CLAIMS

1. A formulation for topical application comprising:

an active compound,

a partition coefficient enhancer (PC enhancer), having a structure of the general formula: $C_nH_{2n+2}O_2$ where n represents an integer from 3 to 6 inclusive,

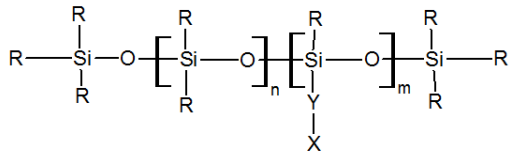
a diffusion coefficient enhancer (DC enhancer) selected from the group consisting of a C_{12} to C_{14} straight chain fatty acid and a C_{14} straight chain primary alcohol,

a first dimethicone macromer mixture including a dimethicone macromer and a hydrocarbyl methyl siloxane emollient selected from the group consisting of an alkyl methyl siloxane, an aryl methyl siloxane and an alkyl aryl methyl siloxane, and

a second dimethicone macromer mixture including a methyl siloxane compound and a cross-linked dimethicone macromer.

2. A formulation according to Claim 1, in which the first dimethicone macromer mixture includes a polyglycol dimethicone macromer.

3. A formulation according to Claim 1 or 2 in which the first dimethicone macromer mixture includes a compound of the following structure:



where R represents H or hydrocarbyl group, in particular C1 to C6 alkyl group;

Y represents a hydrocarbyl group in particular C1 to C6 alkyl group;

X represents an amine, a quaternary amino group or acid functionality; and

M and n independently represent an integer from 1 to 50.

4. A formulation according to Claim 1, 2 or 3, in which the first dimethicone macromer mixture includes a dimethicone macromer having a number average molecular weight of more

than 1000 (typically more than 2000) and a hydrocarbyl methyl siloxane emollient (generally an alkyl methyl siloxane) having a number average molecular weight of less than 500.

5. A formulation according to any preceding claim, in which the first dimethicone macromer mixture includes a polyglycol dimethicone macromer cross-linked with a polyalkylene oxide compound (generally a polyethylene glycol compound, a polypropylene glycol compound or a copolymer of ethylene oxide and propylene oxide) or cross-linked with a diene.

6. A formulation according to Claim 5, in which the first dimethicone macromer mixture includes a polyglycol dimethicone macromer selected from the group consisting of PEG dimethicone PPG crosspolymer and PEG dimethicone bis-isoalkyl PPG crosspolymer.

7. A formulation according to any of Claims 1 to 4, in which the first dimethicone macromer mixture includes a polyglycol dimethicone macromer comprising one or more pendant groups from the dimethicone backbone, the pendant group(s) being a polyalkylene oxide group (generally a polyethylene glycol compound, a polypropylene glycol compound or a copolymer of ethylene oxide and propylene oxide).

8. A formulation according to Claim 7, in which the polyglycol dimethicone macromer includes a polyethylene glycol pendant group and a polypropylene glycol pendant group from the dimethicone backbone.

9. A formulation according to any of Claims 3 to 8 comprising a pyrrolidone carboxylic acid functionalized dimethicone macromer.

10. A formulation according to any preceding claim, comprising 5 to 45%w/w first dimethicone macromer mixture, typically 10 to 40%w/w, generally 20 to 30%w/w.

11. A formulation according to any preceding claim, in which the second dimethicone macromer mixture includes a methyl siloxane compound having a number average molecular weight of less than 1000 and a cross-linked polyalkylsiloxane diol dimethicone macromer having a number average molecular weight of more than 1000, generally of more than 2000.

12. A formulation according to any preceding claim, comprising 5 to 45%w/w second dimethicone macromer mixture, typically 10 to 40%w/w, generally 20 to 30w%w/w.

13. A formulation according to any preceding claim, where the first dimethicone macromer mixture comprises 5 to 30%w/w polyglycol dimethicone macromer, typically 10-20%w/w generally 12-19%w/w.

14. A formulation according to any preceding claim, where the second dimethicone macromer mixture comprises 5 to 30%w/w cross-linked dimethicone macromer, typically 10-20%w/w generally 12-19%w/w.

15. A formulation according to any preceding claim, in which the PC enhancer is selected from one or more of the group consisting of propylene glycol, butylene glycol, pentylene glycol and hexylene glycol.

16. A formulation according to any preceding claim, comprising a second mutually miscible PC enhancer/cosolvent selected from the group consisting of an alcohol, ether-alcohol, diol, triol or alkyl pyrrolidone.

17. A formulation according to Claim 16, in which second mutually miscible PC enhancer/cosolvent is selected from the group consisting of a diol of the general formula $C_nH_{2n+2}O_2$ where n represents an integer greater than 6; an alcohol of the general formula $C_nH_{2n+2}O$, where n represents an integer 2 or 3; an ether-alcohol of the general formula $C_nH_{2n+2}O_3$ or $C_nH_{2n+2}O_2$ where n represents an integer from 1 to 10 or an alkyl pyrrolidone.

18. A formulation according to Claim 16 or 17, in which the second mutually miscible PC enhancer/cosolvent is glycerol or N-methyl pyrrolidone.

19. A formulation according to any preceding claim, including 10 to 60%w/w PC enhancer, generally 25 to 45%w/w.

20. A formulation according to any preceding claim, comprising less than 10%w/w diffusion coefficient enhancer, generally less than 5%w/w, optimally 0.5-2%w/w.

21. A formulation according to any preceding claim, including a highly volatile solvent selected from the group consisting of hexamethyldisiloxane, octamethyltrisiloxane, ethanol, isopropyl alcohol and water.

22. A formulation according to any preceding claim, in which the active compound is selected from the group consisting of retinoids, retinoic acid metabolic blocking agents (RAMBAs), alpha and beta hydroxy acids and polymers and derivatives thereof, immune response modifier compounds, vitamin D analogues, corticosteroids, anti-rosacea agents, antihistamines, antibacterial agents, antiacne agents, antifungal agents, antiviral agents, cytotoxic agents, psoralens, anti-alopecia agents, anti-androgens, anti-pruritic agents, keratolytic agents, skin lightening and depigmenting agents, dithranol, antiseptics, anaesthetics, analgesic, neuropathic and non-steroidal anti-inflammatory agents, vasoactive agents and agents to combat dry and ageing skin.

23. A formulation according to any preceding claim suitable for application to the skin or mucous membrane(s) of the human or animal body.

24. A formulation according to any preceding claim for use in therapy.

25. A kit of parts including a formulation according to any of Claims 1 to 23 and an applicator device such as a syringe, spatula, or spray device.