PREMISE CATALOGUE-SPECIFICATION SHEET

Requirements for Laser-EtchingEngraving and 3D-LaserEngraving

3D LaserEngraving	Depending on type of design 5 - 70 slices are usually lasered into the tool surface. Quantity of slices relates to depth and 3dimensionality of the grain. Size of the graining area and quantity of slices are decisive for laser time and grain cost.
Laser-EtchingEngraving	Laser-EtchingEngravings are structures which are applied onto a mold surface with an acid resistant coating before (digital film coating). Afterwards the tool is etched. This procedure is feasible as 1 layer or multilayer etching. Advantage is the more defined placing of the digital film. Furthermore it gives the possibility of precise stretch in this virtual wrapping process, according to the shape of mold.
Steel quality	Steel quality should be coordinated and match with other tools which are grained in conjunction. Material 1.2738 TS (HH) and 1.2343 ESU are tempered steel and therefore generally feasible. Other materials are possible but require prior consultation.
Nitriding	Nitriding is possible only after graining process. Rework after nitriding is generally not feasible. Some cases of nitriding do not allow a uniform and homogenous gloss treatment.
Mold surface	Polish with grid 320 and finer is generally conveniently. Others are possible but require requirements prior consultation. Surface should be free of welding, joints and EDM.
Draft angle	We recommend to consider 1° draft angle per 10 µm graining depth. In some cases on condition of sufficient wall thickness the value can be reduced up to 0,8° per 10 µm. In case the component shrinks onto the grain the angle must be doubled, in individual cases the angle should be tripled. With 3D-LaserEngraving it is possible to increase the laser approach angle to take additional influence onto the degree of grain for easy de-moulding. This must be determined and coordinated timely.
Tool positioning	For optimal tool positioning we need CAD-data that correspond exactly with tool. The determined zero point information must be given. Tools should at least have 2 measuring points (fitting bores provided approx. 10 mm diameter and 10 mm depth). Fitting bores are required for the touch probe; they must be on the same axis and correspond with CAD-data.
Grain reduction	In case of insufficient draft angle, grain depth can be partially reduced after consultation. If de-moulding problems on injection parts occure despite these measures, additional rounding and flattening is possible. Please keep in mind that many LaserEngravings are detailed grains that can easily loose and change in quality and expression.

Grain direction	In case grain direction is crucial in association with installation position of car interior, axis must be highlighted in tool data according to installation position.
Grain borders	Borders of grain should be discussed at an early stage and implemented into CAD data by customer.
Installation position	It is absolutely necessary to implement installation position in CAD tool data.
Accessability	Laser accessability can be tested during the first working steps of CAD data. Laser-machine needs defined accessibility depending on design and determined grain surface. This should be verified by member of staff. Please consider this issue during CAD construction of mold.
Transfer of data	Please deliver defined, frozen CAD-data (Catia, Step, other files,…) at least 4 - 5 weeks before start of grain production. Take in consideration that all information corresponds with valid resent state of tool data. Every subsequent modification causes a new mapping process. If graining exceeds tool or slider parting line, state of data must precisely correspond with delivered tool. Graining data will be prepared according to your separation requirements.
Mapping process	Our offer generally includes a basic Teture-Mapping. Texture-Mapping process can be tool related, cross part geared, or tool independent. It will be prepared in close collaboration with customer. The offered price depends on the customer's request and does not include adaption cycles.
Mapping approval	1 week before start of grain working process
Gloss level	As in the case of EtchingEngravings, the gloss level for most 3D-Laser Engravings and Laser-EtchingEngravings will be adjusted after the graining process. Gloss level also depends on the final resin material. It is absolutely possible that a second loop is required.
Under carriage for Steel-Positive-Modell	Steel-positive-models need a under carriage for positioning in the laser machine. Please contact us at an timely in order to work it out together.