BS 3811 : 1984

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British Standard Glossary of

Maintenance management terms in terotechnology

Glossaire des termes de maintenance utilisés en térotechnologie

Begriffe aus der Instandhaltungs- und Wartungstechnik

British Standards Institution

Contents

Foreword

This British Standard has been prepared under the direction of the Quality Management and Statistics Standards Committee.

The previous edition of BS 3811 was published in 1974 and contained 47 terms with definitions. In this second revision of this standard attention has been paid to both national and international developments in terminology, not only in maintenance itself but also in related subjects within the context of terotechnology. It is not intended that the non-maintenance sections should be exhaustive but rather that they should include the sometimes specialized terms with which the maintenance manager may be confronted in his communication with other disciplines, such communication being an essential of terotechnology. This revision of this British Standard supersedes BS 3811 : 1974 which is withdrawn.

In the interest of European and international standardization, the opportunity has been taken to adopt terms and definitions from the EOQC Glossary: 5th Edition (1981) which is similar to BS 4778 : 1979. Account has also been taken of the work of such bodies as REHVA (Representatives of European Heating and Ventilating Associations), IMEKO (International Measurement Confederation) and EFNMS (European Federation of National Maintenance Societies). Attention has also been paid to the recent developments of maintenance glossaries by the national standards-making organizations of France, Switzerland and West Germany. To assist users of this glossary a 'source' column has been introduced to enable the user to refer to the document from which the definition has been taken to obtain more information about that and related terms. In some instances, in this glossary, definitions taken from other standards have been combined to form a complete definition.

To avoid unnecessary duplication reference is made in appendix A to publications containing related terms.

The relationship of various forms of maintenance and the relationship of various times are shown in figures 1 and 2 respectively.

This glossary of terms has been arranged in conceptual form instead of alphabetically to assist the user by having all related terms together. At the end of this glossary is an index with a reference to the term number, to assist the user in finding any one particular term with its definition.

The terms in section nine represent only a small number that are coming into use in the field of operational research, and it is intended to include a fuller section in the next revision of this standard.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

British Standard Glossary of

Maintenance management terms in terotechnology

0.1 Scope

This document presents in a structured form terms and definitions designed to aid maintenance managers in terotechnological communication with disciplines such as reliability, quality control, cost control, energy conservation and information and computer application.

NOTE. The titles of the publications referred to in this standard are listed on the inside back cover.

Section one. General terms

No.	Term	Source	Definition
101	**terotechnology**		A combination of management, financial, engineering, building and other practices applied to physical assets in pursuit of economic *life cycle costs.* NOTE. Its practice is concerned with the specification and design for *reliability* and *maintainability* of plant, machinery, equipment, buildings and structures, with their installation, *commissioning*, operation, *maintenance, modification* and replacement, and with *feedback* of information on design, performance and *costs.*
102	**maintenance**	EOQC	The combination of all technical and associated administrative actions intended to retain an *item* in, or restore it to , a state in which it can perform its required function. NOTE 1. The required function may be defined as a stated condition. *NOTE 2. See also section two for terms relating to *maintenance.*
103	**life cycle costs**		The total *cost* of ownership of an *item* of materiel, taking into account all the *costs* of acquisition, personnel training, operation, *maintenance*, modification and disposal, for the purpose of making decisions on new or changed requirements and as a control mechanism in service, for existing and future items. NOTE. See also section three for terms relating to *life cycle costs.*
104	**reliability**	EOQC	The ability of an *item* to perform a required function under stated conditions for a stated period of time. NOTE 1. The term *reliability* is also used as a *reliability* characteristic denoting a probability of success, or a success ratio. *NOTE 2. See also clause 26 of BS 4778 : 1979. *NOTE 3. See also section four for terms relating to *reliability.*
105	**quality control**	EOQC	The operational techniques and the activities which sustain a quality of product or service that will satisfy given needs; also the use of such techniques and activities. *NOTE 1. See also the notes given in the EOQC Glossary. *NOTE 2. See also section five for terms relating to *quality control.*
106	**cost control**		The regulation by executive action of the *costs* of operating an undertaking, particularly where such action is guided by *cost* accounting. NOTE. See also section six for terms relating to *cost control.*

*This note does not form part of the EOQC definition.

No.	Term	Source	Definition
107	**energy management**		The management of the storage, conversion, distribution and utilization of energy directed to the economic provision of required services and the elimination of avoidable losses. NOTE. See also section seven for terms relating to *energy management.*
108	**information and computer application**		The means by which information is acquired, stored, processed and analysed in a systematic sequence of operations. NOTE. See also section eight for terms relating to *information and computer application.*
109	**item**	EOQC	(a) A part, equipment, sub-system or system that can be individually considered and separately examined or tested; or (b) An actual or conventional object on which a set of observations may be made; or (c) Defined quantity of material on which a set of observations may be made; or (d) An observed value, either qualitative (attributes) or quantitative (measured).
110	**safety**	EOQC	The freedom from unacceptable risks of personal harm. NOTE 1. *Safety* is defined in the context of risk of personal harm. It is traceable quantitatively in decision making on acceptable risks. *NOTE 2. See also clause **13** of BS 4778 : 1979. *NOTE 3. It was previous practice for *safety* to cover the freedom from unacceptable risks of damage to plant, equipment and buildings.
111	**specification**	EOQC	The document that describes in detail the requirements with which the product or service has to comply. NOTE 1. *Specifications* may refer to drawings, patterns or other relevant documents, and may also indicate the means and the criteria whereby *compliance* can be checked. NOTE 2. For particular types of *specification* see the entries given in the EOQC Glossary under the heading Target, Functional, Product, Materials, Process, Inspection, Test, Acceptance, Installation, Use, Maintenance and Disposal *specification.* In practice, the information given under these headings may be collated and treated as a single comprehensive *specification*, but in the initial drafting it is recommended that they are treated separately so that each is given its full specialized attention. This subject is of paramount importance in the achievement of quality; in many cases poor products or services are the result of inadequate, ambiguous or imprecise *specifications.* NOTE 3. For some services the requirements are given verbally rather than by means of a written *specification.*
112	**certification**	EOQC	The authoritative act of documenting compliance with requirements. NOTE 1. The requirements can relate to personnel, processes, products, organizations and services. NOTE 2. *Certification* is an area in which quality assurance impinges on regulations, approvals and requirements for manufacturers to satisfy legal obligations. It is a means by which a producer can demonstrate *compliance* with these constraints. *NOTE 3. See also clause **24** of BS 4778 : 1979.
113	**modification**	5191	An alteration made to a physically existing *item* usually resulting in an improvement in performance and generally carried out as the result of a design change (e.g. replacing a plain bearing by a sealed roller bearing). NOTE. Performance includes *reliability, maintainability* and financial considerations.

