

This collection of standards identifies the violations we feel are the greatest hindrance to code safety, readability, best practice and maintainability.

The majority of these checks appear in one form or another in published best practices and generally accepted coding standards.

You can use these checks to get an idea of how cluttered or brilliant the code base is. You might use them as a basis for developing your own standards. Or you can ignore this collection completely and test your code against a published coding standard or select your own checks from the "All Checks" library.

If you can't find the checks you want here, we would be happy to help you develop checks to match your standards. Just send us an email at support@scitools.com.

	All Rules	Recommended Rules
Understand % Coverage	100%	100%
Understand Coverage	206	3
Total Rules	206	3

Checks

Check ID	Check Name	Supported	Category	Severity
CPP_CT_BUGPRONE_ASSERT_SIDE_EFFECT	Assert Side Effect	Yes		High
CPP_CT_BUGPRONE_BRANCH_CLONE	Branch Clone	Yes		High
CPP_CT_BUGPRONE_COPY_CONSTRUCTOR_INIT	Copy Constructor Init	Yes		High
CPP_CT_BUGPRONE_INFINITE_LOOP	Infinte Loop	Yes		High
CPP_CT_BUGPRONE_MACRO_REPEATED_SIDE_EFFECTS	Macro Side Effects	Yes		High
CPP_CT_BUGPRONE_NOT_NULL_TERMINATED_RESULT	Missing Null Terminator	Yes		High
CPP_CT_BUGPRONE_REDUNDANT_BRANCH_CONDITION	Redundant Condition	Yes		High
CPP_CT_READABILITY_DELETE_NULL_POINTER	Delete Null Pointer	Yes		High

TY_DELETE_NULL_POINTER				
CPP_CT_READABILITY_REDUNDANT_CASTING	Redundant Cast	Yes		High
CPP_SA_DANGLING_POINTERS	Dangling Pointer	Yes		High
CPP_SA_DIV_ZERO	Division by Zero	Yes		High
CPP_SA_LEAKS	Memory Leak	Yes		High
CPP_SA_NULL_PTR	Null Pointer Dereference	Yes		High
CPP_SA_STACK_ADDRESS_ESCAPE	Stack Address Escape	Yes		High
CPP_SA_UNDEFINED_CALL	Undefined Call	Yes		High
CPP_SA_UNINITIALIZED	Uninitialized Value	Yes		High
CPP_SA_VIRTUAL_CALLS	Virtual Call	Yes		High
CPP_WARN_ADDRESS_OF_TEMPORARY	Do Not Take the Address of Temporary Objects	Yes		High
CPP_WARN_ARRAY_BOUNDS	Array Bounds	Yes		High
CPP_WARN_AVAILABILITY	Availability Attribute	Yes		High
CPP_WARN_BACKSLASH_NEWLINE_ESCAPE	Backslash Newline Escape	Yes		High
CPP_WARN_BITFIELD_CONSTANT_CONVERSION	Bitfield Constant Conversion	Yes		High
CPP_WARN_BITFIELD_WIDTH	Do Not Exceed Bit-Field Width	Yes		High
CPP_WARN_BOOL_CONVERSION	Bool Conversion	Yes		High
CPP_WARN_BUILTIN_MACRO_REDEFINED	Builtin Macro Redefined	Yes		High
CPP_WARN_BUILTIN_MEMCPY_CHECK_SIZE	Builtin Malloc Check Size	Yes		High

E				
CPP_WARN_CALL_T O_PURE_VIRTUAL_F ROM_CTOR_DTOR	Call to Pure Virtual from Constructor or Destructor	Yes		High
CPP_WARN_CAST_ QUAL_UNRELATED	Cast Qualifiers Unrelated	Yes		High
CPP_WARN_CLASS_ CONVERSION	Class Conversion	Yes		High
CPP_WARN_COMPA RE_DISTINCT_POIN TER_TYPES	Compare Distinct Pointer Types	Yes		High
CPP_WARN_COMPO UND_TOKEN_SPLIT _BY_MACRO	Compound Token Split by Macro	Yes		High
CPP_WARN_CONDIT IONAL_TYPE_MISM ATCH	Conditional Type Mismatch	Yes		High
CPP_WARN_CONST ANT_CONVERSION	Constant Conversion	Yes		High
CPP_WARN_CONST ANT_LOGICAL_OPE RAND	Constant Logical Operand	Yes		High
CPP_WARN_CPP11_ COMPAT_DEPRECA TED_WRITABLE_ST RINGS	C++11 Compatibility Deprecated Writable Strings	Yes		High
CPP_WARN_DANGLI NG	Dangling Pointers	Yes		High
CPP_WARN_DANGLI NG_FIELD	Dangling Field	Yes		High
CPP_WARN_DANGLI NG_GSL	Dangling Pointers Found by Guidelines Support Library	Yes		High
CPP_WARN_DANGLI NG_INITIALIZER_LIS T	Dangling Initializer List	Yes		High
CPP_WARN_DEFAULT ED_FUNCTION_DE LETED	Defaulted Function Deleted	Yes		High
CPP_WARN_DELEGA TING_CTOR_CYCLE	Delegating Constructor Cycles	Yes		High

