

4b) 3 GROUPS:

PARTICLE REINFORCED: WHERE THE PARTICULATES ARE HARDER AND STIFFER THAN THE MATRIX MATERIAL. PARTICLES ARE MACRO, MICRO AND NANO SCOPIC SCALE. THE MECHANICAL BEHAVIOUR CAN BE IMPROVED DEPENDING ON INTERFACE BONDING

i) LARGE PARTICLE REINFORCED, WHERE LARGE IS A RELATIVE TERM, AND INTERACTION WITH THE MATRIX IS NOT ON THE ATOMIC LEVEL.

ii) DISPERSION STRENGTHENED HAS MUCH SMALLER PARTICLES FOR REINFORCEMENT, TYPICALLY 0.1-0.01 MICRONS. BONDS ARE FORMED ON MOLECULAR OR ATOMIC LEVELS TO SURROUNDING MATRIX, RESTRICTING PLASTIC DEFORMATION.

CONCRETE IS A COMMON LARGE PARTICLE COMPOSITE, WITH ALUMINIUM OXIDE BEING A DISPERSION STRENGTHENED COMPOSITE.