*This note does not form part of the EOQC definition.

No.	Term	Source	Definition
114	**a service** (n)	4884	A supply of air, electricity, gas, water, etc.
115	**to service** (v)		To replenish the consumables needed to keep an *item* in operating condition.
116	**procurement**		All managerial, technical, contractual, administrative and physical actions by or on behalf of an organization requiring goods, materials or services in obtaining the requirements.

Section two. Maintenance terms

NOTE 1. The term *defect* now has a definite meaning within the law relating to product liability and should not be used as a broad *maintenance* term; the term *fault* should be used instead. See section five for the strict definition of *defect* together with all the alternatives, e.g. *blemish, imperfection* and *nonconformity.*

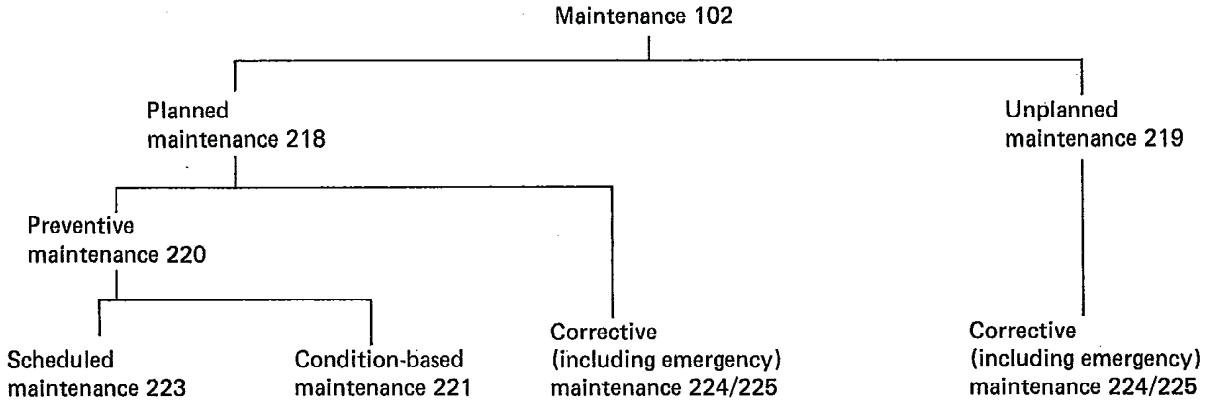
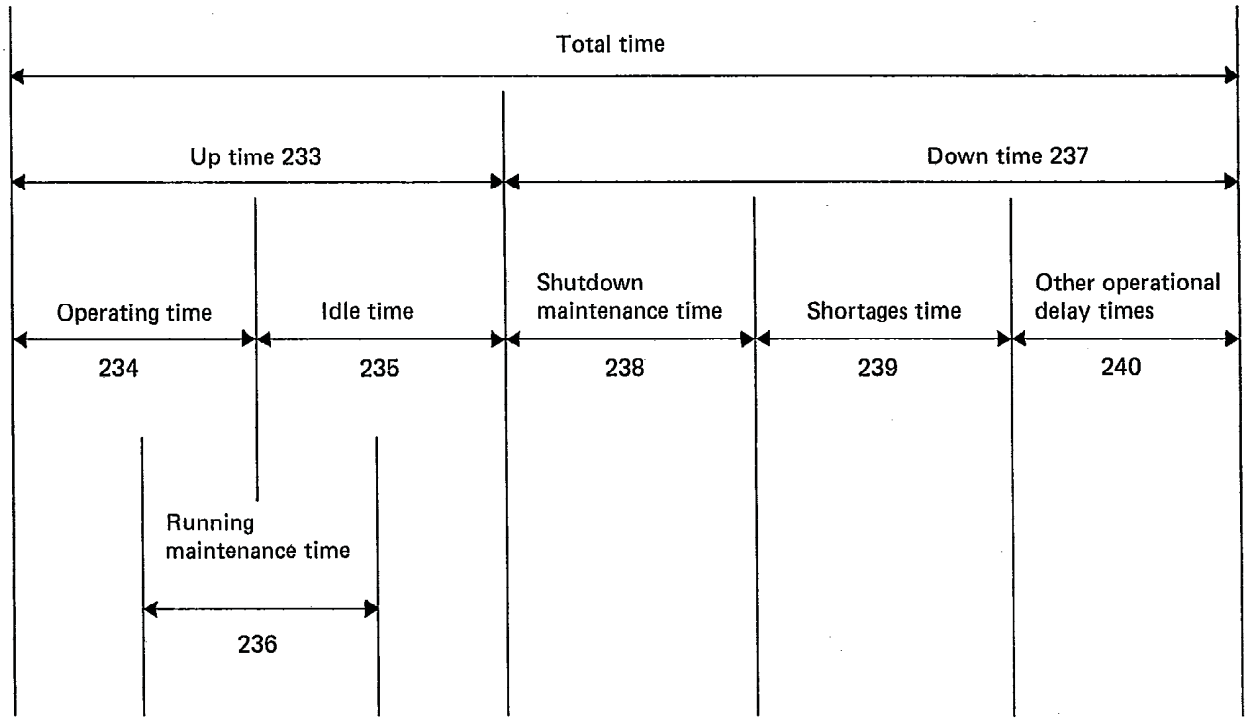