S				
CPP_WARN_DELETE_ABSTRACT_NON_VIRTUAL_DTOR	Delete Abstract Non-Virtual Destructor	Yes		High
CPP_WARN_DELETE_INCOMPLETE	Delete Incomplete	Yes		High
CPP_WARN_DEPRECATED_BUILTINS	Deprecated Builtins	Yes		High
CPP_WARN_DEPRECATED_DECLARATIONS	Deprecated Declarations	Yes		High
CPP_WARN_DEPRECATED_INCREMENT_BOOL	Deprecated Increment Bool	Yes		High
CPP_WARN_DEPRECATED_NON_PROTOTYPE	Deprecated Non-Prototype	Yes		High
CPP_WARN_DEPRECATED_REGISTER	Deprecated Register	Yes		High
CPP_WARN_DEPRECATED_VOLATILE	Deprecated Volatile	Yes		High
CPP_WARN_DIVISION_BY_ZERO	Division by Zero	Yes		High
CPP_WARN_DYNAMIC_CLASS_MEMORY_ACCESS	Dynamic Class Memory Access	Yes		High
CPP_WARN_ENUM_COMPARE	Enum Compare	Yes		High
CPP_WARN_ENUM_COMPARE_SWITCH	Enum Compare Switch	Yes		High
CPP_WARN_EXCEPTIONS	Exceptions	Yes		High
CPP_WARN_EXTERN_C_COMPAT	Extern C Compatibility	Yes		High
CPP_WARN_EXTERN_INITIALIZER	Extern Initializer	Yes		High
CPP_WARN_EXTRA_QUALIFICATION	Extra Qualification	Yes		High
CPP_WARN_FIXED_POINT_OVERFLOW	Fixed Point Overflow	Yes		High
CPP_WARN_FLAG_ENUM	Flag Enum	Yes		High

NUM				
CPP_WARN_FORMAT	Format String	Yes		High
CPP_WARN_FORMAT_EXTRA_ARGS	Format Extra Args	Yes		High
CPP_WARN_FORMAT_INSUFFICIENT_ARGS	Format Insufficient Args	Yes		High
CPP_WARN_FORMAT_INVALID_SPECIFIER	Format Invalid Specifier	Yes		High
CPP_WARN_FORMAT_SECURITY	Format Security	Yes		High
CPP_WARN_FORMAT_ZERO_LENGTH	Format Zero Length	Yes		High
CPP_WARN_FORTIFY_SOURCE	Fortify Source	Yes		High
CPP_WARN_FREE_NON_HEAP_OBJECT	Free Non-Heap Object	Yes		High
CPP_WARN_HEADER_GUARD	Header Guard	Yes		High
CPP_WARN_IGNORED_ATTRIBUTES	Ignored Attributes	Yes		High
CPP_WARN_IGNORED_REFERENCE_QUALIFIERS	Ignored Reference Qualifiers	Yes		High
CPP_WARN_IMPLICIT_CONST_INT_FLOAT_CONVERSION	Implicit Const Int Float Conversion	Yes		High
CPP_WARN_IMPLICIT_CONVERSION_FLOATING_POINT_TO_BOOL	Implicit Conversion Floating Point to Bool	Yes		High
CPP_WARN_IMPLICIT_EXCEPTION_SPEC_MISMATCH	Implicit Exception Spec Mismatch	Yes		High
CPP_WARN_IMPLICIT_FIXED_POINT_CONVERSION	Implicit Fixed Point Conversion	Yes		High
CPP_WARN_IMPLICITLY_UNSIGNED_LITERAL	Implicitly Unsigned Literal	Yes		High

