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NEW PD 5304:2005

Supported by the Health & Safety Executive



Machinery Safety

Eliminating Risks and Promoting Safe Use

Standards | Guidance | Technical Information

Equipping business with knowledge



Eliminating and reducing risks and hazards associated with the use of machinery is a task that requires unremitting and careful attention at all times in the interests of accident prevention. Safety of machinery is governed by the Machinery Directive (98/37/EC) which contains essential health and safety requirements for industrial machinery such as machine tools, injection moulding machines, textile machines, automatic machines and many more.

BSI Business Information has published a number of standards and guidance to help those responsible for the design, manufacture, use and refurbishment, upgrade or change of use of machinery, machinery guarding or safety devices.

For more up-to-date information on Machinery Safety visit www.bsi-global.com/machinesafety

With contributions and support from the Health & Safety Executive

PD 5304:2005 Guidance on safe use of machinery

PD 5304:2005 Guidance on safe use of machinery – a Published Document – covers the safe use of machinery and provides comprehensive guidance on practical measures and techniques that may be applied to machinery so as to safeguard operators, maintenance personnel and others. The guidelines deal with issues ranging from selection of protective measures and safeguards through to practical examples of guard design and their application.

It provides advice on the safeguarding and use of machinery prior to the Supply of Machinery (Safety) Regulations 1992 (normally machines supplied before 1995) as well as guidance for users of machinery designed to and manufactured in accordance with harmonized European machinery safety standards.

The aim of **PD 5304:2005** is to promote a high standard of machinery safety during use and those other activities. In a snapshot it:

- Describes and illustrates a variety of protective measures
- Explains methods by which it is possible to assess which measure(s) it is reasonable to adopt in particular circumstances
- Helps identify hazards
- Looks at aspects of machine design to eliminate or reduce risks
- Outlines the maintenance and safe working practices
- Considers what needs to be done for installation of guards and protective devices.

Who should use PD 5304?

This Published Document is intended for persons that deal with:

- Safe use of machinery, including guards and/or safety devices
- Refurbishment and modification of machinery
- Development and implementation of safe working practices associated with the use of machinery.

It is intended that the guidance contained in PD 5304 can be applied to machinery during its use to assist those persons with duties under the Provision and Use of Work Equipment Regulations 1998.

Contents of PD 5304

- General
- Application and strategy for selecting protective measures
- Risk assessment
- Identification of hazards
- Aspects of machine design to eliminate or reduce risks
- Selection of safeguards
- Guard design and construction
- Protective devices
- Interlocking considerations
- Safety-related control systems
- Installation considerations
- Maintenance and safe working practices

Background Information

BS 5304:1988 was made obsolescent following publication of a series of harmonized European machinery safety standards. Recognizing that BS 5304 contained valuable practical advice, PD 5304:2000 was published to retain the advice contained in BS 5304 and with the addition of references to those relevant harmonized European machinery safety standards. PD 5304:2005 supersedes PD 5304:2000, which is withdrawn.

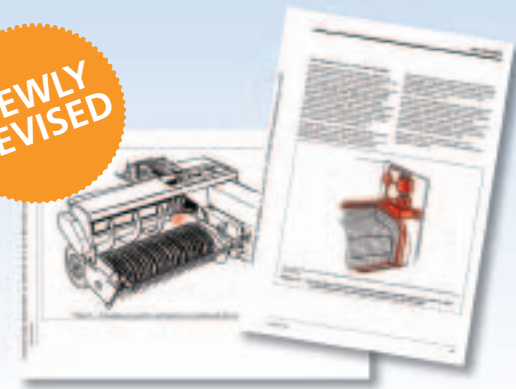
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REVISED**

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Coming mid 2006

ADVANCE NOTICE

BS EN 60204-1 Safety of machinery. Electrical equipment of machines. General requirements

BS EN 60204-1 provides requirements and recommendations relating to the electrical equipment of machines so as to promote:

- Safety of persons and property
- Consistency of control response
- Ease of maintenance.