Figure 1. Chart showing relationship of various forms of maintenance



NOTE. In the above 'time' means duration of time and not an instant of time.

Figure 2. Chart showing relationship of various times

No.	Term	Source	Definition
NOTE 2. The term *maintenance* has already been defined in section one (see **102**).			
201	**fault**		An unexpected deviation from requirements which would require considered action regarding the degree of acceptability. NOTE. See also note 1 at the beginning of this section.
202	**failure**	EOQC	The termination of the ability of an *item* to perform a required function.
203	**maintainability**	EOQC	The ability of an *item*, under stated conditions of use, to be retained in or restored to a state in which it can perform its required functions, when *maintenance* is performed under stated conditions and using prescribed procedures and resources. NOTE 1. *Maintainability* can, depending on the particular analysis situation, be stated by one or several *maintainability* characteristics, such as discrete probability distribution, mean *active maintenance time*, etc. NOTE 2. The value of the *maintainability* characteristic may differ for different *maintenance* situations. NOTE 3. When the term *maintainability* is used as a *maintainability* characteristic, it always denotes the probability that the active *maintenance* is carried out within a given period of time. NOTE 4. The required function may be defined as a stated condition.
204	**maintainability requirements**	4778	A statement of the principal means and frequency of preventing an *item* from failing or of restoring its function when it has failed. *NOTE. Compare with *maintenance requirements.*
205	**maintenance policy**		A strategy within which decisions on *maintenance* are taken.
206	**maintenance management**		The organization of *maintenance* within an agreed policy.
207	**technical manual**		A publication that communicates appropriately and effectively specific direction, data and information to cover the subjects of: (a) purpose and planning (what it is for); (b) operating (how to use it); (c) technical description (how it works); (d) handling, installation, storage transit (how to prepare it for use); (e) *maintenance instructions* (how to keep it working); (f) *maintenance schedules* (what is done and when); (g) *parts lists* (what it consists of); (h) modification instructions (how to change it); (i) *disposal instructions* (how to dispose of it). It is provided for those involved with managing, operating, maintaining and provisioning for all the materiel. NOTE. See also BS 4884.
208	**operating instructions**		The document that describes in detail the methods of starting up, shutting down, controlling and monitoring the materiel under all foreseeable conditions. NOTE. This document forms part of the *technical manual.*
209	**installation instructions**		The document that describes in detail the procedure for installing the product including, if necessary, the procedure for unpacking and preparation prior to installation. NOTE. This document forms part of the *technical manual.*
210	**commissioning**	5643	The advancement of an installation from the stage of static completion to full working order to specified requirements.

*This note does not form part of the definition given in BS 4778.

No.	Term	Source	Definition
211	**maintenance requirements**	EOQC	A statement of the nature of the *maintenance* method, in particular the skill of the personnel involved, their facilities and the duration and frequency of *maintenance* action. *NOTE 1. This information forms part of the *technical manual.* *NOTE 2. Compare with *maintainability requirements.*
212	**maintenance instructions**		The document that describes in detail the procedure and circumstances for carrying out *maintenance.* NOTE. This document forms part of the *technical manual.*
213	**maintenance schedule**		A comprehensive list of *items* and the *maintenance* required, including the intervals at which *maintenance* should be performed. NOTE. This document forms part of the *technical manual.*
214	**maintenance programme**		A time based plan allocating specific *maintenance* tasks to specific periods.
215	**parts list**		A definitive list of all *items* which form the materiel. NOTE. This document forms part of the *technical manual.*
216	**disposal instructions**		The document that describes in detail the method and precautions to be observed in discarding or otherwise disposing of materiel when it has failed or is no longer required for any reason. NOTE. This document forms part of the *technical manual.*
217	**maintenance planning**		Deciding in advance the jobs, methods, materials, tools, machines, labour, time required and timing of *maintenance* actions.
218	**planned maintenance**		The *maintenance* organized and carried out with forethought, control and the use of records to a predetermined plan. NOTE. *Preventive maintenance* is always part of *planned maintenance; corrective maintenance* may or may not be.
219	**unplanned maintenance**		The *maintenance* carried out to no predetermined plan.
220	**preventive maintenance**	EOQC	The *maintenance* carried out at predetermined intervals or corresponding to prescribed criteria and intended to reduce the probability of *failure* or the performance degradation of an *item.*
221	**condition based maintenance**		The *preventive maintenance* initiated as a result of knowledge of the condition of an *item* from routine or continuous monitoring.
222	**condition monitoring**		The continuous or periodic measurement and interpretation of *data* to indicate the condition of an *item* to determine the need for *maintenance.* NOTE. *Condition monitoring* is normally carried out with the *item* in operation, in an operable state or removed but not subject to major stripdown.
223	**scheduled maintenance** routine maintenance *deprecated*		The *preventive maintenance* carried out to a predetermined interval of time, number of operations, mileage, etc.
224	**corrective maintenance**	EOQC	The *maintenance* carried out after a *failure* has occurred and intended to restore an *item* to a state in which it can perform its required function.
225	**emergency maintenance**		The *maintenance* which it is necessary to put in hand immediately to avoid serious consequences.
226	**maintenance history**		A *history record* which is used for the purpose of *maintenance planning.*

*This note does not form part of the EOQC definition.

