

Appendix B. Type Utilities

TypeScript's type utilities come bundled into its standard library. [Table B-1](#) enumerates all of the available utilities at the time of writing.

See [*es5.d.ts*](#) for an up-to-date reference.

Table B-1. Type utilities

Type utility	Use it on	Description
<code>ConstructorParameters</code>	Class constructor types	A tuple of a class constructor's parameter types
<code>Exclude</code>	Union types	Exclude a type from another type
<code>Extract</code>	Union types	Select a subtype that's assignable to another type
<code>InstanceType</code>	Class constructor types	The instance type you get from <code>new</code> -ing a class constructor
<code>NonNullable</code>	Nullable types	Exclude <code>null</code> and <code>undefined</code> from a type
<code>Parameters</code>	Function types	A tuple of a function's parameter types
<code>Partial</code>	Object types	Make all properties in an object optional
<code>Pick</code>	Object types	A subtype of an object type, with a subset of its keys

Type utility	Use it on	Description
<code>Readonly</code>	Array, Object, and Tuple types	Make all properties in an object read- only, or make an array or tuple read- only
<code>ReadonlyArray</code>	Any type	Make an immutable array of the given type
<code>Record</code>	Object types	A map from a key type to a value type
<code>Required</code>	Object types	Make all properties in an object required
<code>ReturnType</code>	Function types	A function's return type