

1/16

Pass selected atmosphere over and/or through filler, uncured epoxy resin
and curing agent



Combine components under selected atmosphere



Continue mixing under selected atmosphere



Wrap mixture



Compress wrapped mixture in wrapping to desired pressure



Heat wrapped mixture to cure to form cured epoxy composite while
maintaining mixture under pressure



Cool cured epoxy composite, optionally to ambient temperature, while
maintaining epoxy composite under pressure



Release pressure and unwrap

Fig. 1

2/16

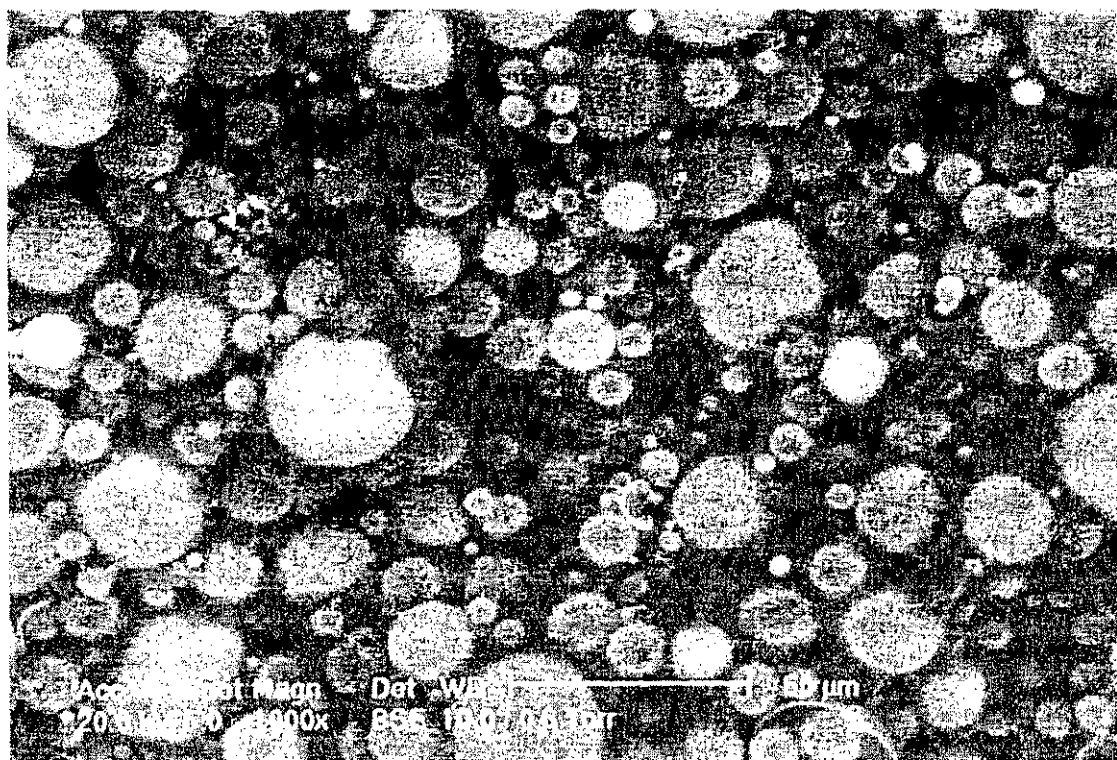


Fig. 2a

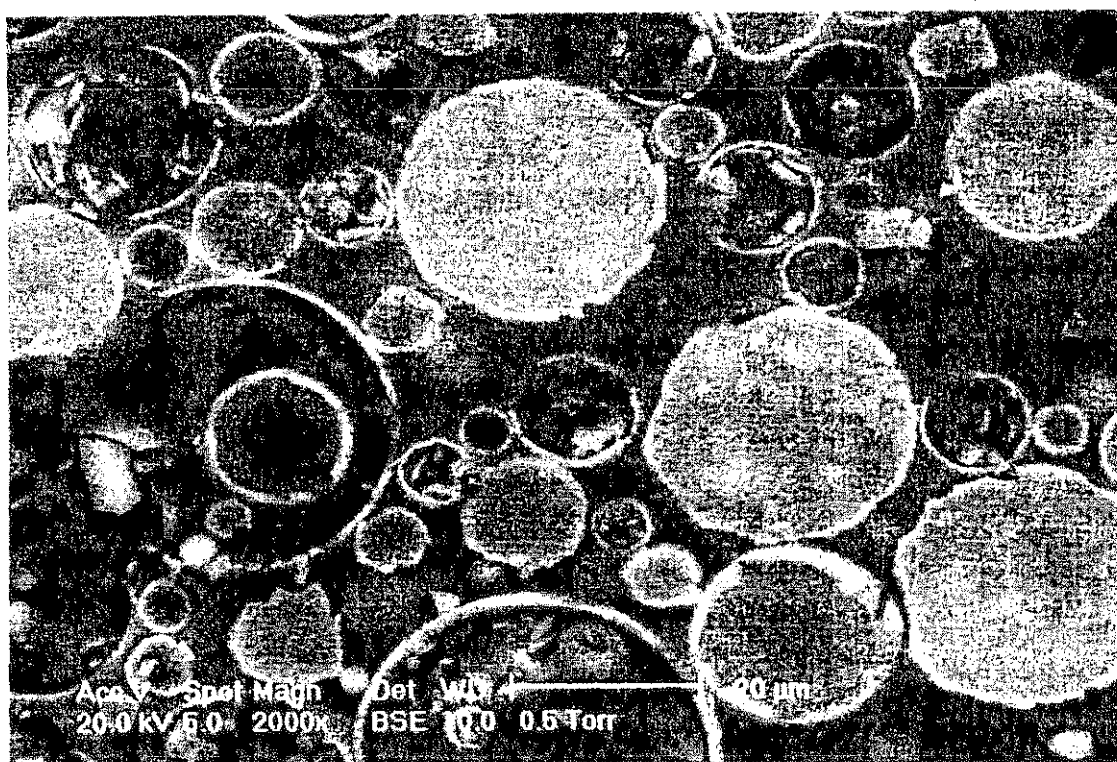


Fig. 2b

3/16

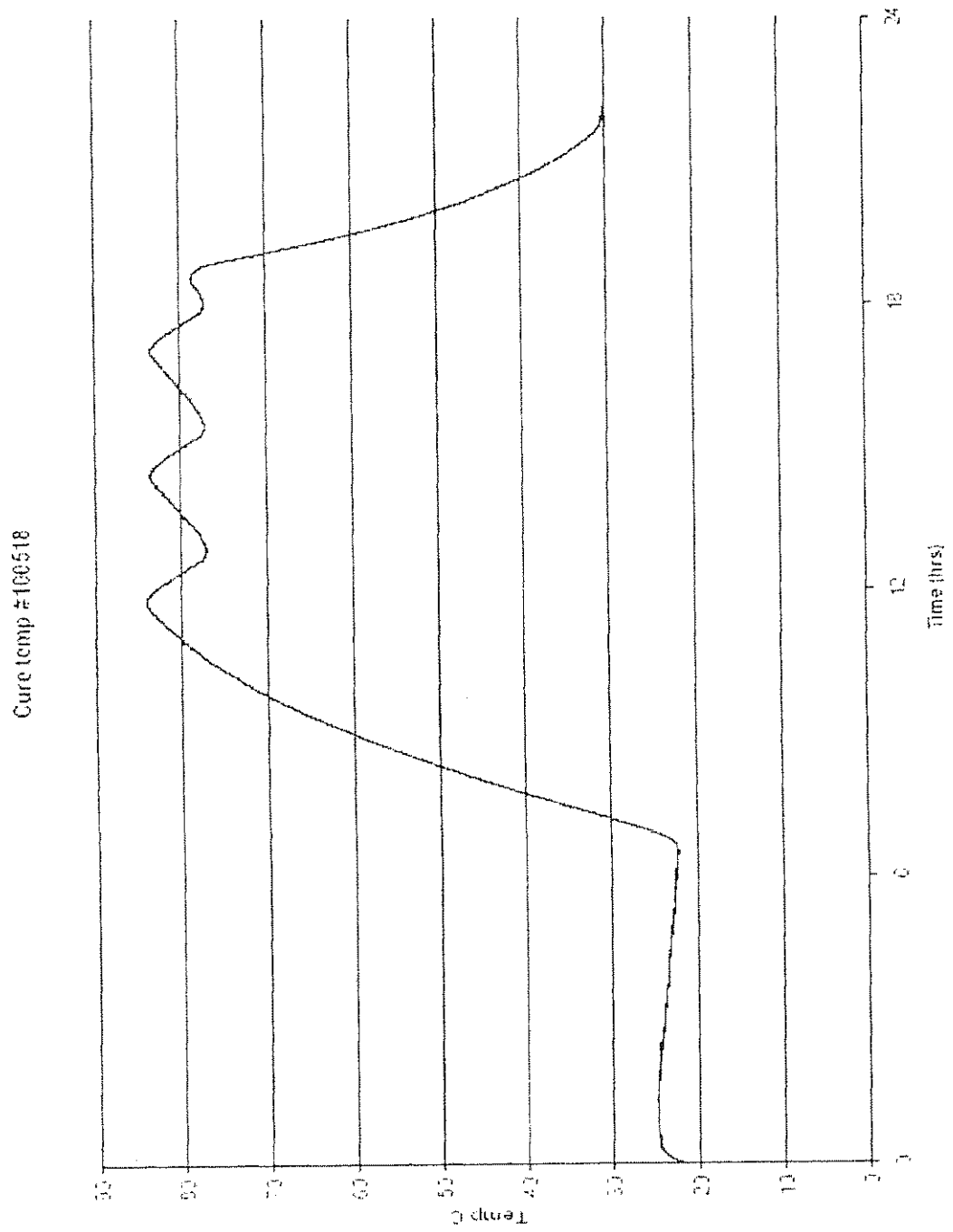