No.	Term	Source	Definition
227	**availability**	4778	The ability of an *item* (under combined aspects of its *reliability, maintainability* and *maintenance* support) to perform its required function at a stated instant of time or over a stated period of time. NOTE 1. The term *availability* is also used as an *availability* characteristic denoting either the probability of performing at a stated instant of time or the probability related to an interval of time. NOTE 2. When *availability* is used as a characteristic it has to be associated with a modifier. NOTE 3. The *availability* of an *item* does not necessarily imply that it is performing, but that it is in a state to perform.
228	**observed mean availability**	EOQC	The ratio of the cumulative time for which an *item* has been in a condition to perform a required function to the cumulative time under observation, or at instants of time (chosen by a sampling technique), the mean of the proportion of a number of nominally identical *items* that performed or have been in a condition to perform their required function. NOTE 1. When one limiting value is given, unless otherwise stated this is usually the lower limit. NOTE 2. The *observed mean availability* is to be associated with a stated period of time and with stated conditions of use and *maintenance.*
229	**observed instantaneous availability**	EOQC	At a stated instant of time the proportion of occasions when an *item* has performed or has been in a condition to perform a required function. NOTE 1. Occasions can refer to either a number of *items* at a single instant of time, or to one or more *items* at a series of instants. NOTE 2. The run-up time is counted in *down time* when the equipment is brought into use for the first time. NOTE 3. The *observed instantaneous availability* has to be associated with a period of time and with stated conditions of use and *maintenance.*
230	**outage***		The state of an *item* being unable to perform its required function. NOTE 1. *Outage* may be measured in terms of numbers of outages per period of time or as a proportion of *outage* time to total time. NOTE 2. *Outage* may be *'scheduled'* or *'forced'.*
231	**scheduled outage*** planned outage *deprecated*		*Outage* due to the programmed taking out of service of an *item.*
232	**forced outage***		*Outage* due to the unscheduled putting out of service of an *item.*
233	**up time**	EOQC	The period of time during which an *item* is in a condition to perform its intended function.
234	**operating time**	EOQC	The period of time during which an *item* performs its intended function.
235	**idle time**	5191	The period of time during which an *item* is available to perform its intended function, but is not used due to a shortage of work, tooling, material, operators, etc. †NOTE. See figure 5 of BS 5191 : 1975 for a diagrammatic representation of various times.
236	**running maintenance time**		The period of time during which *maintenance* is carried out whilst the *item* is in service.

*This term is used in the electricity supply industry.

†This note does not form part of the definition given in BS 5191.

No.	Term	Source	Definition
237	**down time**		The period of time during which an *item* is not in a condition to perform its intended function. NOTE 1. The *down time* of an *item* will be made up of *active maintenance time* and delays due to reporting, awaiting labour, awaiting spares, facilities, movement, etc. NOTE 2. Unless otherwise stated, *down time* of an *item*, due to *failure*, is considered to commence at the instant the *item* is determined to have failed. NOTE 3. Unless otherwise stated, *down time* will include any additional time necessary to reach the same stage in the working programme of the *item* as at the time of *failure*. NOTE 4. See also definition *idle time*.
238	**shutdown maintenance time**		The period of time during which *maintenance* is carried out whilst the *item* is out of service. NOTE. The *item* may be out of service due to either a planned shutdown or a breakdown.
239	**shortages time**		The period of time during which the *item* is unable to perform due to shortages of labour, spares, facilities, movement, etc.
240	**other operational delay times**		The period of time during which the *item* is unable to perform due to a *failure* which has not been scheduled for action.
241	**maintenance time**	EOQC	The period of time during which *maintenance* actions, including delays inherent in the *maintenance* operations, are performed on an *item* either manually or automatically. NOTE 1. The inherent delays include those attributable to design or to prescribed *maintenance* procedures. NOTE 2. *Maintenance* may be carried out while the *item* is performing its intended function.
242	**active maintenance time**	EOQC	The time during which one or more persons are working, or an automatic process is taking place, on an *item* to effect *maintenance*.
243	**observed mean active maintenance time**	EOQC	The ratio of the sum of the observed *active maintenance times* to the total number of *maintenance* actions.
244	**assessed mean active maintenance time**	EOQC	The mean *active maintenance time* determined by a limiting value or values of the confidence interval associated with a stated confidence level based on the same *data* as the *observed mean active maintenance time* of nominally identical *items*. NOTE 1. The source of the *data* shall be stated. NOTE 2. Results can be accumulated (combined) only when all conditions are similar. NOTE 3. It should be stated whether one-sided or two-sided interval is being used. NOTE 4. The assumed underlying distribution of *mean active maintenance times* shall be stated. NOTE 5. When one limiting value is given this is usually the upper limit.
245	**predicted mean active maintenance time**	EOQC	The mean *active maintenance time* of an *item* calculated by taking into account the *reliability characteristics* and the mean *active maintenance time* of all its parts and other relevant factors according to the stated conditions.
246	**corrective maintenance time** repair time *deprecated*	EOQC	That part of the *maintenance time*, including that due to logistic delays, during which *corrective maintenance* is performed on an *item*.
247	**active corrective maintenance time** active repair time *deprecated*	EOQC	That proportion of the *active maintenance time* in which repairs are carried out.

