Paraffin wax removal from metal injection moulded cocrmo alloy compact by solvent debinding process

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One of the most crucial and time consuming phase in metal injection moulding (MIM) process is "debinding". These days, in metal injection moulding process, they had recounted that first debinding practice was depend on thermal binder degradation, which demanding more than 200 hours for complete removal of binder. Fortunately, these days world had introduced multi-stage debinding techniques to simplified the debinding time process. This research study variables for solvent debinding which are temperature and soaking time for samples made by MIM CoCrMo powder. Since wax as the key principal in the binder origination, paraffin wax will be removed together with stearic acid from the green bodies. Then, debinding process is conducted at 50, 60 and 70°C for 30-240 minutes. It is carried out in n-heptane solution. Percentage weight loss of the binder were measured. Lastly, scanning electron microscope (SEM) analysis and visual inspection were observed for the surface of brown compact. From the results, samples debound at 70°C exhibited a significant amount of binder loss; nevertheless, sample collapse, brittle surface and cracks were detected. But, at 60°C temperature and time of 4 hours proven finest results as it shows sufficient binder loss, nonappearance of surface cracks and easy to handle. Overall, binder loss is directly related to solvent debinding temperature and time.