Fig. 3

Epoxy Resin Types
True Compressive Stress/Strain Curves

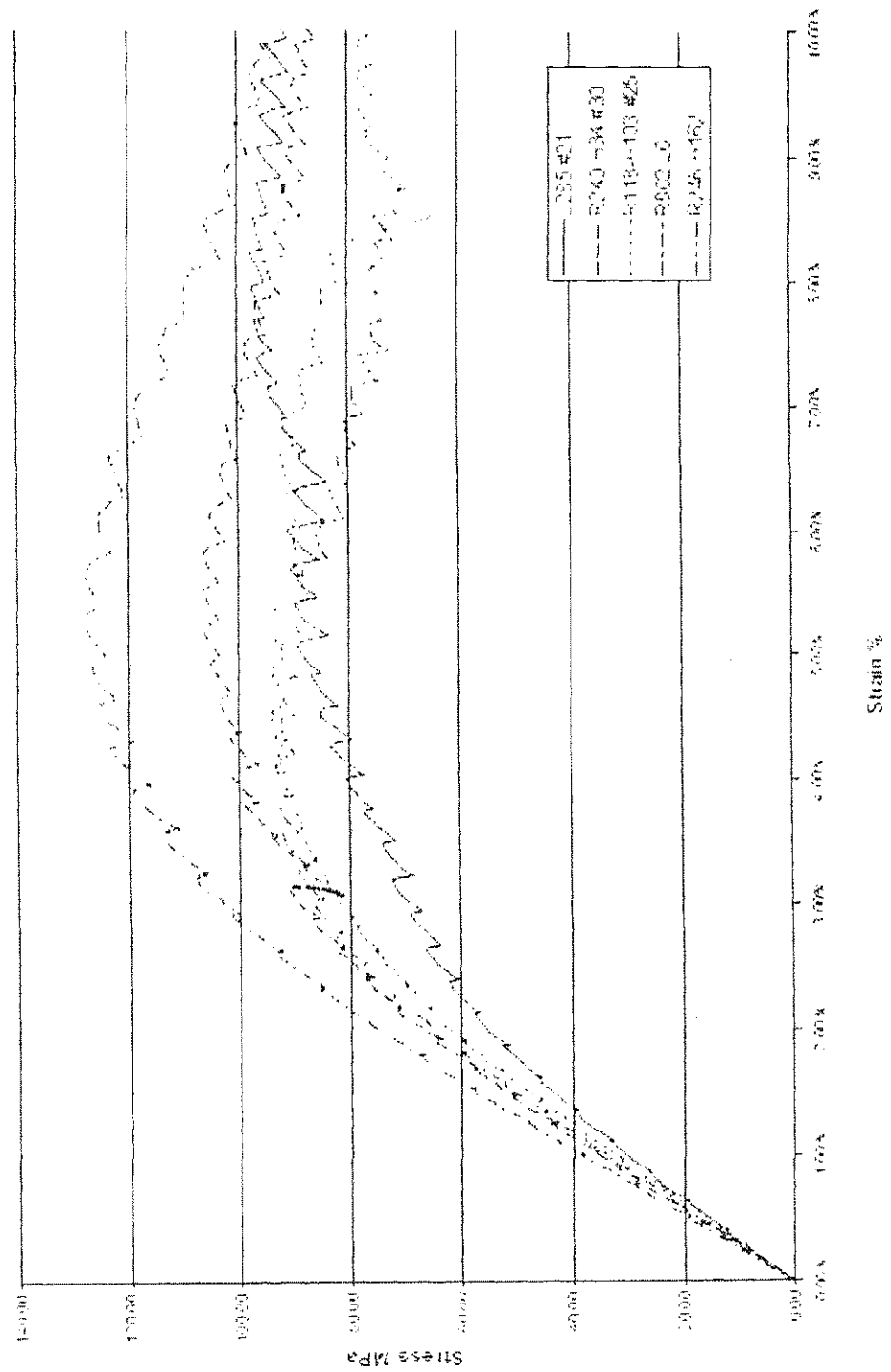


Fig. 4a

5/16

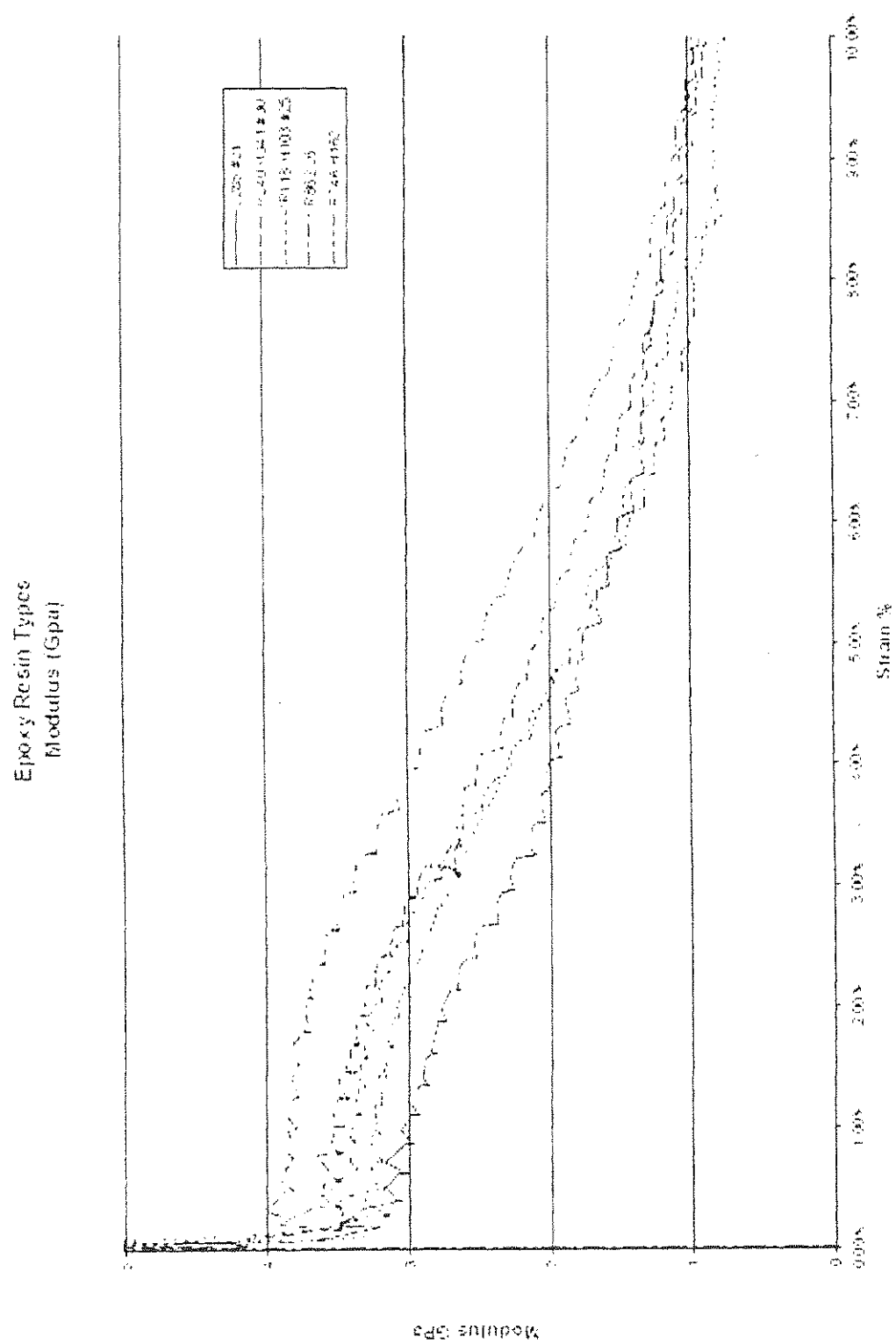


Fig. 4b

6-16

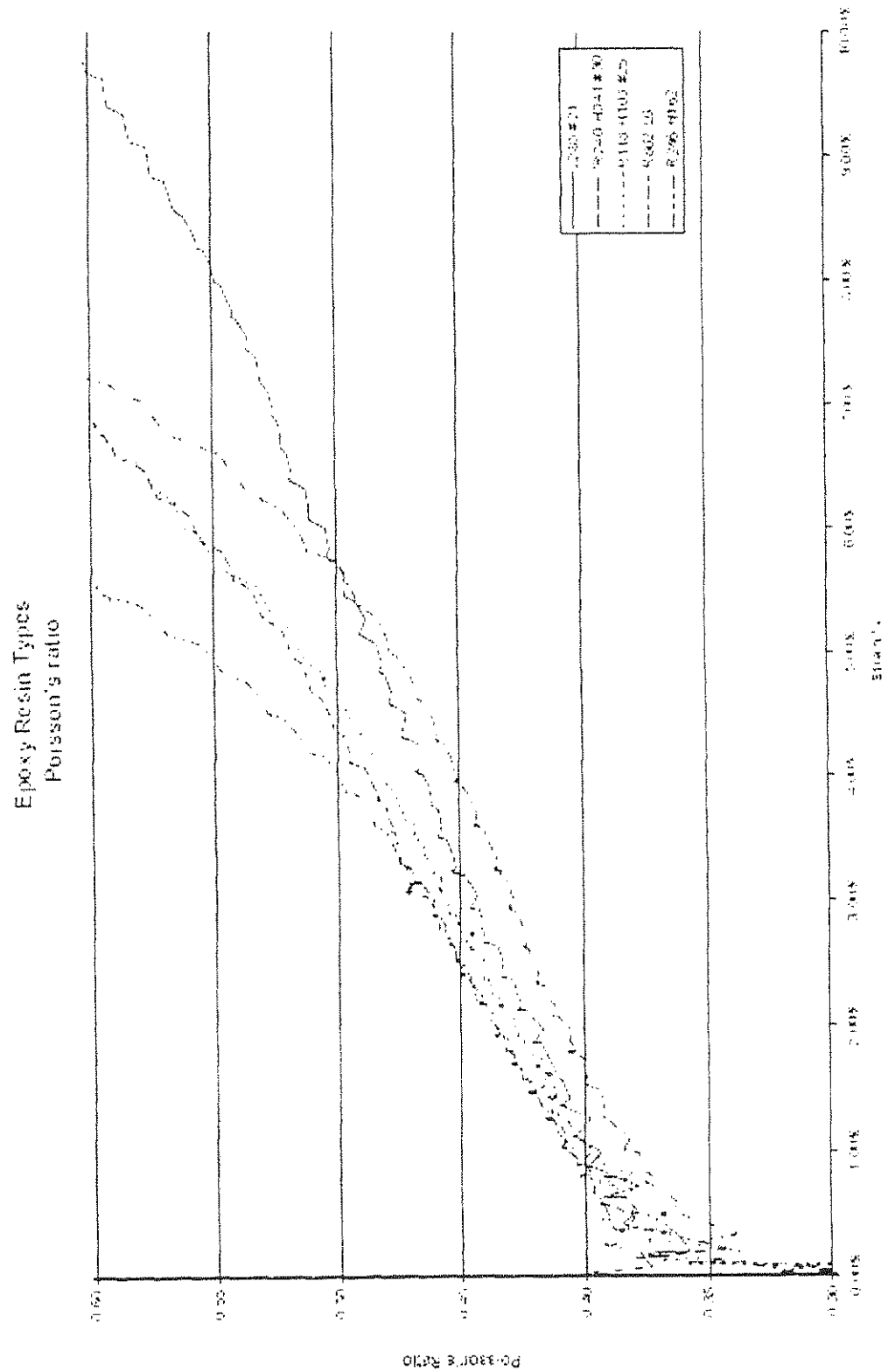


Fig. 4c

7-16

3M Glass Bubble Type - Distribution
(Density vs Hydrostatic Crush Pressure)

