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Subject: Judging stress on steel parts in green state  
Posted by [jbalgley](#) on Tue, 20 Mar 2012 03:06:40 GMT  
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Do you have the material properties for steel in its "green state"?

Even if you did, is there any way to judge how much stress the parts will be subjected to in the green state? Imagine a "lollipop" (big head on long thin stick) for example. If you pick it up by the "head", there's very little stress on the stick. If you pick it up at the opposite end of the stick, there's a lot of stress. And the closer you get to the head, the less stress there is.

Or imagine the "milk droplet" example shown in the rules. There would be a lot more stress on the droplet-neck if you picked it up by the droplet (the droplet-neck is supporting the main structure) vs picking it up by the main structure (the droplet-neck is only supporting the droplet).

In one of the videos, it shows your technician gently blowing the powder away and gently lifting the sample by the main bulk. Is it reasonable to assume that the "main bulk" of the product will be supported in the green state, and that only "peripheral" features must support themselves? As opposed to the peripheral feature being supported, and the connecting structure being required to support the main bulk.

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Subject: Re: Judging stress on steel parts in green state  
Posted by [GlenG](#) on Tue, 20 Mar 2012 14:18:01 GMT  
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Somewhere there is some stress test data on green strength of printed SS material but common sense rules the day. For a rough analogy, green parts have a strength something like plaster of Paris. Fillets and smooth transitions provide extra support for thin projecting sections but some designs are just not practical. A sea urchin design for instance. A tree like design can also be a nightmare for the technicians. Sometimes the only way to successfully produce this sort of design is to add a sacrificial scaffold or cage around the part. This can get very expensive though.

-G

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Subject: Re: Judging stress on steel parts in green state  
Posted by [jbalgley](#) on Tue, 20 Mar 2012 19:26:35 GMT  
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OK, thanks. "Plaster of paris" makes more sense to me than "wet sand".

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Subject: Re: Judging stress on steel parts in green state  
Posted by [GlenG](#) on Tue, 20 Mar 2012 21:21:29 GMT  
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"Wet sand" indeed, not a good analogy! Green parts are pre-baked to set the printing binders so they are actually kind of crispy and crumbly. I often say, "like crystallized sugar", like a sugar cube, because of the granular nature. Just keep in mind that long thin projections, like your "lollipop" analogy are worst case scenarios for the shop techs.

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