

Glossary of terms used in

Materials handling —

Part 3: Terms used in connection with
pneumatic and hydraulic handling

Co-operating organizations

The Mechanical Engineering Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Associated Offices' Technical Committee	Institution of Civil Engineers
Association of Consulting Engineers	Institution of Gas Engineers
Association of Mining Electrical and Mechanical Engineers	Institution of Heating and Ventilating Engineers
Board of Trade	Institution of Mechanical Engineers
British Chemical Plant Manufacturers' Association	Institution of Mechanical Engineers (Automobile Division)
British Compressed Air Society	Institution of Production Engineers
British Electrical and Allied Manufacturers' Association	Locomotive and Allied Manufacturers, Association of Great Britain
British Gear Manufacturers' Association	London Transport Board
British Internal Combustion Engine Manufacturers' Association	Machine Tool Trades Association
British Iron and Steel Federation	Ministry of Defence
British Mechanical Engineering Federation	Ministry of Labour (H.M. Factory Inspectorate)*
British Pump Manufacturers' Association	Ministry of Power
Crown Agents for Oversea Governments and Administrations	Ministry of Public Building and Works
Electricity Council, the Central Electricity Generating Board and the Area Boards in England and Wales	Ministry of Technology — National Engineering Laboratory
Engineering Equipment Users' Association*	Ministry of Transport
Gas Council	National Coal Board
Institute of Marine Engineers	National Physical Laboratory (Ministry of Technology)
	Radio Industry Council
	Royal Institute of British Architects

The Government departments marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Association of Crane Makers	National Association of Lift Makers
Chain Testers Association of Great Britain	National Joint Council on Materials Handling
Excavator Makers Association	United Kingdom National Committee of the International Cargo Handling Co-ordination Association
Institute of Materials Handling	The Cranfield Work Study School
Lifting Equipment Manufacturers Association	Individual firms
Mechanical Handling Engineers Association	
Ministry of Defence, Army Department	

This British Standard, having been approved by the Mechanical Engineering Industry Standards Committee and endorsed by the Chairman of the Engineering Divisional Council, was published under the authority of the General Council on 15 August 1967

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Foreword

In order to keep abreast of progress in the industries concerned, British Standards are subject to periodical review. Suggestions for improvements will be recorded and in due course brought to the notice of the committees charged with the revision of the standards to which they refer.

A complete list of British Standards, numbering over 4000, fully indexed and with a note of the contents of each, will be found in the British Standards Yearbook, price 15s. The BS Yearbook may be consulted in many public libraries and similar institutions.

This British Standard has been prepared at the request of the National Joint Council on Materials Handling under the authority of the Mechanical Engineering Industry Standards Committee. It is intended to cover the whole field of materials handling in a number of parts of this standard.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 20 and a back cover.

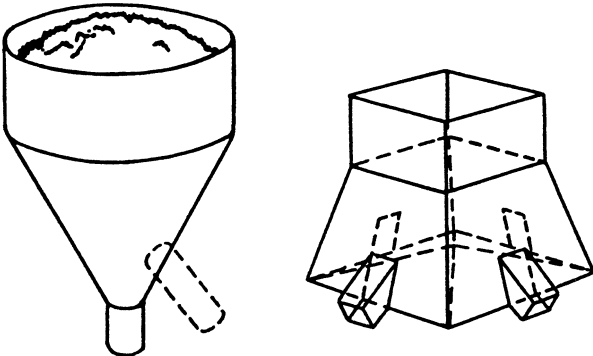
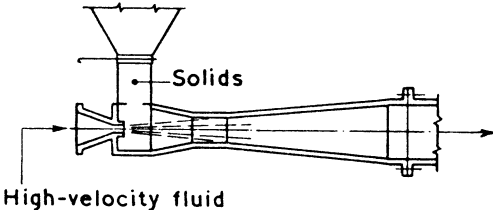
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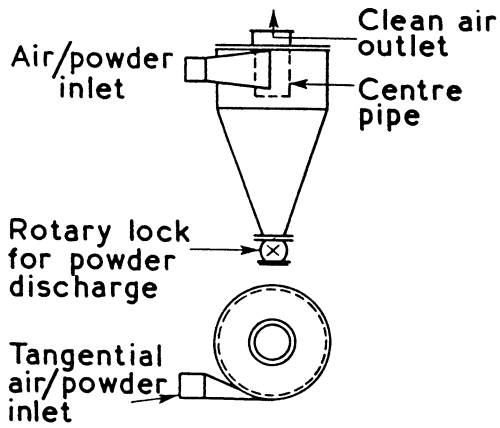
Section 1. Terms common both to pneumatic and hydraulic handling

