I am not known as a technical chap, more the social type, but I feel the urge to comment on Hillsy's and the Prof's bits. It might be being pedantic, but isn't that a part of being technically correct? Dave talks about "blasting of parts" and "silica particles ... embedded ... in the surface", then he goes on to say "shot blasting". What a confusion! Let's set the record straight. There are many types of blasting. They are all specific and they all have their own purpose. There are two forms of blasting. The most common is using compressed air (let's call it dry blasting for the moment) and then there is wet blasting, a liquid at high pressure (usually water), which is known as vapour blasting. Now both the wet and dry methods again sub-divide into two types. We have abrasive dry blasting and non-abrasive dry blasting. We have abrasive wet blasting and, yes, you've guessed it, non-abrasive wet blasting. Dave, are you following this?

Apart from the wet and dry bit the main difference in blasting is the type of media used. The media is the material that is shot out of the blast gun nozzle by either the pressure of air or the water, at great force, to crash into whatever object is being aimed at. Let's be specific, starting with dry media:

Sand. This is an abrasive material most often used in masonry cleaning, and glass processing, but rarely, if ever, used for engineering purposes.

Aluminium oxide, silicon carbide and several others are the serious abrasive grits. These are very tough and very sharp, sand is a softie in comparison. Anyway, these grits are used for rapid cleaning of surfaces. They actually remove good metal if you linger, their job is to 'etch' the surface. Like abrasive paper they come in a series of grades, the very coarse being the most aggressive, which give a very textured finish, the finer grades work more slowly and result in a fine matt finish. This type of media is expensive and is wasted on the wrong class of work. They are mainly used for metal component or glass and ceramic processing. They should not be used to strip paint or de-rust fragile parts, the problem being that they eat away good metal.

Coke ash, and other similar products, are less aggressive as they break up on impact and being by-products of industry they are very cheap. These are very often used in the commercial blasting business to strip paint and to de-rust, as they remove almost none of the sound metal. Being cheap they are generally used in total loss blasting, whereas expensive media is normally reclaimed.

Glass beads. These are small spheres of glass. Used correctly they are non-abrasive, as like grits they come in different grades/sizes. The weight of the sphere does the work, so the big stuff works fastest. The blast pressure is less for beads than for grits. This is so it does not fracture and become jagged. The beads hammer, or as we are being technically correct, peen the surface, thus consolidating it, leaving a finely dimpled finish, the technical term being planished. Bead blasting is often used after grit blasting. The grit does a deep cleaning job and then the beads close up and smooth the surface over. Beads are an expensive media, but it is excellent for fine paint stripping and cleaning off metal oxide, because it does not remove good metal. It also closes up the pores of the metal and toughens the surface, leaving a finish that will resist dirt and corrosion better than untreated metal. Used extensively in various types of manufacturing and engineering.

Shot. Well, this is heavyweight beads. Heavy because it is metal, most usually steel. It does all the same things as glass beads, but with more aggression. The blast force is greater than glass in order to lift the heavier medium. It is used for stripping and cleaning marine structures, piers of wharfs and bridges, because it is fast and closes up the pores of the metal. It is also widely used in the aerospace industry. Should they get bent, critical parts of undercarriages and engine components can only legally be straightened by peening, 'peen straightening'. This is a highly skilled job whereby the operator gently stretches the concave part of the component using the blast nozzle to deliver millions of rapid tiny hammer blows of steel shot. Expensive! But not if the damaged component was a £10,000 turbine blade. This is not a process for the Vincenteer's home workshop. Mind you, many a racer will tell you he had his con-rods peened, as it lessens the chance of fracture; look at new Carrillos.

Technical point: beads are glass or sometimes ceramic; shot is metal - all are spherical. Plastic bits and walnut shells. What? Yes it's true, walnut shells can claim to be amongst one of the earliest established media. These are very gentle in their cleaning action and are used for conservation work and for decorative processes like polishing of intricate and delicate metalwork. There are now all manner of high tech plastic media, all non-abrasive. Under magnification the shapes of some are bizarre. This is truly the designer end of the blast media market, with very specific purposes involved. The Royal Air Force use a lot of this stuff to strip the paint off their planes as it removes the paint without altering the metal beneath in any way.

Let's quickly do the wet stuff. Grit, beads and shot all appear again. The main difference is that the water lubricates the action and so things are generally gentler. Often chemicals are added to the water to aid a specific type of cleaning or to
inhibit post cleaning corrosion. Vapour blasting is most commonly non-abrasive and uses beads. This is an excellent process for cleaning aluminium crankcases. The finished surface is smooth, medium bright and very much easier to clean when it's back on the road. The liquid process also leaves very much less media behind than the dry alternatives. Disadvantages: well it is not so commonly available and, as a result, is more expensive. It is also something that is difficult to set up on a DIY basis, whereas dry cabinets are easy and cheap to build.

Now, although wet blasting is generally non-abrasive, it has to be said that when it is, it can claim the ultimate aggression award: 'abrasive water jet cutting'. If you want to cut precise shapes out of 12-inch thick granite or two inch toughened glass, or four inch stainless steel or a slab of English oak, this is the way to do it. Forget lasers, forget plasma, forget gas, AWJC is the business. Upwards of 10,000 psi water pressure with abrasive grit fed into the stream; fantastic to see.

So Dave, please be specific. You were not sand or shot blasting, you were grit blasting and really you should have been bead blasting or, better still, vapour bead blasting. The best masking materials during blasting are rubber and you can readily buy all sizes of silicon taper plugs to stop off your oilways and threaded holes, and adhesive sheets and tapes for large holes or bearings and spindles. This stuff is made for the job. Ask me to point you in the direction of a supplier next time we meet; it really works!