Preliminary Datasheet on MIM Duplex 2507

Duplex 2507 has been know 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 Metal Injection Molding 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 costumers 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

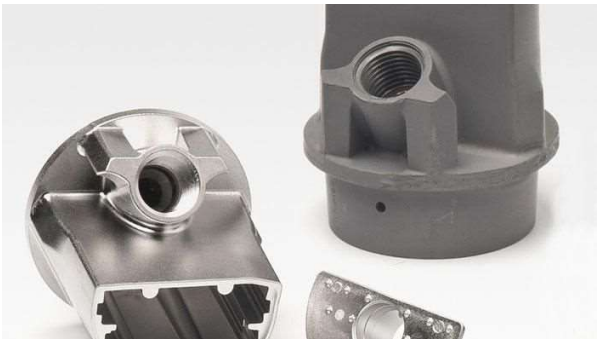

Figure 1: Typical parts that are made with the Metal Injection Molding process showing the degree of freedom that exist with the MIM process now open for Duplex 2507 alloys

In salt spray chamber the alloy is unaffected, and even in 3% FeCl3 solution we cannot measure any weigthloss. Therefore we have changed our corrosion test into a traditional CPT rising the temperature untill we have breakdown.

Duplex 2507 Critical Pitting Temperature (CPT) 24 h test

6% FeCl3 Corrosion resistance	Weightloss	Observation
30 °C	0,093 g	No visual
40		
50		

Figure 2: Preliminary results from CPT test

316L reference Critical Pitting Temperature (CPT) 24 h test

3% FeCl3 Corrosion resistance	Weightloss	Observation
20 °C	<1 g	No visual

Figure 2: Preliminary results from CPT test

Preliminary mechanical properties from ISO 2740 Tensile bars

	Mechanical properties
Tensile Strength	590 MPa
UTS	690 MPa
Elongation	7,4%

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

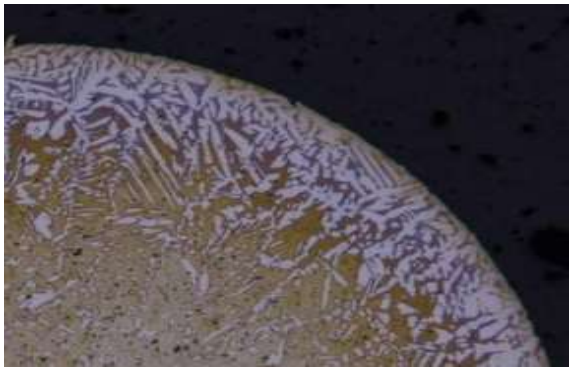

Figure 3: Typical microstructure of a Duplex 2507 material made via MIM process route.

Results

It is expected that the new MIM 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.

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Rethinking Components of Tomorrow

Peter Kjeldsteen
Development & Innovation Manager
Telephone: +45 9657 4395
Email: pet-sintex@grundfos.com
www.sintex.com