



# What's your materials quotient?

While you are all familiar with the intelligence quotient (IQ) designed by Alfred Binet in 1905, and some of you may be aware of the emotional quotient (EQ) first reported by Michael Beldoch in 1964 and popularized in a book by Daniel Goleman in 1995, few are probably aware of the materials quotient (MQ), no doubt because I just made it up last week.

The MQ is based on the concept that, since we are all made of materials, identifying exactly what type of material you are can help you to understand your actions and motivations, and ease your interactions with other material beings, including, but not limited to, Madonna, whose 1984 song “Material Girl” marked the founding of materials science (you could look it up).

The following is a sample of a MQ test. (Disclaimer: The MQ test should be administered only by a highly trained individual, such as a tight-rope walker, a dancing bear, or an orthodontist. Tell your doctor if you are allergic to any material properties mentioned here, or if you have a family history of fluorescence. Rare side effects include brittle fracture, point defects, irreversible phase change, unexpected grain growth, loss of electrons, feelings of semiconductivity, sudden and uncontrollable thoughts of giant magnetoresistance, and a mild rash.)

Choose one of the following responses for each statement below: (a) Strongly disagree; (b) Disagree; (c) Neither agree nor disagree; (d) Agree; (e) Strongly agree; or (f) All of the above.

- (1) People often tell me that I diffract x-rays in a discernible pattern.
- (2) I handle tension well, but not compression.
- (3) I believe I have a young modulus.
- (4) If I were the leader of an orchestra, I would conduct better as the temperature approaches absolute zero.
- (5) Madonna should get the Nobel Prize for “Material Girl.”
- (6) I have sometimes been called too elastic for my own good.
- (7) I once dreamed I was a superalloy with no super powers.
- (8) If I could change one thing about myself, I would have a smaller grain-size distribution.
- (9) If reincarnation exists, I want to come back as a silky, sleek, one-atom-thick sheet of pure carbon. Oh!
- (10) My enemies—and I have many—have accused me of being spinel-less.

The remaining 90 statements of the test are similarly inane and arguably meaningless. There is no scoring, per se, on this test, as it is highly nuanced and does not yield easily to numerical interpretation. Rather, an experienced MQ oracle, such as myself,

must consider all answers holistically and ridiculously. The results place you in an overall materials category:

- Crystalline. You have your act together. Everything is in its place, down to the last atom. All your ducks are in a row.
- Amorphous. You are all over the place. You didn’t even know there were ducks.

Examples of MQ subcategories that further elucidate the nature of your personality and how other people perceive you include:

- Cubic: Square, man, square.
- Face-centered cubic: Stop staring in the mirror!
- Body-centered cubic: You are obsessed with your beautiful six-pack abs.
- Close packed: You need to loosen up a little.
- Dislocation: You’ve been slipping away all your life.
- Excited: You are always getting promotions.
- Screw dislocation. Simply twisted.
- Grain boundary: Beware of impurities!
- Vacancy: You are never occupied, which makes you a bad candidate for a hotel room.
- Interstitial: You are untethered, just rattling around inside a lattice.
- Bandgap: You have forbidden energies.
- Solid solution: You get along well with others who are unlike you.
- Unit cell: You are constantly repeating yourself.
- Single crystal: You are self-consistent, without boundaries (grain boundaries, at least).
- Nucleus: You are a self-starter, at least some of the time.
- Fatigued: You are worn out from repeated loading.
- Equiaxed: You are well rounded—approximately the same size in all three dimensions, like a cue ball.
- Dielectric: You are a poor conductor; avoid jobs on trains or leading symphonies.

If you think of other subcategories to add to this list, please keep them to yourself.

It is my firm, unscientific belief that the MQ test is a great advance in the history of questionnaires, and that being aware of your MQ will help you to live a happier, healthier life, or, in lieu of that, just the opposite.

Of course, there are no correct or incorrect answers to the MQ test. Also, your MQ classification is not better or worse than someone else’s, just different. Whether you are a crystalline-solid solution-nucleus (a well-ordered self-starter who gets along with others) or an amorphous-fatigued-unit cell (a worn out, repetitious mess), just remember: we are all Madonna’s children.

**Tim Palucka**