ERAL				
CPP_WARN_INACCESSIBLE_BASE	Inaccessible Base	Yes		High
CPP_WARN_INCOMPATIBLE_EXCEPTION_SPEC	Incompatible Exception Spec	Yes		High
CPP_WARN_INCOMPATIBLE_LIBRARY_REDECLARATION	Incompatible Library Redclaration	Yes		High
CPP_WARN_INCOMPATIBLE_POINTER_TYPES	Incompatible Pointer Types	Yes		High
CPP_WARN_INCOMPATIBLE_POINTER_TYPES_DISCARDS_QUALIFIERS	Incompatible Pointer Types Discards Qualifiers	Yes		High
CPP_WARN_INCONSISTENT_MISSING_OVERRIDE	Inconsistent Missing Override	Yes		High
CPP_WARN_INCREMENT_BOOL	Increment Bool	Yes		High
CPP_WARN_INJECTED_CLASS_NAME	Injected Class Name	Yes		High
CPP_WARN_INLINE_NAMESPACE_REOPENED_NONINLINE	Inline Namespace Reopened Non-Inline	Yes		High
CPP_WARN_INSTANTIATION_AFTER_SPECIALIZATION	Instantiation After Specialization	Yes		High
CPP_WARN_INT_TO_POINTER_CAST	Int to Pointer Cast	Yes		High
CPP_WARN_INT_TO_VOID_POINTER_CAST	Int to Void Pointer Cast	Yes		High
CPP_WARN_INTEGER_OVERFLOW	Integer Overflow	Yes		High
CPP_WARN_INVALID_NO_BUILTIN_NAMES	Invalid No Builtin Names	Yes		High
CPP_WARN_INVALID_NORETURN_ATTRIBUTE	Invalid Noreturn Attribute	Yes		High

CPP_WARN_INVALID_OFFSETOF	Invalid Offsetof	Yes		High
CPP_WARN_INVALID_PP_TOKEN	Invalid Preprocessor Token	Yes		High
CPP_WARN_LARGE_BY_VALUE_COPY	Large by Value Copy	Yes		High
CPP_WARN_LITERAL_CONVERSION	Literal Conversion	Yes		High
CPP_WARN_LITERAL_RANGE	Literal Range	Yes		High
CPP_WARN_LOGICAL_NOT_PARENTHESES	Logical Not Parentheses	Yes		High
CPP_WARN_MACRO_REDEFINED	Macro Redefined	Yes		High
CPP_WARN_MAIN_RETURN_TYPE	Main Return Type	Yes		High
CPP_WARN_MANY_BRACES_AROUND_SCALAR_INIT	Many Braces Around Scalar Init	Yes		High
CPP_WARN_MAX_UNSIGNED_ZERO	Max Unsigned Zero	Yes		High
CPP_WARN_MEMSET_TRANSPOSED_ARGS	Memset Transposed Args	Yes		High
CPP_WARN_MEMSIZE_COMPARISON	Memsize Comparison	Yes		High
CPP_WARN_MISMATCHED_NEW_DELETE	Mismatched New Delete	Yes		High
CPP_WARN_MISSING_DECLARATIONS	Missing Declarations	Yes		High
CPP_WARN_MISSING_EXCEPTION_SPEC	Missing Exception Spec	Yes		High
CPP_WARN_MULTICHAR	Multiple Characters in Character Literal	Yes		High
CPP_WARN_MULTIPLE_MOVE_VIRTUAL_BASE	Multiple Move Virtual Base	Yes		High
CPP_WARN_NEW_RETURNS_NULL	New Returns Null	Yes		High

CPP_WARN_NODEREF	Noderef Attribute	Yes		High
CPP_WARN_NON_C_TYPEDEF_FOR_LINKAGE	Non-C Typedef for Linkage	Yes		High
CPP_WARN_NON_LITERAL_NULL_CONVERSION	Non-Literal Null Conversion	Yes		High
CPP_WARN_NON_POD_VARARGS	Non-POD (Plain Old Data) Variadic Arguments	Yes		High
CPP_WARN_NON_POWER_OF_TWO_ALIGNMENT	Non-Power of Two Alignment	Yes		High
CPP_WARN_NONNULL	Null as an Argument	Yes		High
CPP_WARN_NONPORTABLE_INCLUDE_PATH	Non-Portable Include Path	Yes		High
CPP_WARN_NONTRIVIAL_MEMORY_ACCESS	Nontrivial Memory Access	Yes		High
CPP_WARN_NULL_ARITHMETIC	Null Arithmetic	Yes		High
CPP_WARN_NULL_CHARACTER	Null Character	Yes		High
CPP_WARN_NULL_CONVERSION	Null Conversion	Yes		High
CPP_WARN_NULL_DEREFERENCE	Null Dereference	Yes		High
CPP_WARN_ODR	One Definition Rule	Yes		High
CPP_WARN_ORDERED_COMPARE_FUNCTION_POINTERS	Ordered Compare Function Pointers	Yes		High
CPP_WARN_OUT_OF_SCOPE_FUNCTION	Out of Scope Function	Yes		High
CPP_WARN_OVERLOADED_SHIFT_OPERATOR_PARENTHESSES	Overloaded Shift Operator Parentheses	Yes		High
CPP_WARN_PARENTHESSES_EQUALITY	Parentheses Equality	Yes		High

