
Technical Bulletin

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SAMPLING PROCEDURES FOR ABRASIVE WORK MIX - SEPARATOR DISCARD

Accurate sampling is of the greatest importance and is the basic requirement for meaningful sieve analysis. Great care should be taken to ensure that the samples obtained are truly representative samples or have the operator get them.

1. WORK MIX SAMPLES

- (a) The ideal place to take the sample is where the abrasive flows into the propelling unit, i.e., at the feed spout to the wheel. As a result, we are sure we are evaluating the material that would have gone to the wheel and then to the work. This is the material doing the work at the time the sample is taken.
- (b) The most accurate sample results are achieved when the sample is taken at the point where the abrasive drops from the control valve. If possible, use a receptacle (pie tin, etc.) that enables you to sweep across the full stream with a uniform movement.
- (c) Where multiple wheels are involved, samples should be taken from all wheels for separate analysis. It is entirely possible for one wheel to be fed mostly coarse material, while another wheel is being fed mostly fine material depending upon flow characteristics from the main abrasive feed hopper.
- (d) In many installations, it is not possible to obtain samples at the feed spout. Samples may then be taken from the separator shed plate. The ideal spot to take the sample is at a point below the lower skimming lip where the air stream flows. Use a suitable receptacle which can be swung completely across the flowing abrasive stream, in a uniform movement. When taking such a sample, observe the condition of the abrasive curtain. Is the full width of the shed plate being used? $\frac{3}{4}$? $\frac{1}{2}$? If less than full, make note of the actual condition on the sample label.

- (e) For purposes of evaluating the work mix distribution, a minimum sample weight of $\frac{1}{2}$ pound is required. If the $\frac{1}{2}$ pound is reduced from a larger sample, be sure to mix the gross sample thoroughly, then take several small cuts to make up the representative $\frac{1}{2}$ pound. Remember, fines tend to work to the bottom.
- (f) When labeling the work mix sample, identify the machine and ascertain from the operator the normal time lapse between additions. Note this on the label and indicate whether the sample was taken mid-way between additions, just after an addition, or just before an addition is due. Also indicate how much abrasive is added normally.
- (g) Do not separate and remove non-metallics by use of a magnet.
- (h) Indicate on your report whether the abrasive feed hopper is less than $\frac{3}{4}$ full. Show how much is in the hopper.
- (i) Ascertain whether additions are made only when ammeter readings are low or by visual check of the abrasive feed hopper level.

2. SEPARATOR DISCARD SAMPLES

- (a) By our definition, separator discard material is the discard material from the waste or discard side of the abrasive separator.
- (b) The discard sample should be taken directly from the discard dribble pipe, not from the refuse container. A sample from the refuse container can include particles of abrasive, sand, scale, or other contaminants being removed in the blast cleaning operation.
- (c) We are interested primarily in the abrasive portion of the sample. Therefore, it is best, when dealing with batch type equipment, to take the sample during the last $\frac{1}{3}$ or $\frac{1}{4}$ of the cleaning cycle.
- (d) As a guide to how much usable abrasive is being exhausted through the separator, try to take a timed sample at 30 seconds, 1 minute, or 2 minutes. Note the time elapsed of the sample (1-lb. minimum).
- (e) Some of you may have magnets and can separate the metallic and non-metallic on the spot. If this is done, please state so on the report. $\frac{1}{4}$ -lb. of metallics will be sufficient. Do this only on discard samples, not on work mix samples.
- (f) Please note on the report whether or not the dribble pipe has an operative flapper valve.

3. GENERAL

- (a) Always inspect any refuse containers under the separator discard pipe and under the scalp drum trash discard pipe. Look for evidence of shredded paper. Include in the report if found.
- (b) Wherever usable shot is found in containers, (separator discard, scalp drum trash, abrasive trap discard, floor sweepings, etc.), ascertain its ultimate disposition. Is it returned to the blast equipment? Is it thrown away? Does it go to a reclaim system? Include in your report. Be sure to find out what actually happens vs. what is supposed to happen.
- (c) Whenever samples are obtained from a pipe or chute that is not a straight vertical drop, be careful to get material from the full cross section. Because fines always go to the bottom or back of a sloping pipe or chute, be sure to get a full cut, not just the front or back half.
- (d) When collecting samples, use plastic bags that are sturdy and tightly sealed. This will protect samples from being mixed due to bags breaking and/or opening.

As you follow this procedure when collecting samples, it will tell you a great deal about the machine operating practice.

Now the samples collected can be screened to determine work mix size distribution. Findings: Is the work mix balanced, or is it coarse or fine? Are contaminants being removed by the air wash separator? Is the separator discard samples free of usable abrasive? Proper sampling is an important step in controlling the blasting process.

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