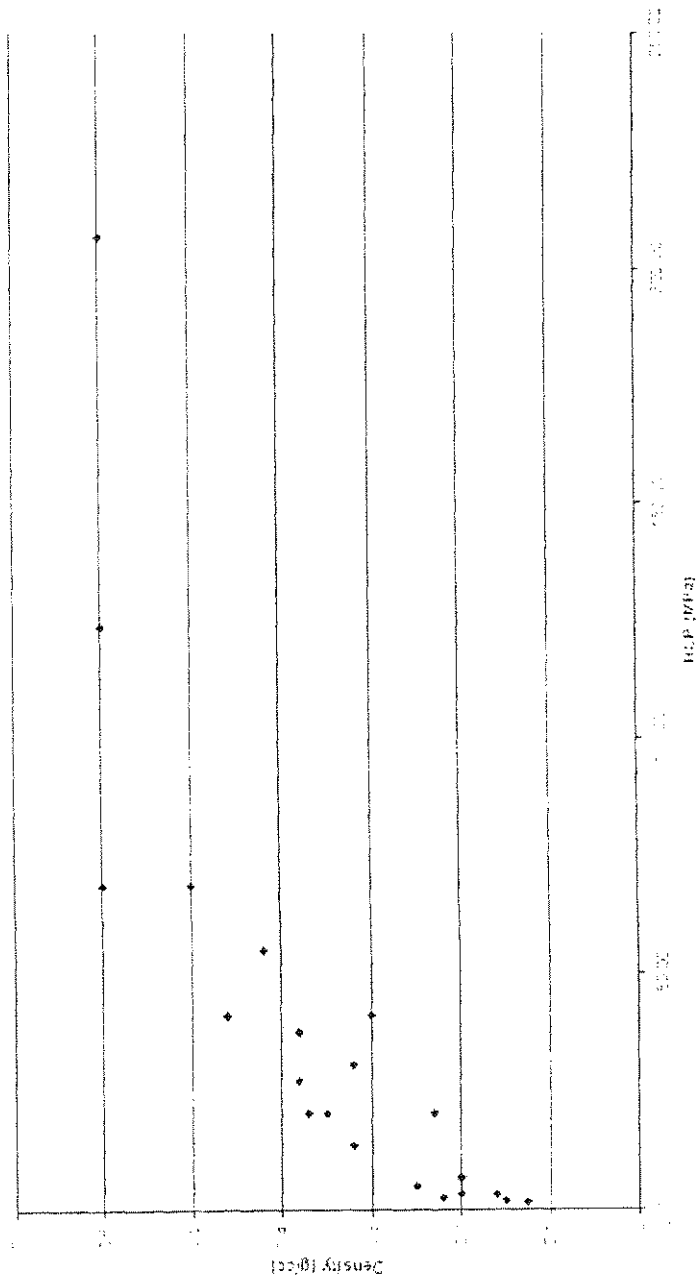


Fig. 5

8/16

Synthetic Trial Results
Density vs Hydrostatic Crush Pressure

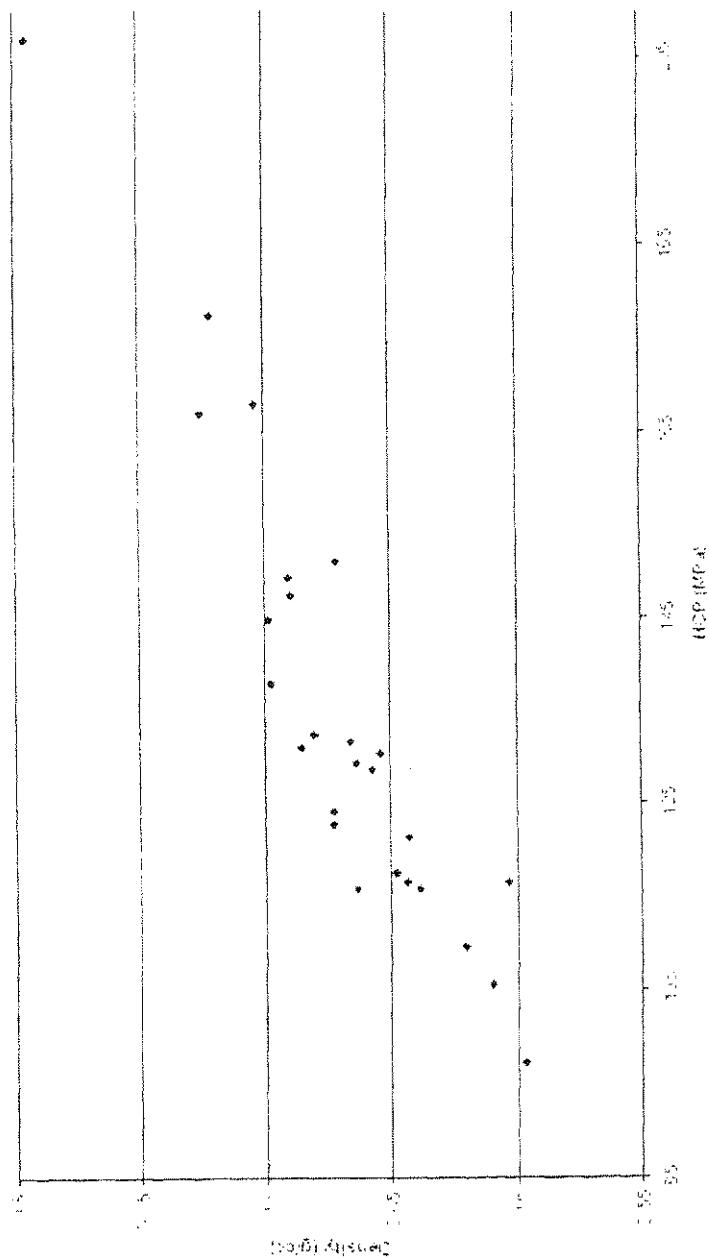


Fig. 6

9/16

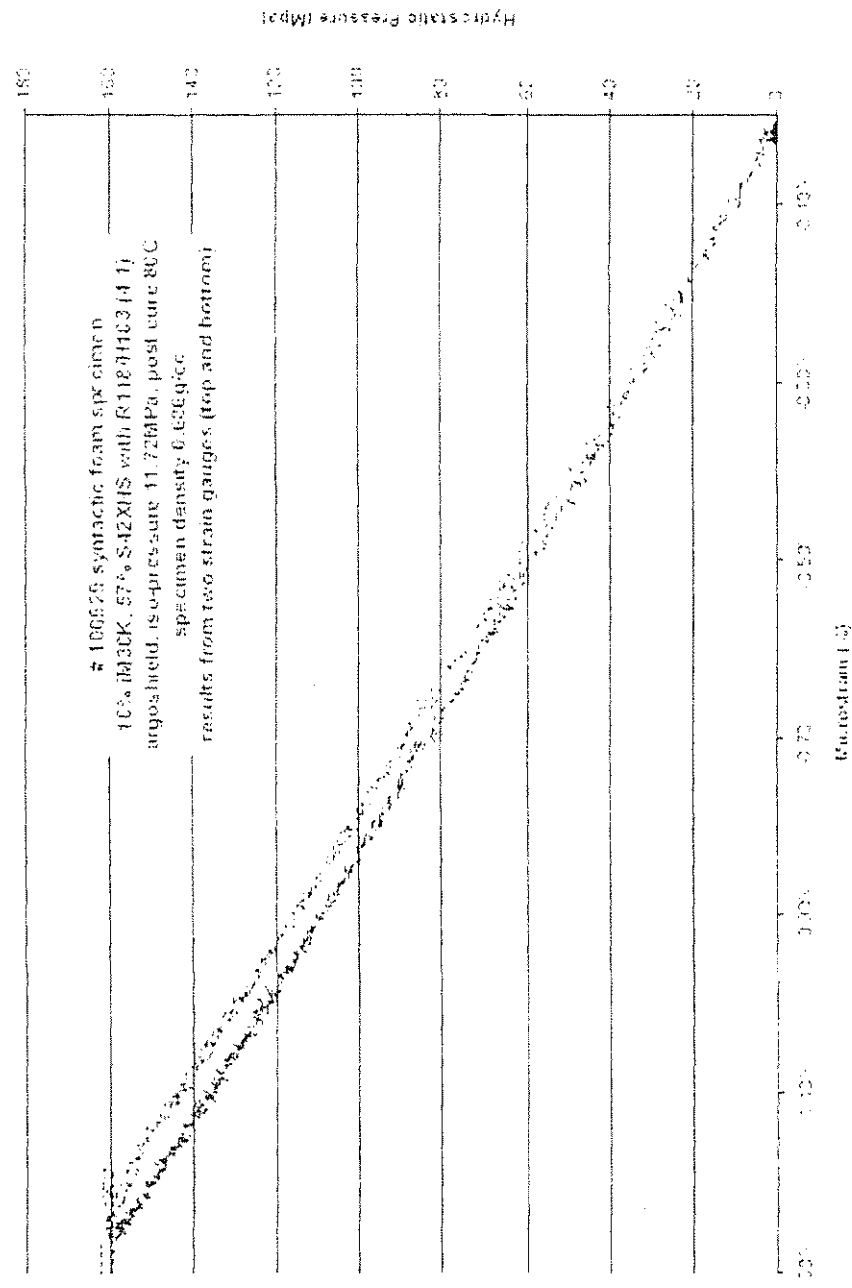


Fig. 7

10/16

True Stress-Strain Curve
Syntactic Batch #100529 Isopocimen 44.67mm dia, 67.40mm long)
(10%MI20K, 57% S42XHS with R4184163 epoxy resin)
(strain gage factor 2.05)

