



Plastic mold steels
For medical applications

Plastic mold steels

Plastic mold steels are as diverse as their applications.

This tool steel group is used in tools and molds, e.g. for injection molding, blow molding or extrusion. A mold for the processing of plastics is a complex tool that can be made of various components. For example, the tool steels can be used as material for mold frames and / or inserts for small molds or for large and complex molds.

Plastic mold steels provided by Deutsche Edelstahlwerke are characterized by two main factors.

On one hand the highest quality and on the other hand the steels properties can be ideally adjusted to the most diverse requirements in each individual case to those of the plastic product itself.

By the use of the latest technologies, our steels meet the highest requirements with regard to:

- Cleanliness
- Polishability
- Homogeneity of the microstructure
- Uniform hardness distribution
- Wear resistance
- Temperature resistance
- Machinability
- Toughness
- Thermal conductivity



Corrosion resistant plastic mold steels

Corrosion resistant tool steels are mainly used to accompany the highest properties required for the production of medical products.

In order to guarantee clean and stable devices even the tool, wherein the part is produced, shall be made of corrosion resistant steel. The reasons for this can be found, amongst other things, in their resistance to condensation and cooling water as well as in the increasing proportion of corrosive plastics which corrode tool steel during processing through acid precipitation. However, the benefits resulting for plastic part manufacturers from the increasing use of "all-stainless" mold designs are simultaneously a problem for mold makers. The machinability of all stainless steels available to date requires a great deal of machining effort.

Particularly in the case of mold frames, which frequently require machining volumes of 60%, efficient machinability and dimensional stability are important criteria.

Corroplast

Corroplast features a special alloy system with reduced carbon content resulting in outstanding machinability and improved weldability. It is recommended for base plates, assembly parts or plastic molds with standard requirements regarding polishability which must be resistant to condensation and cooling water.

Thanks to its special manufacturing technology, Corroplast is virtually free from residual stress and therefore extremely dimensionally stable during machining. In addition, the good thermal conductivity results in a high processing rate.

The corrosion resistant plastic mold steels from DEW at a glance

Brand	Chemical composition in weight-%							
	C	Si	Mn	S	Cr	Mo	Ni	Additions
Formadur 2083 Superclean	0.40	0.35	0.90	-	13.50	-	-	-
Formadur 2190 Superclean	0.37	0.90	0.50	-	13.60	-	-	0.30 V
Formadur PH X Superclean	0.05	0.30	0.30	-	15.00	-	4.50	3.50 Cu + Nb
Corroplast	0.05	0.40	1.30	0.15	12.50	-	-	+

*pre-hardened

Superclean = ESR

This is an excerpt from our portfolio that also contains other grades. Reference numbers/designations in brackets are not standardized in EN ISO 4957.

Formadur 2083 Superclean

Formadur 2083 Superclean is a corrosion resistant, remelted plastic mold steel for high polishability requirements. Application areas in plastics processing: Injection molds, compression molding, extrusion molding.

Formadur 2190 Superclean

Formadur 2190 Superclean is a corrosion resistant plastic mold steel for highest demands on the surface quality. Due to the excellent polishability the through hardening steel achieves best results in injection molding, compression molding and blow molds.

Formadur PH X Superclean

Formadur PH X Superclean is a highly corrosion resistant, precipitation-hardening steel featuring high strength combined with excellent toughness. Because Formadur PH X Superclean is remelted and pre-hardened to 40 HRC, it features outstanding polishability. Application areas in plastics processing: Injection molds, compression molding, extrusion molding, blow molding, extrusion tools.

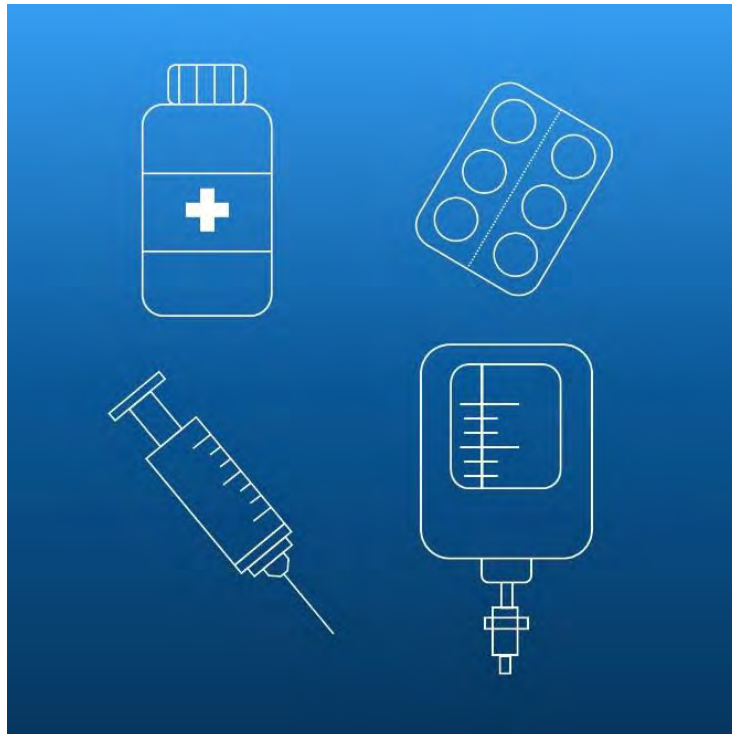
Designations		Hardness	Machinability	Polishability	Corrosion resistance	Homogeneity	Through hardenability
DIN EN ISO 4957	AISI						
X40Cr14	420	48 - 52 HRC	●●	●●●	●●	●●●	●●●
(X37Cr14)	420mod	48 - 52 HRC	●●	●●●	●●	●●●	●●●
-	-	38 - 42 HRC*	●	●●●●	●●●●	●●●●	●●●●
-	-	280 - 325 HB*	●●●	○	●	●	●●●

The basis for high quality ready-to-use plastic products

In this difficult time medical-disposable items, research, testing, and diagnosis plastic components as well as medical packaging are of major importance.

In many cases these components require complex corrosion resistant injection molds with improved productivity, a high number of cavities as well as highest surface demands

In sum, the molds have to fulfill design features, performance and functionality requirements of the medical markets. For this reason the right plastic mold steel is the basis, as they serve the high quality of the ready-to-use plastic products. A general rule: The better a tool steel is matching to the demands of a plastic product, the better the final product quality.



General note (liability)

Printing errors, omissions and changes accepted. Product-specific data sheets have priority over the information providing in this brochure. The desired performances characteristics are binding only if they are exclusively agreed upon at the conclusion of the contract.

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