No.	Term	Source	Definition
248	**preventive maintenance time**	EOQC	That part of the *maintenance time* during which *preventive maintenance* is performed on an *item*, including the time attributable to logistic delays inherent in the *preventive maintenance* operations. NOTE 1. The inherent delays include delays attributable to design or to prescribed *maintenance* procedures. NOTE 2. *Preventive maintenance time* does not include any time taken to maintain an *item* that has been replaced.
249	**active preventive maintenance time**	EOQC	That proportion of the *active maintenance time* in which *preventive maintenance* is carried out.
250	**scheduled outage duration***		Within a specified period of time, the period of time during which an *item* is not available to perform its function because it is withdrawn from service according to programme.
251	**forced outage duration***		Within a specified period of time, the period of time during which an *item* is incapable of performing its function because of a *fault*.
252	**outage rate***		For a particular class of *outage* and a specified period of time, the quotient of the number of *outages* to the *up time* for an *item*, e.g. *scheduled outage* rate, *forced outage* rate, etc.
253	**utilization factor**		The ratio of the actual time in use to the *availability* over a stated interval of time. NOTE. If the materiel is capable of variable output, the term is usually defined as 'the ratio of the actual output to the maximum possible output during the time that the materiel was available, measured over the stated interval of time'.
254	**breakdown**		*Failure* resulting in the non-availability of an *item*. NOTE. See also definition for *availability*.
255	**repair**		To restore an *item* to an acceptable condition by the renewal, replacement or mending of worn, damaged or decayed parts.
256	**overhaul**		A comprehensive *examination* and *restoration* of an *item*, or a major part thereof, to an acceptable condition.
257	**restoration**		*Maintenance* actions intended to bring back an *item* to its original appearance or state.
258	**rehabilitation** refurbishment *deprecated*		Extensive work intended to bring plant or buildings up to current acceptable functional conditions, often involving improvements.
259	**running maintenance**		*Maintenance* which can be carried out whilst the *item* is in service.
260	**shut down maintenance**		*Maintenance* which can only be carried out when the *item* is out of service.
261	**examination**		A comprehensive *inspection* supplemented by measurement and physical testing in order to determine the condition of an *item*.
262	**inspection**	EOQC	The process of measuring, examining, testing, gauging or otherwise comparing the unit with the applicable requirements.
263	**survey**		An *examination*, the written report of which would include a recommendation for action.

*This term is used in the electricity supply industry.

No.	Term	Source	Definition
264	**test**	EOQC	A critical trial or *examination* of one or more properties of characteristics of a material, product, set of observations, etc. *NOTE. See also clause 21 of BS 4778 : 1979.
265	**to clean** (v)		To reduce contamination to an acceptable level.
266	**work requisition**		A document requesting work to be carried out.
267	**work specification**		A document describing the way in which the work is to be carried out. It may define the materials, tools, time, standards.
268	**work order** job card *deprecated*		A written instruction detailing work to be carried out.
269	**permit to work**		A signed document, authorizing access to an *item*, which defines conditions, including safety precautions, under which work may be carried out. This may include a document, signed on completion of *maintenance*, stating that an *item* is safe and ready for use.
270	**feedback**		A written or oral report of the success or *failure* of an action to achieve its desired result which can be used to influence design, performance and *costs.*
271	**job report**		A statement recording the work done and the condition of the *item.*
272	**stock** inventory *deprecated*	5191	All the tangible material assets of a company other than the fixed assets; comprising all the finished or saleable products, all the *items* to be incorporated into the finished products, and all the *items* to be consumed in the process of manufacturing the product or in the carrying out of the business. NOTE 1. *Inventory*, when used as a generic term, is synonymous with *stock*. This use is common in the USA and extensive in the UK. NOTE 2. An *inventory*, when used specifically, is defined as a list of tangible material assets. For production control purposes this can be limited to being a list of *stock*.
273	**spares stock**	5191	*Items* which are held available for *maintenance* purposes or for the replacement of defective parts. NOTE. If *spares stock* is associated with a saleable product it is regarded as direct stock, whereas if associated with the fixed assets (e.g. plant, vehicles) it is regarded as indirect stock.
274	**consumable stock**		Expendable materials (e.g. oils, lubricants, nails, packing) that are held available for *maintenance* purposes.
275	**storage life** shelf life *deprecated*	EOQC	The specified length of time prior to use for which *items* which are inherently subject to deterioration are deemed to remain fit for use under prescribed conditions.
276	**daywork**		Charging for work for which control standards have been determined (e.g. quality) but which cannot readily be measured in accordance with general principles. NOTE. The normal practice is to record labour, materials and plant used as the work proceeds, and to charge at standard rates plus agreed on-costs.
277	**waiting time**		The period of time for which an operator is available for production but is prevented from working.

*This note does not form part of the EOQC definition.

No.	Term	Source	Definition
278	**nugatory time** non productive time *deprecated*		That portion of time for which payment is made but for which no *service* is rendered.
279	**diagnosis**		The art or act of deciding from symptoms the nature of a *fault.*
280	**diagnostic**		Of or assisting *diagnosis.*

Section three. Life cycle cost terms

NOTE. The term *life cycle costs* has already been defined in section one (see **103**).

301	**life cycle costing**		The technique of considering *life cycle costs.*
302	**acquisition costs**		The total *costs* to the materiel owner of acquiring an *item* of materiel and bringing it to the condition where it is capable of performing its intended function. NOTE. This includes the financial effects of activities involving the purchase of goods and services extra-murally to the organization and/or of providing necessary goods and services intra-murally to the organization.
303	**running costs** costs in use *deprecated*		The total *costs* to the materiel owner of the operation, *maintenance* and modification of an *item* of materiel. NOTE. The term *costs in use* is normally applied to building.
304	**disposal costs**		The total *costs* to the materiel owner of disposing of an *item* of materiel when it has failed or is no longer required for any reason. NOTE. These *costs* may be either positive or negative.