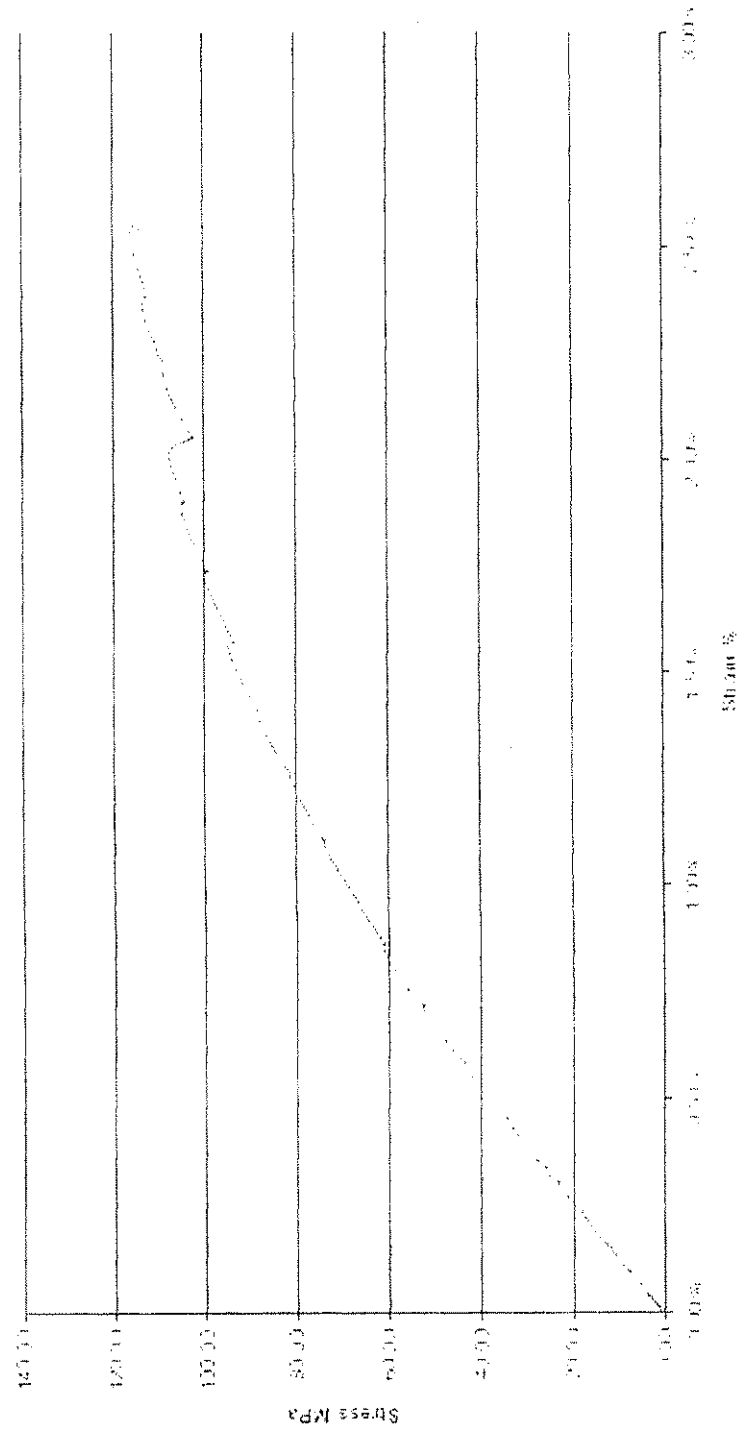


Fig. 8a

11/16

Compressive Modulus
Synthetic Batch A100529 (specimen 44.97 mm dia, 67.40mm long)
H100-M30K, 57% S-42XHS with R110-1100 epoxy resin
(strain gage factor 2.09)

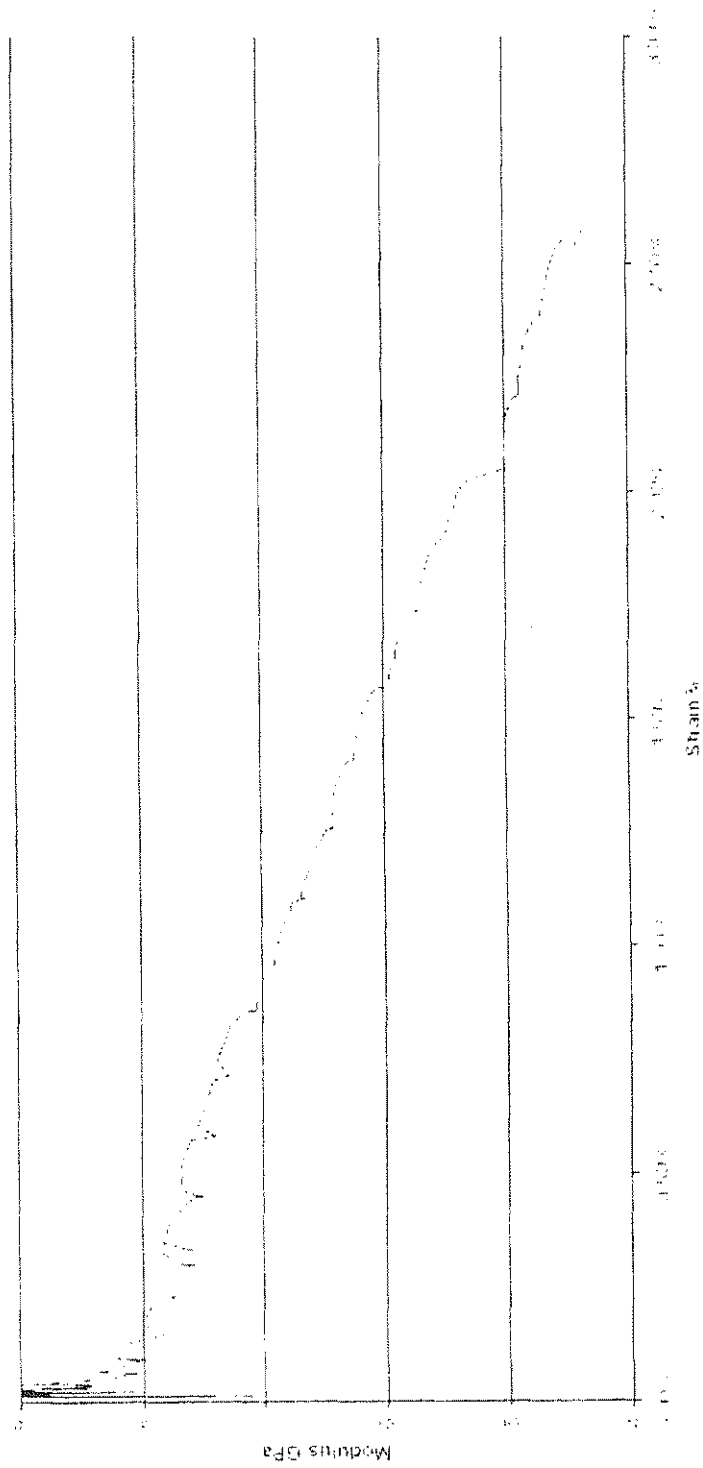


Fig. 8b

12/16

Poisson's Ratio
Syntactic Batch #100529 (specimen 44.97mm dia. 67.40mm long)
(10% M20K, 57% S42XHS with R112H103 epoxy resin)
(strain gage factor 2.09)

