

High-Speed Grinding: Think Safety First

Higher operating speeds have fueled progress in the grinding industry for over a century. Modern machines with faster spindles can boost productivity, but they also carry increased safety risks. It is a fact that the most common cause of personal injury with abrasive wheels is exceeding the maximum approved operating speed, which is clearly marked on the wheel in RPM; therefore the topic of safety demands very careful attention in High-Speed Grinding applications.

In order to help customers reap the benefits and avoid the dangers of High-Speed Grinding wheels, Co-Max Abrasives has prepared the following article presenting the requirements for safe design and operation, as outlined in the American National Standards Institute (ANSI) B7.1 Safety Requirements for the Use, Care and Protection of Abrasive Wheels.

To start, some important definitions:

- (1) Standard (Maximum) Speeds – Operating speeds that have been established for the safe use of grinding wheels of various types and strengths, under general conditions. (See ANSI B7.1 Section 7.)
- (2) Special (Maximum) Speeds – Grinding wheel operating speeds that exceed standard maximum speeds, and require special conditions for safe use. (See ANSI B7.1 Section 8.)

In high-speed grinding applications, the responsibility to meet those special conditions is shared by three stakeholders: the wheel manufacturer, the machine supplier, and the user.

A. The Wheel Manufacturer's responsibilities are to:

- Make certain that the wheels are of adequate strength (i.e. perform appropriate testing).
- Test each wheel at a suitable overspeed (i.e. perform speed tests) according to ANSI B7.1 Section 7.1.4.1, excluding wheels exempted in Sections 8.3.2 and 8.3.3.
- Identify on the wheels that they are approved for special speeds. (i.e. mark with the Speed Flag symbol)

B. The Machine Supplier's responsibilities are to:

- Ensure that the machine is of suitable design (e.g. spindle, bearings, flanges, horsepower, etc.) and adequately guarded according to ANSI B7.1 Section 4



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- Consult with the Wheel Manufacturer to determine that they can produce a wheel for the high-speed application that meets ANSI and any other applicable requirements.

C. The User's responsibilities are to:

- Confirm with the Machine Supplier that the machine is approved to be operated at the special wheel speed.
- Fully inform operators that only wheels identified for special speeds may be used, and at no time may the maximum operating speed be exceeded.
- When modifying an existing machine, adhere to the ANSI requirements of a Machine Supplier described above.
- Maintain the machine in good and safe operating conditions, as instructed by the Machine Supplier, ANSI B7.1 Sections 3 and 4, and other applicable standards.
- Properly handle, store and inspect the wheels in accordance with ANSI B7.1 requirements.

When each stakeholder does his/her part, High-Speed Grinding wheels can be safely and beneficially used. Remember to do your part, keep innovating, and always think "Safety First."



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