

# Preliminary Datasheet on PM Duplex 2507

Duplex 2507 has been known for years and has solved many jobs within offshore, chemical industry and other industries where demands for high corrosion resistance combined with high mechanical properties are needed.

At Sintex we have developed Duplex 2507 based on traditional powder metallurgical compaction process added up with our experts knowhow on optimization of corrosion resistance resulting in a new product that enables the delivery of Duplex 2507 parts in complex shapes and in high numbers.

This preliminary datasheet covers the first findings and we expect that further optimization is possible in collaboration with customers and partners in the market.

### Chemical composition

Cr	Ni	Mo	N	Fe
25	7	3,9	0,32	Balance

Table 1: Please note that Molybdenum has been reduced to 3,9% in order to fulfill the European drinking water approvals.

PREN-number: 43



Figure 1: Typical parts that are made with the traditional PM process showing the degree of freedom that exist with the PM process now open for Duplex 2507 alloys

In salt spray chamber the alloy is unaffected, and even in 3% FeCl<sub>3</sub> solution we cannot measure any weight loss. Therefore we have changed our corrosion test into a traditional CPT rising the temperature until we have breakdown.

The tests are ongoing and we have in March 2021 passed 30 degree C without any weight loss. Tests are ongoing but delayed due to Corona.

### Critical Pitting Temperature (CPT) 24 h test

6% FeCl <sub>3</sub> Corrosion resistance	Weightloss	Observation
25 °C	0 g/m <sup>2</sup>	No visual
30 °C	0 g/m <sup>2</sup>	No visual
40 °C	~2 g/m <sup>2</sup>	No visual
50 °C		ongoing

Figure 2: Preliminary results from CPT test

### Preliminary mechanical properties from ISO 2740 Tensile bars

Mechanical properties	Low	Medium
Tensile Strength	324 MPa	350 MPa
UTS	409 MPa	442 MPa
Elongation	4,3%	4,8%

Table 3: Mechanical properties measured on standard compaction and sintering conditions. There is a potential for improving these on several parameters.

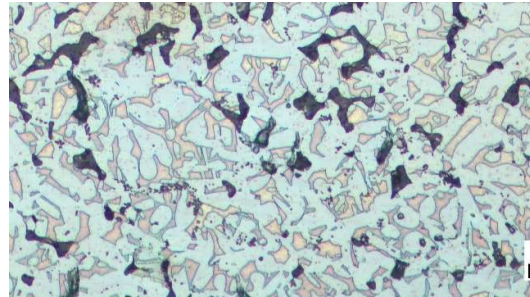


Figure 3: Typical microstructure of a Duplex 2507 material made via PM process route.

### Results

It is expected that the new PM Duplex 2507 material can be used successfully in new application areas like offshore, food industry and chemical industry where demands for high corrosion resistance combined with solid mechanical properties are known.

Further development will be carried out in collaboration with application partners optimizing the needed properties.

Please contact us for more information or potential collaboration on your application.

Version 2021-06-11