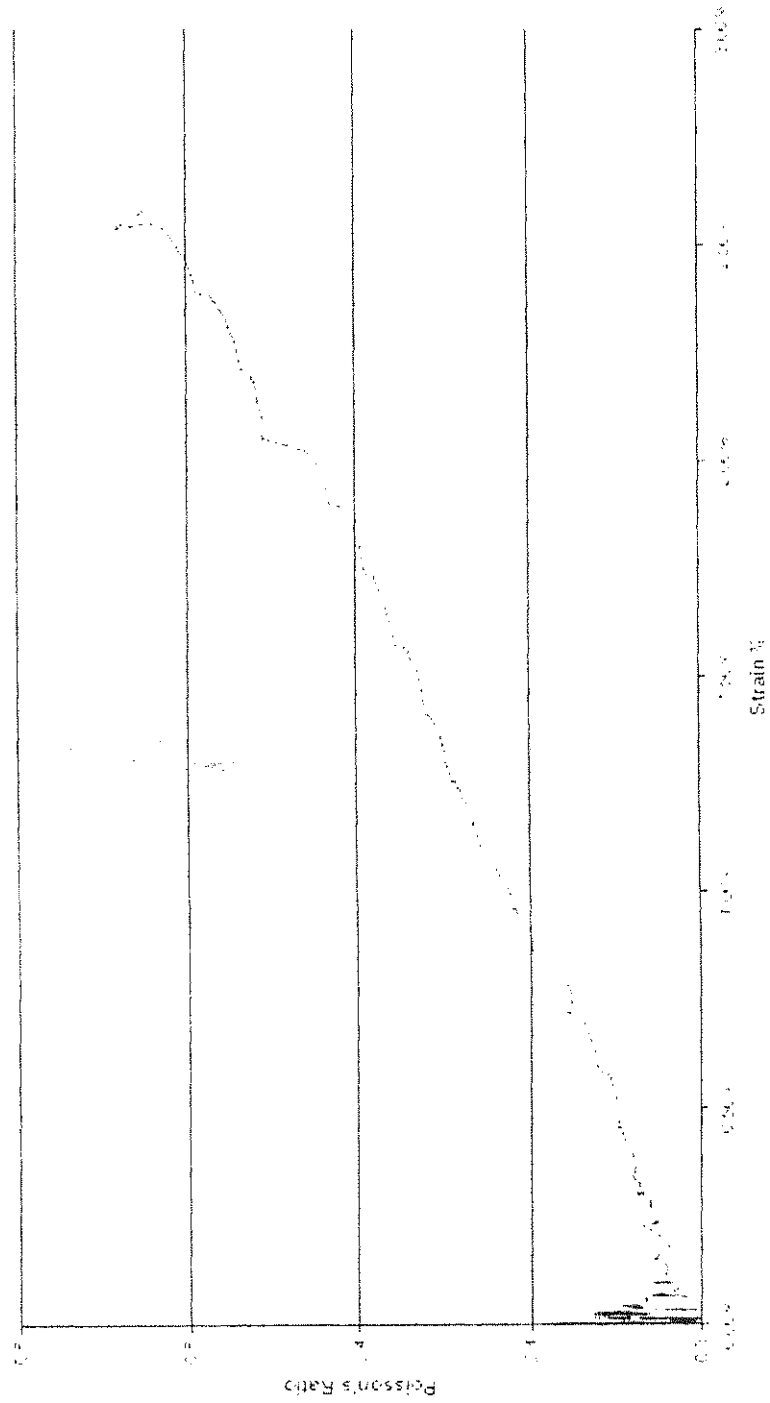


Fig. 8c



Fig. 9

14/16

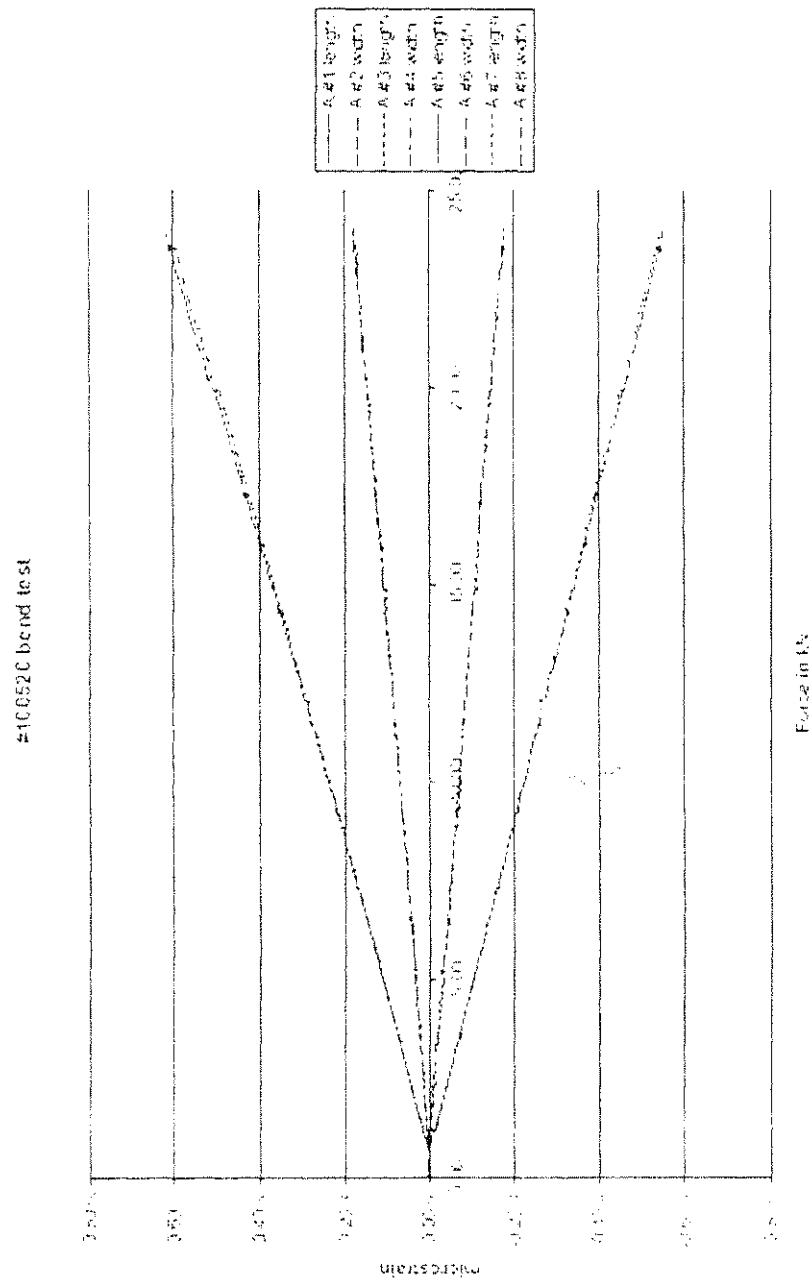