CPP_WARN_POINTER_ARITH	Pointer Arithmetic	Yes		High
CPP_WARN_POINTER_BOOL_CONVERSION	Pointer Bool Conversion	Yes		High
CPP_WARN_POINTER_COMPARE	Pointer Compare	Yes		High
CPP_WARN_POINTER_INTEGER_COMPARE	Pointer Integer Compare	Yes		High
CPP_WARN_POINTER_SIGN	Pointer Sign	Yes		High
CPP_WARN_POINTER_TO_ENUM_CAST	Pointer to Enum Cast	Yes		High
CPP_WARN_POINTER_TO_INT_CAST	Pointer to Int Cast	Yes		High
CPP_WARN_POINTER_TYPE_MISMATCH	Pointer Type Mismatch	Yes		High
CPP_WARN_POTENTIALLY_EVALUATED_EXPRESSION	Potentially Evaluated Expression	Yes		High
CPP_WARN_PRAGMA_ONCE_OUTSIDE_HEADER	Pragma once Outside Header	Yes		High
CPP_WARN_QUALIFIED_VOID_RETURN_TYPE	Qualified Void Return Type	Yes		High
CPP_WARN_REDECLARED_CLASS_MEMBER	Re-Declared Class Member	Yes		High
CPP_WARN_REDUNDANT_CONSTEVAL_IF	Redundant Consteval If	Yes		High
CPP_WARN_REINTERPRET_BASE_CLASSES	Reinterpret Base Class	Yes		High
CPP_WARN_REORDER_INITIALIZER_LIST	Reorder Initializer List	Yes		High
CPP_WARN_RETURN_STACK_ADDRESS	Return Stack Address	Yes		High
CPP_WARN_RETURN_TYPE	Return Type	Yes		High

N_TYPE				
CPP_WARN_RETURN_TYPE_C_LINKAGE	Return Type C Linkage	Yes		High
CPP_WARN_SELF_ASSIGN_FIELD	Self Assign Field	Yes		High
CPP_WARN_SHIFT_COUNT_NEGATIVE	Shift Count Negative	Yes		High
CPP_WARN_SHIFT_COUNT_OVERFLOW	Shift Count Overflow	Yes		High
CPP_WARN_SHIFT_NEGATIVE_VALUE	Shift Negative Value	Yes		High
CPP_WARN_SHIFT_OP_PARENTHESES	Shift Operator Parentheses	Yes		High
CPP_WARN_SHIFT_OVERFLOW	Shift Overflow	Yes		High
CPP_WARN_SINGLE_BIT_BITFIELD_CONSTANT_CONVERSION	Single Bit Bitfield Constant Conversion	Yes		High
CPP_WARN_SIZEOF_ARRAY_ARGUMENT	Sizeof Array Argument	Yes		High
CPP_WARN_SIZEOF_ARRAY_DECAY	Sizeof Array Decay	Yes		High
CPP_WARN_SIZEOF_ARRAY_DIV	Sizeof Array Division	Yes		High
CPP_WARN_SIZEOF_POINTER_DIV	Sizeof Pointer Division	Yes		High
CPP_WARN_SIZEOF_POINTER_MEMORY_ACCESS	Sizeof Pointer Memory Access	Yes		High
CPP_WARN_STATIC_INLINE_EXPLICIT_INSTANTIATION	Static Inline Explicit Instantiation	Yes		High
CPP_WARN_STATIC_LOCAL_IN_INLINE	Static Local in Inline	Yes		High
CPP_WARN_STATIC_SELF_INIT	Static Self Init	Yes		High
CPP_WARN_STRING_COMPARE	String Compare	Yes		High

