

TABLE 2 THE ELASTIC MODULUS VALUE OF THE LIGHT ELASTIC-PLASTIC MATERIAL

弹性模量	1#	2#	3#
E (MPa)	32	25.5	20
μ 值	0.277	0.357	0.706

From the above result we can see that when Poisson's ratio of 1# 2# material and Poisson's ratio of steel is near and the firming agent is 25-50, the Poisson's ratio will increase along with the plasticizer increasing. The experiments show that choosing 1#, 2# samples to make rail model is reasonable.

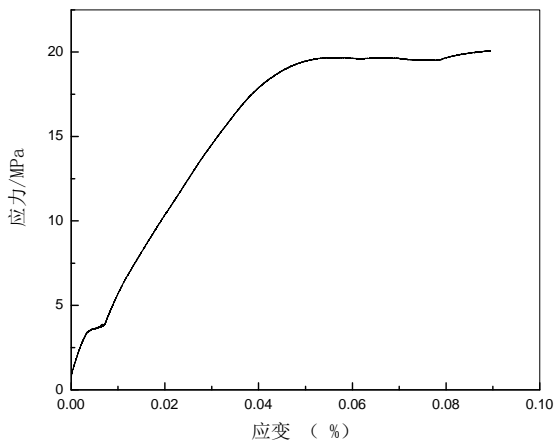


Fig.4 1# Stress-Strain curve

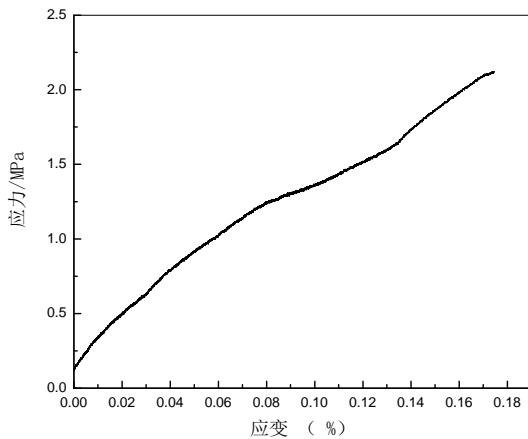


Fig.5 2# Stress-Strain curve

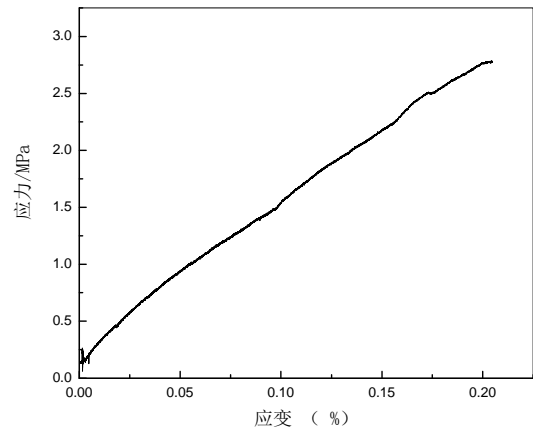


Fig.6 3# Stress-Strain curve

According to Fig.4, Fig.5, 1# has apparent elastic stage and the plastic stage, so does 2#. From Fig.6, we can see that, Epoxy proportion 3# is dominated by the plastic stage, instead of the apparent elastic stage. In contrast, the Stress-strain curve of steel and light elastic-plastic material proportion 1# and 3# are similar, moreover, 1# is more appropriate to deform steel in room temperature.

IV. CONCLUSION

(1) The light elastic-plastic material of different plasticizer proportion can occur obvious clear elastic-plastic deformation, its tensile strength will decrease with plasticizer increasing. When the epoxy resin: the firming agent: the plasticizer=100:25-45:25-35, the stress- strain curve of light elastic-plastic material's is similar to steel's and the Poisson's ratio of 1# light elastic-plastic material is similar to steel's, according with similar theory. This proportion can meet the need of the light elastic-plastic material simulating rail straightening deformation, which provide Simulation of elastic-plastic deformation of steel with feasibility.

(2) The 1# sample of proportion of 100: 30-50: 50-70 whose inner stress stripe can reserve for long time after unloading. We can research inner residual stress of the component of elastic-plastic deformation with the material's peculiarity.

REFERENCES

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