Fig. 10

15/16

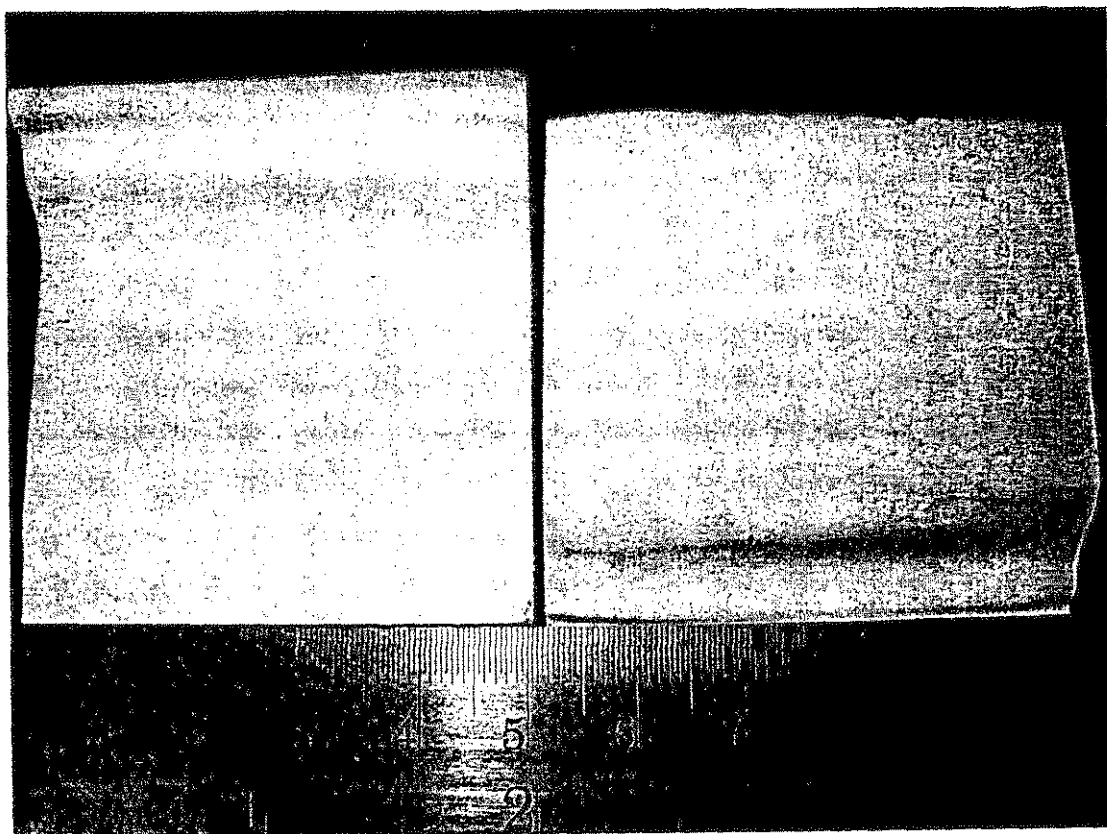


Fig. 11

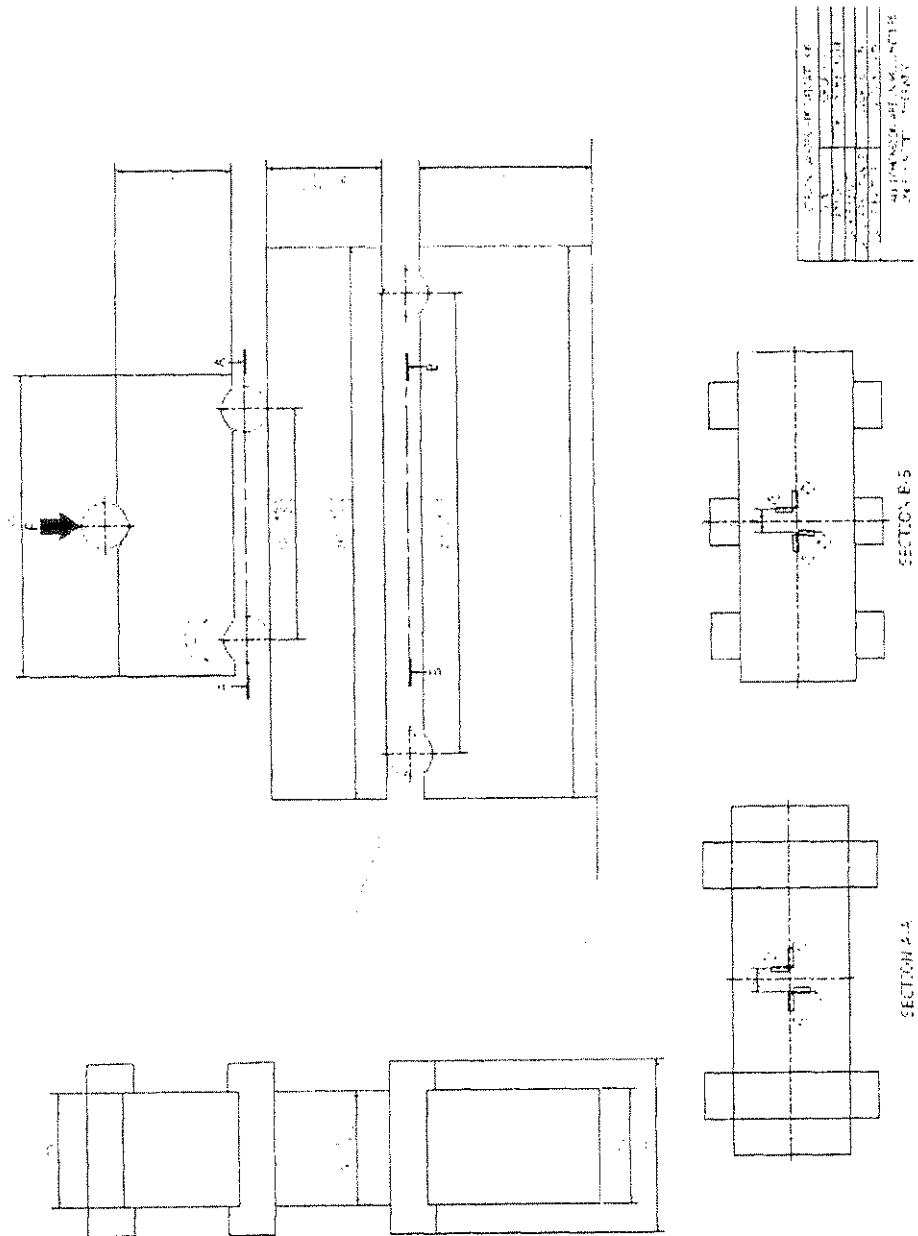


Fig. 12