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Quantitative Evaluation of Plastics Surface Appearance Aspects in Accordance with the Human Perception

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Surface defects such as sink marks, gloss and color differences still form a big problem in injection molding of decorative parts. Since in most cases more or less trained evaluators decide by visual observation or by using comparison kits about the acceptance of a part, there is still a strong human component. For that reason lots of effort to quantify surface appearance aspects in order to get rid of subjectivity has been made so far. Nevertheless both surface roughness parameters as well as gloss and gonio-reflectometer parameters cannot completely evaluate what human eye-apparatus exactly perceives. A recently developed and patent-pending series consisting of three methodologies, utilizing multi-dimensional data acquisition and mathematical modelling has been used to evaluate surface appearance very close to the human perception and in a quantitative, reproducible and unambiguous way. As these methodologies provide a better accuracy than the human eye concerning several visual aspects, it can even visualize mainly concealed surface defects. Based on this method quantitative surface quality parameters with very good correlation to the human vision have been defined.