What is claimed is:

1. A conjugated diene based polymer comprising a monomer unit derived from a noncyclic conjugated diene and a monomer unit derived from an alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond.

2. The conjugated diene based polymer according to claim 1, wherein the content of the monomer unit derived from an alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond is not less than 0.01% by weight and not more than 30% by weight where the total amount of the monomer unit contained in the conjugated diene based polymer is taken as 100% by weight.

3. The conjugated diene based polymer according to claim 1, wherein the alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond is p-menthane-1,8-diene.

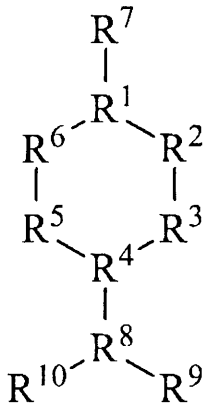
4. A polymer composition comprising the conjugated diene based polymer according to claim 1 and a reinforcing agent, wherein the content of the reinforcing agent is not less than 10 parts by weight and not more than 150 parts by weight per 100 parts by weight of the conjugated diene based polymer.

5. A method for producing a conjugated diene based polymer, wherein the method comprises a step of polymerizing monomer components in a hydrocarbon solvent with an alkali metal catalyst, the monomer components comprise a noncyclic conjugated diene and an alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond.

6. The method according to claim 5, wherein the amount of the alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond to be used is not less than 0.01% by weight and not more than 30% by weight where the total amount of the monomer components to be used is taken as 100% by weight.

What is claimed is:

1. A conjugated diene based polymer comprising a monomer unit derived from a noncyclic conjugated diene and a monomer unit derived from an alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond, wherein the alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond is a compound represented by formula (1),



(1)

wherein R^1, R^4 and R^8 each independently represent a methine group or a carbon atom, R^2, R^3, R^5 and R^6 each independently represent a group represented by $-C(R^{11})(R^{12})-$, wherein R^{11} and R^{12} each independently represent a hydrogen atom or a hydrocarbyl group having 1 to 10 carbon atoms, or a group represented by -CH=, R^7 and R^9 each independently represent a hydrocarbyl group having 1 to 10 carbon atoms or a group represented by $=C(R^{13})(R^{14})$, wherein R^{13} and R^{14} each independently represent a hydrogen atom or a hydrocarbyl group having 1 to 10 carbon atoms, and R^{10} represents a hydrocarbyl group having 1 to 10 carbon atoms.

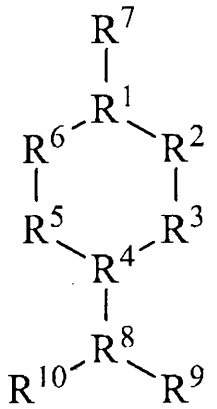
2. The conjugated diene based polymer according to claim 1, wherein the content of the monomer unit derived from an alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond is not less than 0.01% by weight and not more than 30% by weight where the total amount of the monomer unit contained in the conjugated diene based polymer is taken as 100% by weight.

3. The conjugated diene based polymer according to claim 1, wherein the alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond is p-menthane-1,8-diene.

4. A polymer composition comprising the conjugated diene based polymer according to claim 1 and a reinforcing agent, wherein the content of the reinforcing agent is not less than 10 parts by weight and not more than 150 parts by weight per 100 parts by weight of the conjugated diene based polymer.

5. A method for producing a conjugated diene based polymer, wherein the method comprises a step of polymerizing monomer components in a hydrocarbon solvent with an alkali metal catalyst, the monomer components comprising a noncyclic conjugated diene and an alicyclic hydrocarbon compound having

a non-conjugated carbon-carbon double bond, wherein the alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond is a compound represented by formula (1),



(1)

wherein R^1, R^4 and R^8 each independently represent a methine group or a carbon atom, R^2, R^3, R^5 and R^6 each independently represent a group represented by $-C(R^{11})(R^{12})-$, wherein R^{11} and R^{12} each independently represent a hydrogen atom or a hydrocarbyl group having 1 to 10 carbon atoms, or a group represented by -CH=, R^7 and R^9 each independently represent a hydrocarbyl group having 1 to 10 carbon atoms or a group represented by $=C(R^{13})(R^{14})$, wherein R^{13} and R^{14} each independently represent a hydrogen atom or a hydrocarbyl group having 1 to 10 carbon atoms, and R^{10} represents a hydrocarbyl group having 1 to 10 carbon atoms.

6. The method according to claim 5, wherein the amount of the alicyclic hydrocarbon compound having a non-conjugated carbon-carbon double bond to be used is not less than 0.01% by

weight and not more than 30% by weight where the total amount of the monomer components to be used is taken as 100% by weight.