Section four. Reliability terms

NOTE. The term *reliability* has already been defined in section one (see **104**).

401	**reliability characteristics**		Quantities used to express *reliability* in numerical terms. NOTE. The six characteristics of *reliability*, together with all the variations are given in clause **31** of BS 4778 : 1979.
402	**design for reliability**		The process of task recognition and problem solving to enable an *item* to perform a required function under stated conditions for a stated period of time. NOTE. All *items* should be designed to be as reliable as required for the efficient performance of the *item* using the parameters given in clause **17** of BS 4778 : 1979.
403	**reliability tests**		A critical trial or *examination* of an *item* to determine if it will perform a required function under stated conditions for a stated period of time. NOTE. *Reliability tests* should be specified and carried out under the headings given in clause **30** of BS 4778 : 1979.
404	**reliability data**		Data on characteristics permitting quantitative evaluation of *reliability.* NOTE. Details of the different kinds of data which it is normal to collect are given in clause **32** of BS 4778 : 1979.
405	**failure**	EOQC	The termination of the ability of an *item* to perform a required function. *NOTE. See also clause **27** of BS 4778 : 1979.
406	**failure classification**		The allocation of a *failure* to one of the classifications under the headings given in clause **28** of BS 4778 : 1979.
407	**failure report**		A document reporting departure of an *item* from an *acceptable condition.*

*This note does not form part of the EOQC definition.

Section five. Quality control terms

NOTE. The term *quality control* has already been defined in section one (see **105**).

No.	Term	Source	Definition
501	**defect**	EOQC	A departure of a quality characteristic from its intended level or state that occurs with a severity sufficient to cause an associated product or *service* not to satisfy intended normal, or reasonably foreseeable, usage requirements. *Defects* will generally be classified by their degree of seriousness such as: *Class 1. Very serious:* Leads directly to severe injury or catastrophic economic loss. *Class 2. Serious:* Leads directly to significant injury or significant economic loss. *Class 3. Major:* Related to major problems with respect to intended normal, or reasonably foreseeable, use. *Class 4. Minor:* Related to minor problems with respect to intended normal, or reasonably foreseeable, use. NOTE 1. The word *defect* is appropriate for use when a quality characteristic of a product or *service* is evaluated in terms of usage (as contrasted to *conformance* to *specifications*). NOTE 2. *Defects* of classes 1 and 2 are also designated 'critical *defects*' and may have particular significance in relation to liability. *NOTE 3. The term *defect* should only be used in this specific sense and it should be distinguished from *blemish, imperfection* and *nonconformity.* *NOTE 4. The distinctions between these definitions is essential to cope with product liability problems. Because the term *defect* now has a definite meaning within the law it should not be used as a broad *maintenance* term. See *fault.* *NOTE 5. The draft EEC Directive on Product Liability states that 'A product is defective when, being used for the purpose for which it is apparently intended, it does not provide for persons or property the *safety* which a person is entitled to expect, taking into account all the circumstances, including its presentation and the time at which it was put into circulation'.
502	**blemish**	EOQC	An *imperfection* that occurs with a severity sufficient to cause awareness, but that should not cause any real impairment with respect to intended normal, or reasonably foreseeable, usage requirements. NOTE. The word *blemish* is appropriate for use when a quality characteristic of a product or *service* is evaluated in terms of customer awareness (as contrasted to simply *conformance* to *specifications*). There may be synonyms for *blemish* more appropriate to particular products or *services.*
503	**blemished unit**	EOQC	A unit of product or *service* containing at least one *blemish.*
504	**imperfection**	EOQC	A departure of a quality characteristic from its intended level or state without any association with *conformance* to *specification* requirements or to the usability of a product or *service.* NOTE 1. Usually *imperfections* will be rated on a severity scale or measured as deviations and, unless of high severity of magnitude, would be reasonably expected in a product or *service* of acceptable quality. NOTE 2. An alternative term for *imperfections* is 'quality characteristic departure'. NOTE 3. For quality characteristics where there is no designated intended level so that a 'departure' is not definable, 'observed measurements' will serve the same role as *imperfection* in providing information. In some cases where the differences become part of the product description, it may be more appropriate to use a term such as 'variant'.

*This note does not form part of the EOQC definition.