It applies to electrical, electronic and programmable electronic equipment and systems to machines not portable by hand while working, including a group of machines working together in a co-ordinated manner.

BS EN 60204-1 is relevant to the electrical equipment or parts of the electrical equipment that operate with nominal supply voltages not exceeding 1,000 V for alternating current (a.c.) and not exceeding 1,500 V for direct current (d.c.), and with nominal supply frequencies not exceeding 200 Hz.

This standard does not cover all the requirements (for example guarding, interlocking, or control) that are needed by other standards or regulations in order to protect persons from hazards other than electrical hazards. Each type of machine has unique requirements to be accommodated to provide adequate safety.

BS EN 60204-1 does not specify additional and any special requirements that can apply to the electrical equipment of machines that, for example:

- Are intended for use in open air (i.e. outside buildings or other protective structures)
- Use, process, or produce potentially explosive material (for example paint or sawdust)
- Are intended for use in potentially explosive and/or flammable atmospheres
- Have special risks when producing or using certain materials
- Are intended for use in mines
- Are sewing machines, units, and systems
- Are hoisting machines.

ISBN 0 580 46819 4

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NEW

BS EN 62061:2005 Safety of machinery. Functional safety of safety-related electrical, electronic and programmable electronic control systems

This standard specifies requirements and makes recommendations for the design, integration and validation of safety-related electrical, electronic and programmable electronic control systems (SRECS) for machines.

It applies to control systems used, either singly or in combination, to carry out safety-related control functions on machines that are not portable by hand while working, including a group of machines working together in a co-ordinated manner.

This is an application standard and is not intended to limit or inhibit technological advancement.

This document:

- Is concerned only with functional safety requirements intended to reduce the risk of injury or damage to the health of persons in the immediate vicinity of the machine and those directly involved in the use of the machine
- Is restricted to risks arising directly from the hazards of the machine itself or from a group of machines working together in a co-ordinated manner
- Does not specify requirements for the performance of non-electrical (e.g. hydraulic, pneumatic) control elements for machines
- Does not cover electrical hazards arising from the electrical control equipment itself (e.g. electric shock).

ISBN 0 580 45882 2

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BS EN ISO 12100:2003 Safety of machinery

Designing machinery can be a very intricate business. It is important that terminology associated with machinery is clearly defined and understood. It is crucial for organizations to use effective and efficient methodologies when designing machinery so that they are safe for their intended use - taking into account the many hazards ranging from mechanical and electrical to those generated by noise and vibration. With all these safety risks, designers need to incorporate relevant safeguards and provide protective measures at the varying stages of machine operation.

BS EN ISO 12100:2003 is a two-part standard key to designers of machinery.

BS EN ISO 12100-1:2003 Safety of machinery. Basic terminology and methodology

Part 1 of BS EN ISO 12100:2003 defines the basic overall terminology and methodology used when designing machinery and used in achieving safety of machinery. It also provides the basic terminology related to the philosophy underlying this work.

By understanding the terminology and methodology used in machine safety, the designer can work closely with relevant parties and help reduce the risk of equipment causing hazards during normal use. The potential hazards range from mechanical, electrical and thermal to hazards generated by noise, vibration, radiation, material and substances or even a combination of these.

BS EN ISO 12100-1:2003 supersedes BS EN 292-1:1991.

ISBN 0 580 42922 9

Price £120*, £60 BSI Subscribing Members

BS EN ISO 12100-2:2003 Safety of machinery. Technical principles

Part 2 of BS EN 12100:2003 defines technical principles to help designers achieve safety in the design of machinery. It sets out inherent design measures ranging from considerations for geometrical and physical aspects to provisions for stability, choosing the appropriate technology to use, and limiting exposure to hazards.

This essential publication details safeguarding and complementary protective measures such as selecting and implementing guards and protective devices for the different uses, and at varying stages, of machine operation – normal use, machine setting, teaching, process changeover, fault finding, cleaning or maintenance.