A. General

Term No.	Term and definition	Typical example
31001	Fluid. Any gas or liquid.	
31002	Conveying medium. A fluid which supports and conveys the solid material.	
31003	Particle velocity. The velocity of a solid particle at any given instant in the conveying direction.	
31004	Particle exit velocity. The velocity of solid particles at the delivery end of the transport line.	
31005	Critical settlement velocity. The velocity below which the largest particles will settle out of the conveying medium.	
31006	Optimum velocity. The velocity giving the lowest specific power consumption without settlement.	
31007	Turbulent flow. A condition when the flow at any point does not remain constant either in magnitude or direction.	

B. Equipment

Term No.	Term and definition	Typical example
31101	Hopper, bunker, silo. A vessel, with either open or closed top, for the temporary storage of materials for ultimate transfer elsewhere. The material is fed into the top and discharged by power or by gravity through an outlet or outlets at the bottom or sides.	 Figure 1
31102	Transport or conveying line. The pipes or ducts along which the entrained solids are carried.	
31103	Injector. A device used to create a flow of fluid under suction through a pipeline. This device is also used to entrain solids into a high-velocity stream.	 Figure 2

Term No.	Term and definition	Typical example
31104	Filter. A device used to remove entrained solids or other contaminants from fluids.	
31105	Cyclone. A device imparting a rotary motion to the fluid stream thereby causing the entrained particles to be separated by centrifugal force and gravity.	 Figure 3
31106	Screen. Any device, having perforations used for separating or grading wet or dry materials.	
31107	Valve. Any device which controls the flow of fluid. Types of valve used in pneumatic and/or hydraulic conveying are as follows: Sluice valve. Shovel or flap valve. Non-return valve. Diaphragm valve. Plug valve. Gate valve. Ball valve. Disk valve.	
31108	Vacuum relief valve. A valve which allows fluid to enter the pipeline or appliance when the vacuum conditions occur.	
31109	Pressure relief valve. A valve which automatically discharges fluid to relieve pressure.	

Section 2. Pneumatic handling

A. General

Term No.	Term and definition	Typical example
32001	Pneumatic. Appertaining to air but in practice to any gas.	
32002	Pneumatic handling/conveying. The movement of particulate solids in pipelines, ducts and silos by the application of gas, usually air.	

Term No.	Term and definition	Typical example
32003	Free air. The volume of air at prevailing atmospheric conditions entering a pneumatic system.	
32004	Fluidization. The physical treatment of solid particles so that they behave in certain respects like a fluid.	
32005	Fluidizing medium. The gas or liquid by which the solid particles are fluidized.	
32006	Fluidized bed. The volume occupied by solid particles when they are in the fluidized condition.	
32007	Dense phase. The condition of fluidization in which the solid particles appear to boil like a liquid and no solids leave the fluidized bed	
32008	Dilute phase. The condition of fluidization obtained with a bed of different particle sizes where some of the particles become entrained into the atmosphere above the bed.	
32009	Fluidizing gas velocity. The average velocity of the fluidizing gas through the fluidized bed.	
32010	Critical air velocity. The air velocity below which fluidization cannot occur.	
32011	Angle of repose. The angle formed by the horizontal with the side of the conical pile formed by the product when it falls freely and evenly from a small height.	

B. Equipment

Term No.	Term and definition	Typical example
32101	Slide or shutter valve. A sliding plate moving across a pipeline or hopper discharge outlet to control the flow of material.	The diagram shows a hopper with a conical body and a square discharge outlet at the bottom. A rectangular slide valve is positioned across the outlet. An arrow labeled 'Open' points to the valve in its tilted position, allowing material to pass. Another arrow labeled 'Close' points to the valve in its horizontal position, blocking the outlet.

Figure 4