PRODUCTION CHAIN

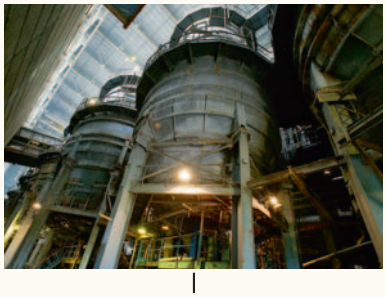
MINING → CRUSHING

Ore extraction takes place underground at an approximate depth of 400 metres. Specialised mining combines drill for potash underground, then the extracted ore is moved by conveyor belts to the shafts and lifted to the surface.

In the crushing section of the flotation plant rod mills and screens break ore into smaller particles of the size required for further enrichment.

CHEMICAL ENRICHMENT (HALURGIC METHOD)

FLOTATION



The halurgic method has been used since the potash industry started in the second half of the 19th century. The method is based on the varying joint solubility of potassium chloride (KCl) and sodium chloride (NaCl) in water at different temperatures. KCl crystallises out of saturated solution when it cools down.

The flotation method has been used since the 1960s to produce potash fertilisers for agriculture which contain up to 95% of the useful component. The method is based on the varying floatability of sylvite and halite minerals in the saturated aqueous solution of potassium chloride and sodium chloride in the presence of reagents. Partly purified potash ore is placed in the flotation machine, bubbles stick to potassium chloride particles and push them to the mixture surface for subsequent separation. The humidity of pink MOP after drying is only 0.1%.

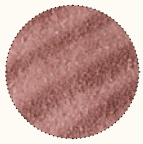
STANDARD → COMPACTING

White Potash (MOP)

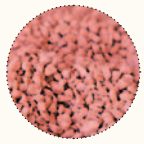
Pink Potash (MOP)

Granular Potash

Chemical Enrichment (Halurgic method). White MOP is produced at Uralkali's enrichment plants through the halurgic method. Potash fertilisers containing 95% and 98% of MOP and chemically pure 99.8% MOP (where the humidity of the end product after drying is only 0.2% of its weight) are produced using the halurgic method.



Flotation method. Pink MOP is produced at Uralkali's enrichment plants through the flotation method.



Granulation. The process of making granular potash is identical to that for Pink MOP, up to the end of the final drying phase. Following this phase, dried potash powder is compressed into flakes (at 200–220 atm), then, flakes are crushed and granules of the correct size are selected. These granules are treated to remove sharp edges and cracks and are hardened in furnaces to increase their strength. Granules are prepared for long transportation in the oil treatment blender. Uralkali also owns a technology of granular production from white MOP.