

# IMPROVEMENT IN MECHANICAL STRENGTH OF BONDED NEO MAGNETS

## Mechanical strength

### Crush Strength

Continuously increasing load  
Measure the load when ring fails  
Useful during assembling and handling of magnet

### Creep Rupture Strength

Constant load  
Measure the period of time when ring fails  
Useful when magnet is spinning

## Improve room temperature ring crush strength

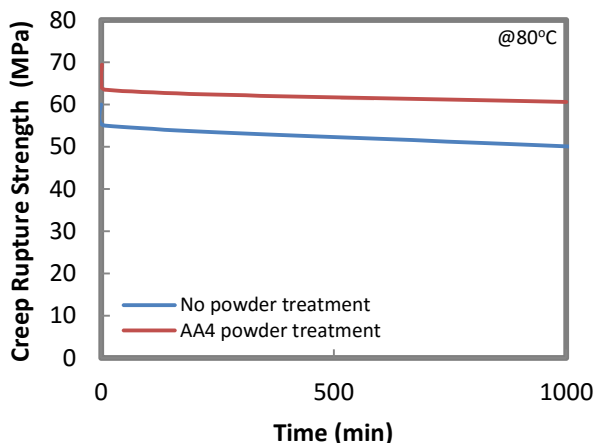
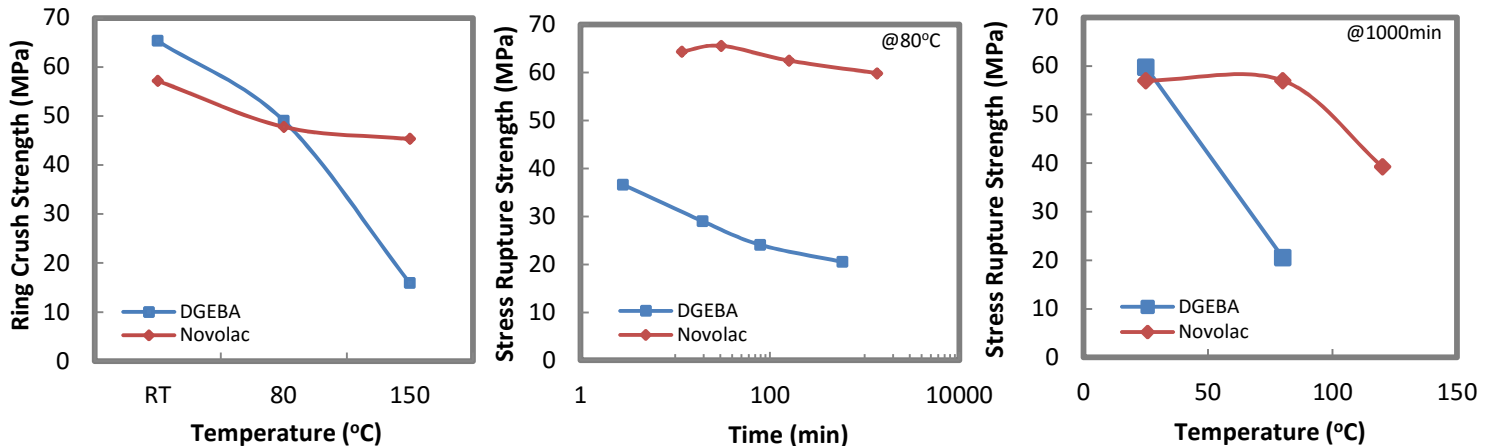
Epoxy Amount (wt%)	Ring Crush Strength (MPa)
1.6	98.7
2.0	117.8
2.7	120.4
3.1	142.1
3.5	146.2

Increase in epoxy results in better cross-linking, reduced porosity and hence helps to increase ring crush strength.

Notes:  
Crush strength was measured without lubricant.  
Magnet density was measured on OD20.8\*ID18.6\*H5mm ring magnets.

## Improve high temperature mechanical strength

Novolac epoxy can help to improve the crush strength and stress rupture strength at elevated temperatures relative to DGEBA epoxy.



The creep rupture strength can be further improved with powder surface treatment (AA4).