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## New Stainless Mold Base Steel from SCHMOLZ + BICKENBACH and Deutsche Edelstahlwerke GmbH

Manufacturers of PET bottles are forced to produce more units in less time without loss of quality in order to compete internationally. Molding efficiency is essential. **Deutsche Edelstahlwerke GmbH** helps in this regard by supplying the new specialty mold steel Corroplast FM to support plastics-processing cost optimization.



Michael Bauer, head of technical customer support for tool steel at Deutsche Edelstahlwerke (DEW), reports seeing a growing trend in the PET bottle industry toward ever more highly processed corrosion-resistant molds, mold frames and superstructures. One injection mold may now contain cavities for as many as 192 PET bottle blanks, or preforms.

"Wherever many cavities are required, the machining complexity also increases for our customers," explains Bauer. "We wanted to respond to that with a suitable material." Corroplast FM is engineered to be significantly more machinable than other, established mold steels for plastics processing without suffering any reduction in corrosion resistance. Analysis of the new material reveals a well-balanced ratio of hardness, corrosion resistance and machinability.

Development of Corroplast FM took more than two years. "In order to achieve the desired properties, the optimum ratio of the alloy components chromium, nickel, manganese and sulphur had to be determined," says Jens-Sebastian Klung, a member of the DEW technical staff.

A particular challenge was to homogenize the steel's structure with the correct proportion of sulphur so as to optimize the machining properties of the specialty steel without impairing its performance characteristics. To meet this challenge, the melting process and subsequent secondary metallurgic treatment were both carefully adjusted. Further, the possibility of embrittling delta ferrite being formed was minimized through thermodynamic calculations, which resulted in optimal homogeneity of the structure.

This homogeneous structure ensures that Corroplast FM remains corrosion resistant even in an environment marked by heat, condensation and coolant. It also provides great stability for filigree components and molds with minimal cavity spacing. In addition to PET bottle manufacturers, other users who need complex, corrosion-resistant and easy-to-machine base and build-up plates, mold frames or plastic molds can benefit from this.

Corroplast FM mold steel can be purchased as rolled or forged plate 1,000mm wide and from 50mm to 400mm thick. Upon request, SCHMOLZ + BICKENBACH will provide 6 side machining and chamfering.

"We thus provide the entire process chain, starting with melting, then hot forming and heat treatment, up to processing and storage service," reports Rolf Krusenbaum, head of sales for plastic mold steel.

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