No.	Term	Source	Definition
			NOTE 4. The term *imperfection* is a general classification. Each *imperfection* type will usually be identified by its specific name (e.g. scratch, weight, missing part, etc.). The severity or magnitude indicator may be a measurement deviation, a 'guide' identification or some other appropriate scale rating. Some *imperfections* may involve a large number of severity or magnitude classifications while others, such as a missing part, may involve only one. NOTE 5. The very existence of a specified tolerance is recognition that achieving 'perfection' for every quality characteristic is essentially impractical on an economic basis and, under usual circumstances, impossible in a physical sense. In many situations 'perfection' cannot be defined other than as some desired aim.
505	**compliance**	EOQC	An affirmative indication or judgement that the supplier of a product or *service* has met the requirements of the relevant *specifications*, contract or regulation; also the state of meeting the requirements. NOTE. Refers to delivery of contract *items* whereas *conformance* refers to a manufacturing or distribution stage.
506	**conformance**	EOQC	An affirmative indication or judgement that a product or *service* has met the requirements of the relevant *specifications*, contract or regulation; also the state of meeting the requirements. NOTE. In *quality control* usage, *conformance* customarily refers to an assessment not dependent on the passage of time in product use, as contrasted to *reliability* which has a time connotation. See also the comment under *compliance*.
507	**conformity**	EOQC	The fulfilment by an *item* or *service* of *specification* requirements. NOTE. *Conformity* may refer to a single quality characteristic in control or appraisal phases or to the entire set of *specification* requirements.
508	**nonconformity**	EOQC	A departure of a quality characteristic from its intended level or state that occurs with a severity sufficient to cause an associated product or *service* not to meet a *specification* requirement. NOTE. In some situations, requirements coincide with customer usage requirements (see definition of *defect*). In other situations, they may not coincide, being either more or less stringent, or the exact relationship between the two is not fully known or understood. When a quality characteristic of a product or *service* is 'evaluated' in terms of *conformance* to *specification* requirements, the use of the term *nonconformity* is appropriate. The emphasis on the word 'evaluated' is that of making a decision concerning *conformance*, whereas an *imperfection* rating basically deals with a measurement process. Contractual obligations, stated or implied, may be involved, or the *specification* requirements may be purely internal and deliberately set tighter than the customer requirements.
509	**acceptable condition**		The condition agreed for each particular usage. NOTE. Attention is drawn to the fact that statutory requirements may exist governing minimum *acceptable conditions*.
510	**calibration**	4778	All the operations for the purpose of determining the values of the errors of a measuring instrument (and, if necessary, to determine other metrological properties). NOTE 1. The metrological usage of the term *calibration* is often extended to include operations such as adjustment, gauging, scale graduation, etc. NOTE 2. This definition is the same as that given in 3.6 of BS 5223 : 1975.

Section six. Cost control terms

NOTE. The term *cost control* has already been defined in section one (see **106**).

No.	Term	Source	Definition
601	**budgetary control**	5191	The establishment of budgets relating the responsibilities of executives to the requirements of a policy, and the continuous comparison of actual with budgeted results either to secure by individual action the objective of that policy or provide a basis for its revision.
602	**estimate**		An assessment based on a detailed breakdown of the resources, etc., involved, of the *cost* expected to arise in respect of a given thing or *service*. This is usually calculated before the expenditure occurs, or before the true *costs* are known.
603	**costing methods, principles and techniques**		All those methods, principles and techniques used in *cost control*. NOTE. See **B.1** of BS 5191 : 1975.
604	**cost centre**	5191	A location, person or *item* of equipment (or group of these) in respect of which *costs* may be ascertained and related to *cost* units, e.g. processes *cost centre*, production *cost centre, service cost centre,* etc.
605	**cost(s)**	4778	The expenditure (actual or notional) incurred on, or attributable to, a given thing. NOTE. The word *cost* can rarely stand on its own, and should be qualified as to its nature or limitations (e.g. historical, variable, etc.) and related to a particular thing or 'object of thought' (e.g. a given quantity or unit of goods made or *services* performed).
606	**quality related costs**	4778	The expenditure incurred in *defect* prevention and appraisal activities plus the losses due to internal and external failure. *NOTE. See BS 6143 for guidance on the use of these *costs*, detailed briefly in **607, 608, 609** and **610.**
607	**prevention costs**	EOQC	The *cost* of any action taken to improve the quality system, e.g. to investigate, prevent or reduce the risk of *defects* and *failures.* NOTE. *Prevention costs* include the *cost* of planning, setting up and maintaining the *quality control* system.
608	**appraisal costs**	EOQC	The *cost* of assessing the achievement of specified quality, e.g. *costs* of *inspection.* NOTE. *Appraisal costs* can include the *cost* of inspecting, testing, etc. carried out during and on completion of manufacture.
609	**internal failure costs**		The *costs* arising within the manufacturing organization due to *failure.*
610	**external failure costs**		The *costs* arising outside the manufacturing organization due to *failure.*
611	**cost function**	EOQC	An expression of the way *cost* varies with a given parameter.
612	**elements of cost**		All those *items* which are considered individually and which are combined together to form the total *cost(s).* NOTE. See **B.3** of BS 5191 : 1975.

*This note does not form part of the definition given in BS 4778.

No.	Term	Source	Definition
613	**economic quality level**	4778	The economic level of quality at which the *cost* of securing higher quality would exceed the benefits of the improved quality.
614	**valuation of stock**		The total value of *stock*, usually measured in monetary units. NOTE. See **B.2** of BS 5191 : 1975.

Section seven. Energy management terms

NOTE. The term *energy management* has already been defined in section one (see **107**).

701	**energy audit**	5643	The determination of actual energy used in each part of an installation or process.
702	**energy budget**	5643	The energy allowance for building or process purposes.
703	**energy requirement**	5643	The summation of the amounts of energy used in a building or process.
704	**energy target**	5643	The desired energy demand of a building or process.
705	**degree day**	5643	The number of degrees of temperature difference on any one day between a given base temperature and the mean day outside temperature.
706	**heat gain**	5643	The flow of heat into an enclosure from all sources other than by space heating means.
707	**heat loss**	5643	The rate of heat flow from a space.
708	**heat reclaim**	5643	The principle whereby heat that might otherwise be discharged to waste is passed through a suitable form of heat exchanger and thereby recovered for other uses.
709	**heat recovery**	5643	A process that enables waste heat to be stored or transferred for the purpose of performing a useful function elsewhere.

Section eight. Information and computer application terms

NOTE. The term *information and computer application* has already been defined in section one (see **108**).

801	**classification**	EOQC	The act of grouping items into classes.
802	**codification**		The act of systematically sequencing, identifying and presenting *items* within their class or classes.
803	**history record**		A record of usages, events and actions as appropriate relating to a particular *item*.
804	**physical asset register**		A record of *items*, including information such as constructional and technical details about each. This may be combined with an *inventory* (see note 2 to **272**).
805	**data**	3527	A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by humans or by automatic means.
806	**to record** (v)		To preserve information in a file.
807	**a record** (n)	3527	A set of related *data* or words treated as a unit. NOTE. *Example.* In *stock* control, each invoice could constitute one *record*.

