

Hand specimen descriptions of igneous rocks

Basically, hand specimen descriptions should tell someone looking at a rock everything they need to know to recognize it in the field. Descriptions should be reasonably comprehensive but clear and succinct, typically no more than two sentences.

- **Rock color.** One color only. After stating the overall rock color, you may then qualify it. Remember that people walk up to an outcrop from far away, “black and white” or “green and gray speckles” means nothing from 50 meters away.
- **Rock type,** to the extent that it can be told in the field, plus other information you may have. If the feldspars are all white, but your thin section shows that they are half alkali feldspar and half plagioclase, call the rock a granite. Don’t be mysterious.
- **Grain size,** for both matrix and phenocrysts, if you have them.
- **Visible mineralogy,** making clear which occur as phenocrysts, if you have them.
- **Textures,** including phenocrysts, foliation and layering (and what defines them), cumulates, equigranular, inequigranular, etc.

Grain sizes:	Very fine	<0.2 mm
	Fine:	0.2-1 mm
	Medium	1-5 mm
	Coarse	5-15 mm
	Very coarse	>15 mm



Hand sample description as a list:

Color: Grayish-pink.

Texture: Porphyritic.

Grain size: Phenocrysts up to 2.5 cm long with matrix grains ~3 mm.

Visible minerals: Phenocrysts are pink K-feldspar, in a matrix of pink K-feldspar, gray-glassy quartz, white plagioclase, biotite, and muscovite.

Rock type: Porphyritic granite.

Hand sample description as a paragraph:

Grayish-pink, porphyritic, isotropic granite. Pink K-feldspar phenocrysts are up to 2.5 cm long in a medium-grained matrix of pink K-feldspar, quartz, white plagioclase, biotite, and muscovite.

The point of hand sample descriptions is to give enough information so someone at a complex outcrop could easily find the rock described. In this case, the term K-feldspar is used in place of a more specific term because the structural state of K-feldspar cannot be determined in the field, and perthite exsolution textures, if present, happen here to be too small to see. If you have a thin section, however, call the feldspar what you know it to be.



Hand sample description as a list:

Color: Light-gray.

Texture: Equigranular, isotropic.

Grain size: Medium-grained.

Visible minerals: Hornblende, biotite, white feldspar, and quartz.

Rock type: Hornblende-biotite granite.

Hand sample description as a paragraph:

Light-gray, medium-grained, equigranular, isotropic granite. Minerals include white feldspar, quartz, hornblende, and biotite.

The term feldspar is used in place of a more specific term because we can distinguish only one feldspar type. If you had a thin section, be forthcoming and say there is white plagioclase and white perthite, for example. Are most K-feldspars white rather than pink? Oh, my, yes, you're not in introductory geology anymore. Not only that, but some plagioclase in igneous rocks is pink.



Hand sample description as a list:

Color: Medium-gray.

Texture: Porphyritic.

Grain size: Phenocrysts up to 5 mm long in a microcrystalline matrix, with sparse elliptical dark-gray spots (probably amygdules) up to 6 mm across.

Visible minerals: Phenocrysts are plagioclase and hornblende.

Rock type: Andesite.

Hand sample description as a paragraph:

Medium-gray, massive, porphyritic andesite. White plagioclase and black hornblende phenocrysts up to 5 mm long are set in a medium-gray, microcrystalline matrix. Some dark-gray amygdules up to 6 mm across are present.

The feldspar is white. With luck, twin striations might be seen on some cleavage surfaces. The hornblende is dark-gray and angular, as compared to the rounded, elliptical amygdules.



Hand sample description as a list:

Color: Black, dark-gray and somewhat rusty-weathering.

Texture: Inequigranular.

Grain size: Fine-grained matrix with sparse black phenocrysts up to 1 cm long.

Visible minerals: Plagioclase, black minerals that may be augite or hornblende.

Rock type: Gabbro.

Hand sample description as a paragraph:

Black, inequigranular gabbro with black phenocrysts up to 1 cm long in a fine-grained dark-gray matrix. Somewhat rusty-weathering. Mafic minerals may include hornblende or augite, with plagioclase.

Here the mafic minerals are somewhat nondescript and so it isn't clear if they are hornblende or augite. The nondescript nature may indicate that there are both, possibly with hornblende replacing augite, a common occurrence in the area of this pluton. Notice that the freshly broken surface to the lower-right is black and it is difficult to tell one mineral from another, quite different from the lighter-colored weathered surface, where the textures are easily seen.