In theory, a designer may have designed a safe machine, but the true test of its safety is in its safe use. Users need to be informed and instructed on how best to use the machinery, and that's why the location, signals and warnings, markings as well as instruction handbooks are produced so that they are easily understood and clearly visible.

BS EN ISO 12100-2:2003 supersedes BS EN 292-2:1991.

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BS EN 1050:1997 Safety of machinery. Principles for risk assessment

This key document gives guidance for decisions during the design of machinery and will assist in the preparation of consistent and appropriate Type-B and Type-C standards in order to comply with the essential safety and health requirements. It establishes general principles for the procedure known as risk assessment by which the knowledge and experience of the design, use, incidents, accidents and harm related to machinery is brought together in order to assess the risks during all phases of the life of the machinery.

ISBN 0 580 27153 6

Price £64*, £32 BSI Subscribing Members

BS EN ISO 14159:2004 Safety of machinery. Hygiene requirements for the design of machinery

This standard specifies hygiene requirements of machines and provides information for the intended use to be provided by the manufacturer. It applies to all types of machines and associated equipment used in applications where hygiene risks to the consumer of the product can occur.

ISBN 0 580 43486 9

Price £106*, £53 BSI Subscribing Members

PD CEN/TR 14715:2004 Safety of machinery. Ionizing radiation emitted by machinery. Guidance for the application of technical standards in the design of machinery in order to comply with legislative requirements

This technical report gives guidance on how to comply with the relevant legislative requirements, and how to take into account the technical recommendations specified in standards when machines emitting ionizing radiation are designed and built.

ISBN 0 580 44028 1

Price £92*, £46 BSI Subscribing Members

BS EN 1005-2:2003 Safety of machinery. Human physical performance. Manual handling of machinery and component parts of machinery

This document specifies ergonomic recommendations for the design of machinery involving manual handling of machinery and component parts of machinery, including tools linked to the machine, in professional and domestic applications. It applies to the manual handling of machinery, component parts of machinery and objects processed by the machine (input/output) of 3 kg or more, for carrying less than 2 m.

ISBN 0 580 42101 5

Price £92*, £46 BSI Subscribing Members

BS EN ISO 13849-2:2003 Safety of machinery. Safety-related parts of control systems. Validation

This standard specifies the procedures and conditions to be followed for the validation by analysis and testing of the safety functions provided, and the category achieved of the safety-related parts of the control system using the design rationale provided by the designer. This standard does not give complete validation requirements for programmable electronic systems and therefore can require the use of other standards.

ISBN 0 580 42475 8

Price £128*, £64 BSI Subscribing Members

CE Marking for Machinery A Guide to the European Directive

This technical handbook is essential reading for all those involved in the supply, manufacture, refurbishing and purchasing of machinery. It gives practical advice on how to CE mark products falling within the scope of the Machinery Directive. In addition, it covers international regulations and approval requirements.

Contents include:

- Machinery included in and excluded from the Directive
- The Technical Construction File and its contents
- Hazard and risk assessment (including a copyright-free template)
- CE marking requirements
- How to complete the different Declaration forms (including examples)
- Relationship with other relevant EC Directives including EMC and Low Voltage
- Requirements for refurbished and second-hand machinery
- Copy of the Machinery Directive 98/37/EC
- A list of all current harmonized machinery standards.

Written and Researched by Experts

BSI Business Information's team of technical specialists research, compile, write and work with national and international experts in the field to ensure that the information provided in this guide has been validated, verified and is correct at the time of publication. This gives you the confidence to make business-critical decisions safe in the knowledge that you have the right information at your fingertips.

Peace of Mind with CE Marking for Machinery

BSI Business Information is committed to providing you with the most critical, relevant and up-to-date information so that you have all you need to comply with regulations and procedures. That's why, throughout the subscription year, you will receive updates for any relevant sections of the publication. New and replacement pages are supplied - all you need to do is take out the old pages from your binder and replace them with the most up-to-date information or add the new data.

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