No.	Term	Source	Definition
808	**hardware**	3527	The physical equipment used in *data* processing, as opposed to *computer programs*, procedures, rules and associated documentation.
809	**computer**	3527	A *data* processor that can perform substantial computation, including numerous arithmetic operations or logic operations, without intervention by a human operator during a run.
810	**central processing unit (CPU)**	3527	A unit of a *computer* that includes circuits controlling the interpretation and execution of instructions.
811	**keyboard**		A device, visually similar to a typewriter, which is used to put *data* into a *computer.*
812	**card reader**	3527	A device that reads or senses the holes in a punched card, transforming the *data* from hole patterns to electrical signals.
813	**visual display unit (VDU)**		A device, visually similar to a television set, which is used to display *data* from a *computer.*
814	**printer**	3527	An output unit that produces a durable *record* of *data* in the form of a sequence of discrete graphic characters belonging to a predetermined character set.
815	**magnetic disk**	3527	A flat circular plate with a magnetizable surface layer on which *data* can be stored by magnetic recording.
816	**disk pack**	3527	A removable assembly of *magnetic disks.*
817	**flexible disk** floppy disk *deprecated*	3527	A flexible *magnetic disk* enclosed in a protective container.
818	**magnetic tape**	3527	A tape with a magnetizable surface layer on which *data* can be stored by magnetic recording.
819	**direct access store (RAM)** random access store	3527	A storage device that provides direct access to *data.* NOTE. The contents of the store can be infinitely modified.
820	**read only store (ROM)**	3527	A storage device whose contents cannot be modified, except by a particular user, or when operating under particular conditions. NOTE. *Example.* A storage device in which writing is prevented by a lockout.
821	**computer program**	3527	A schedule or plan that specifies actions which may or may not be taken expressed in a form suitable for execution by a *computer.*
822	**software**	3527	*Computer programs,* procedures, rules, and any associated documentation concerned with the operation of a *data* processing system.
823	**operating systems**	3527	*Software* for controlling the execution of *computer programs* and that may provide scheduling, debugging, input/output control, accounting, compilation, storage allocation, *data* management, and related services.
824	**language**	3527	A set of characters, conventions, and rules that is used for conveying information.

No.	Term	Source	Definition
825	**requirement specification**		A detailed brief of the user's requirements.
826	**software specification**		The conversion of the user's *requirement specification* into file structures, report lay-outs, input, amend and delete routines.
827	**interactive**		The ability to question and analyse information according to current needs. Communicating with the *computer* on the basis of action and response.

Section nine. Terms used in maintenance schedule optimization models

901	**optimization**		Finding the best procedure, policy or *maintenance* interval with respect to specified criteria
902	**model**		An approximate or exact mathematical analogue of the cybernetics of a real system made usually for the purpose of *optimization* of schedules.
903	**life cycle cost model**		A mathematical *model* designed to estimate the *life cycle cost* of materiel.
904	**life cycle cost trade-off**		The pursuit of a reduced, or at best minimized, *life cycle cost* by selection of appropriate design, operation and support characteristics.
905	**optimized life cycle cost**		The achievement of minimum *life cycle cost* by selection of optimum design, operation and support characteristics.
906	**good-as-new, bad-as-old (g.a.n., b.a.o.)**		Terms used to describe a system after it has been repaired as to whether the *repair* has restored it to its original condition, or whether it still contains some used or worn parts. NOTE. Practical *maintenance* restores *items* to a condition which is neither *g.a.n.* nor *b.a.o.*, but *models* usually assume one or the other. *G.a.n.* implies that *preventive maintenance* is as good as a renewal and the '*item* clock' is zeroed thereby. Under *b.a.o.* the *item* is restored as if the *failure* had not happened so that its propensity for future *failure* is the same as an unfailed *item* of the same age from new.

Appendix A

Publications containing related terms

The following publications define terms both similar and related to those defined in this standard.

BS 2564	Control chart technique when manufacturing to a specification, with special reference to articles machined to dimensional tolerances
BS 3138	Glossary of terms used in work study and organization and methods (O & M)
BS 3527	Glossary of terms used in data processing
BS 4778	Glossary of terms used in quality assurance (including reliability and maintainability terms)
BS 5191	Glossary of production planning and control terms
BS 5233	Glossary of terms used in metrology
BS 5643	Glossary of refrigeration, heating, ventillating and air conditioning terms
BS 5750	Quality systems
BS 6143	Guide to the determination and use of quality related costs
EOQC	Glossary of terms used in the management of quality – 5th edition – June 1981 (European Organization for Quality Control)

Index

Publications referred to

BS 2564	Control chart technique when manufacturing to a specification, with special reference to articles machined to dimensional tolerances
BS 3138	Glossary of terms used in work study and organization and methods (O&M)
BS 3527	Glossary of terms used in data processing Part 1 Fundamental terms Part 4 Organization of data Part 12 Data media, storage and related equipment Part 14 Reliability, maintenance and availability
BS 4778	Glossary of terms used in quality assurance (including reliability and maintainability terms)
BS 4884	Technical manuals
BS 5191	Glossary of production planning and control terms
BS 5233	Glossary of terms used in metrology
BS 5643	Glossary of refrigeration, heating, ventillating and air conditioning terms
BS 5750	Quality systems
BS 6143	Guide to the determination and use of quality related costs
EOQC	Glossary of terms used in the management of quality — 5th edition — June 1981 (European Organization for Quality Control)

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