CPP_WARN_STRING_PLUS_CHAR	String Plus Char	Yes		High
CPP_WARN_STRING_PLUS_INT	String Plus Int	Yes		High
CPP_WARN_STRLCOPY_STRLCAT_SIZE	Strncpy Strlcat Size	Yes		High
CPP_WARN_STRNCAT_SIZE	Strncat Size	Yes		High
CPP_WARN_SWITCH	Switch Statements	Yes		High
CPP_WARN_SWITCH_BOOL	Switch Bool	Yes		High
CPP_WARN_TAUTOLOGICAL_CONSTANT_COMPARE	Tautological Constant Compare	Yes		High
CPP_WARN_TAUTOLOGICAL_CONSTANT_OUT_OF_RANGE_COMPARE	Tautological Constant Out of Range Compare	Yes		High
CPP_WARN_TAUTOLOGICAL_POINTER_COMPARE	Tautological Pointer Compare	Yes		High
CPP_WARN_TAUTOLOGICAL_UNDEFINED_COMPARE	Tautological Undefined Compare	Yes		High
CPP_WARN_TENTATIVE_DEFINITION_INCOMPLETE_TYPE	Tentative Definition Incomplete Type	Yes		High
CPP_WARN_TRIGRAPHS	Trigraphs	Yes		High
CPP_WARN_TYPE_SAFETY	Type Safety	Yes		High
CPP_WARN_TYPEDEF_REDEFINITION	Typedef Redefinition	Yes		High
CPP_WARN_TYPENAME_MISSING	Typename Missing	Yes		High
CPP_WARN_UNDEFINED_BOOL_CONVERSION	Undefined Bool Conversion	Yes		High
CPP_WARN_UNDEFINED_INLINE	Undefined Inline	Yes		High

CPP_WARN_UNDEFINED_INTERNAL	Undefined Internal	Yes		High
CPP_WARN_UNDEFINED_VAR_TEMPLATE	Undefined Var Template	Yes		High
CPP_WARN_UNEVALUATED_EXPRESSION	Unevaluated Expression	Yes		High
CPP_WARN_UNGUARDED_AVAILABILITY_NEW	Unguarded Availability New	Yes		High
CPP_WARN_UNICODE_ESCAPE	Unicode Escape Sequences	Yes		High
CPP_WARN_UNICODE_HOMOGLYPH	Unicode Homoglyph	Yes		High
CPP_WARN_UNICODE_WHITESPACE	Unicode Whitespace	Yes		High
CPP_WARN_UNICODE_ZERO_WIDTH	Unicode Zero Width	Yes		High
CPP_WARN_UNKNOWN_DIRECTIVES	Unknown Directives	Yes		High
CPP_WARN_UNKNOWN_ESCAPE_SEQUENCE	Unknown Escape Sequence	Yes		High
CPP_WARN_UNQUALIFIED_STD_CAST_CALL	Unqualified Standard Cast Call	Yes		High
CPP_WARN_UNSEQUENCED	Unsequenced Modifications	Yes		High
CPP_WARN_UNSUPPORTED_AVAILABILITY_GUARD	Unsupported Availability Guard	Yes		High
CPP_WARN_UNSUPPORTED_FRIEND	Unsupported Friend	Yes		High
CPP_WARN_UNUSED_COMPARISON	Unused Comparison	Yes		High
CPP_WARN_UNUSED_RESULT	Unused Result	Yes		High
CPP_WARN_UNUSED_VALUE	Unused Value	Yes		High
CPP_WARN_UNUSED_VOLATILE	Unused Volatile	Yes		High

D_VOLATILE_LVALUE	Lvalue			
CPP_WARN_USER_DEFINED_LITERALS	User Defined Literals	Yes		High
CPP_WARN_VARIADIC_ARGS	Variadic Arguments	Yes		High
CPP_WARN_VEXING_PARSE	Vexing Parse Occurrences	Yes		High
CPP_WARN_VISIBILITY	Visibility of Declarations	Yes		High
CPP_WARN_VOID_POINTER_TO_ENUM_CAST	Void Pointer to Enum Cast	Yes		High
CPP_WARN_VOID_POINTER_TO_INT_CAST	Void Pointer to Int Cast	Yes		High
CPP_WARN_VOID_POINTER_DEREFERENCE	Void Pointer Dereference	Yes		High
CPP_WARN_WRITABLE_STRINGS	Writable Strings	Yes		High
CPP_WARN_XOR_USED_AS_POWER	Xor Used as Power	Yes		High
STI_FRIENDS	Unnecessary Friends	Yes	Recommended	High
STI_SPECIAL_MEMBER_FUNCTIONS	Special Member Functions	Yes	Recommended	High
STI_UNUSED	Unused Entities	Yes	Recommended	High