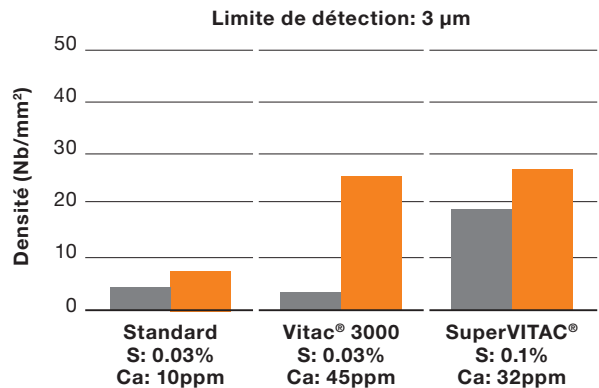
Inclusion population

The improvement of the fragmentation of the chips is made possible thanks to a high density of sulfides homogeneously distributed in the product.



Al oxide encapsulated in a CaMnS sulfide Globular CaMnS sulfide Elongated MnS sulfide

Inclusion typology present in SuperVITAC® steels.



Comparative density/inclusion typology for VITAC® 3000 and SuperVITAC® steels



Capability

Process applied on the Fos-sur-Mer elaborations, for diameters greater than 80 mm.



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