

M504 Asbestos and Other Fibres – Answers to revision questions

Section 2 – Introduction and fibre types

1. What is asbestos, and what are the 6 different types? (Pages 3 and 6)
 - Naturally occurring hydrated fibrous silicate mineral
 - Chrysotile, amosite, crocidolite, anthophyllite, actinolite, tremolite
2. Which groups of people were most at risk from asbestos in the past in countries such as US / UK? (Page 5)
 - Asbestos miners, ladders, manufacturers of asbestos products
3. Which groups of people are thought to be most at risk from asbestos now in countries such as US / UK? (Page 5)
 - Workers involved in repair, maintenance and refurbishment work on buildings / plant that contains asbestos
4. What properties do asbestos fibres have that make them useful for industrial applications? (Pages 8 and 9)
 - Flexibility, tensile strength, non-combustibility, good thermal insulator, good electrical insulator, resistant to chemical attack
5. What changes can occur when asbestos fibres are heated at high temperatures? (Page 10)
 - Dehydroxylation (loss of water of crystallisation), fibres may change colour
 - Fibres lose tensile strength
6. What differences are there between serpentine and amphibole fibres? (Pages 7 to 11)
 - Serpentine – chrysotile
 - Sheet silicate crystal structure, less likely to break down into finer fibres, more curved fibres, more flexible, less resistant to acids, more resistant to alkalis, easily wetted
 - Amphibole – other 5 types
 - Chain silicate crystal structure, more likely to break down into finer fibres, straighter fibres, less flexible, more resistant to acids, less resistant to alkalis, less easily wetted

7. What are the differences between asbestos fibres and man made mineral wools?
(Pages 12 to 14)

- Asbestos fibres split into finer fibres, generally smaller diameter fibres, crystalline, bio-persistent (particularly amphiboles), well established serious health effects
- MMMF fibres do not split into finer fibres, generally larger diameter fibres, generally amorphous (non-crystalline), broken down relatively quickly by lungs, lower risk and generally less serious potential health effects

8. What are typical sizes of carbon fibres, aramid fibres and polyolefin fibres? What industrial applications are they used for? (Pages 14 and 15)

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| • Carbon fibres | 5-15 micron |
| • Aramid | 12-15 micron (some much smaller) |
| • Polyolefin | > 10 micron |
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| • Carbon fibres | High-tech composite materials (light, strong, corrosion |
| resistance) | |
| • Aramid | High-tech composite materials (flexible, strong, heat and |
| chemical resistant) | |
| • Polyolefin | Textile and rope applications |