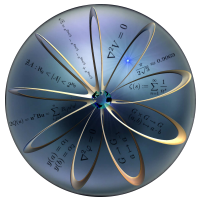

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total integral closure

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A commutative unitary ring R is said to be *totally integrally closed* if it does not have an overring which is both an integral and an essential extension of R.

All totally integrally closed rings are `http://planetmath.org/ReducedRing`reduced.

Suppose that R is any commutative ring and that $\bar{R}$ is an integral and essential extension of R. If $\bar{R}$ is a totally integrally closed ring, then $\bar{R}$ is called a *total integral closure* of R.

For fields the concept totally integrally closed, integrally closed and algebraically closed coincide.

Let A be an integral domain, then its total integral closure is the integral closure of A in the algebraic closure of $\mathrm{Quot}(A)$.

Enochs has first proven that all commutative reduced rings have total integral closure and this is unique up to ring isomorphism.