Na-Soil + $CaSO_4 \rightarrow$ Ca-Soil + Na^+ + SO_4^{2-}

Gypsum requirement is determined from the formula:

Gypsum requirement (GR) i.e. me of Ca^{2+}/100 g soil = ESP (initial)-ESP (final) × CEC/100

ESP (initial) is obtained from the analysis of soil before reclamation or application of gypsum; ESP (final) is usually kept at 10 and CEC is the cation exchange capacity in me/ 100 g of the soil.

me of Ca^{2+}/100 g soil = 5 × 40/100 = 1.13

Since one hectare of soil to a depth of 30 cm weighs approximately 4×10^6 and 1 me of replaceable gypsum as $CaSO_4 \cdot 2H_2O$ equals 1720 ppm of amendment, the theoretical amount of gypsum required per hectare will be:

Theoretical amount of gypsum kg/ha = $1720/10^6 \times 2 \times 10^6 \times 1.13$ = 3440×1.13 = 105,262 kg

This has to be multiplied by the purity factor of gypsum to arrive at the field requirement of the amendment.