



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



Department of Aerospace Engineering

23AST101-Fundamentals of Aerospace Engineering

UNIT-1:
History of Flight

Aircraft Materials

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Aircraft materials are chosen based on strength, weight, durability, and resistance to environmental factors. Here's an overview of key materials used in aircraft construction:

1. Aluminum Alloys

Common Use: Fuselage, wings, and structural components

Properties: Lightweight, corrosion-resistant, high strength-to-weight ratio

Example: 2024, 7075, and 6061 aluminum alloys

2. Titanium Alloys

Common Use: Jet engines, landing gear, and high-stress areas

Properties: High strength, corrosion resistance, and heat resistance

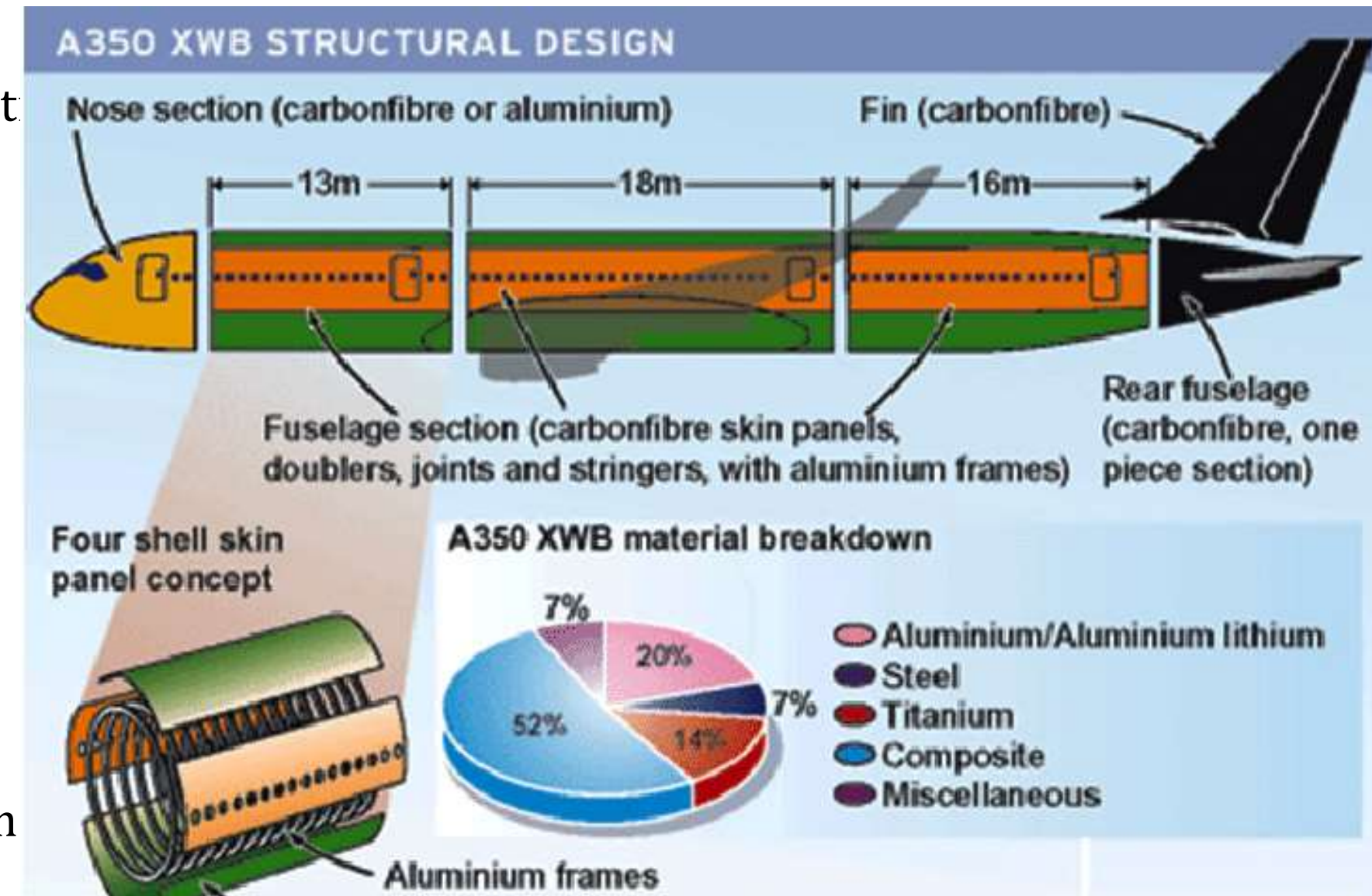
Example: Ti-6Al-4V (Titanium alloy)

3. Steel and Stainless Steel

Common Use: Landing gear, fasteners, engine components

Properties: High strength, fatigue resistance, but heavier than aluminum

Example: 17-4 PH, 4130 steel





4. Composites (Carbon Fiber, Kevlar, Fiberglass)

Common Use: Aircraft fuselage, wings, and control surfaces

Properties: Lightweight, high strength, corrosion-resistant, reduces fuel

Example: Carbon fiber reinforced polymers (CFRP), Glass fiber reinforce

5. Magnesium Alloys

Common Use: Structural components, engine parts

Properties: Lightweight but prone to corrosion and flammability

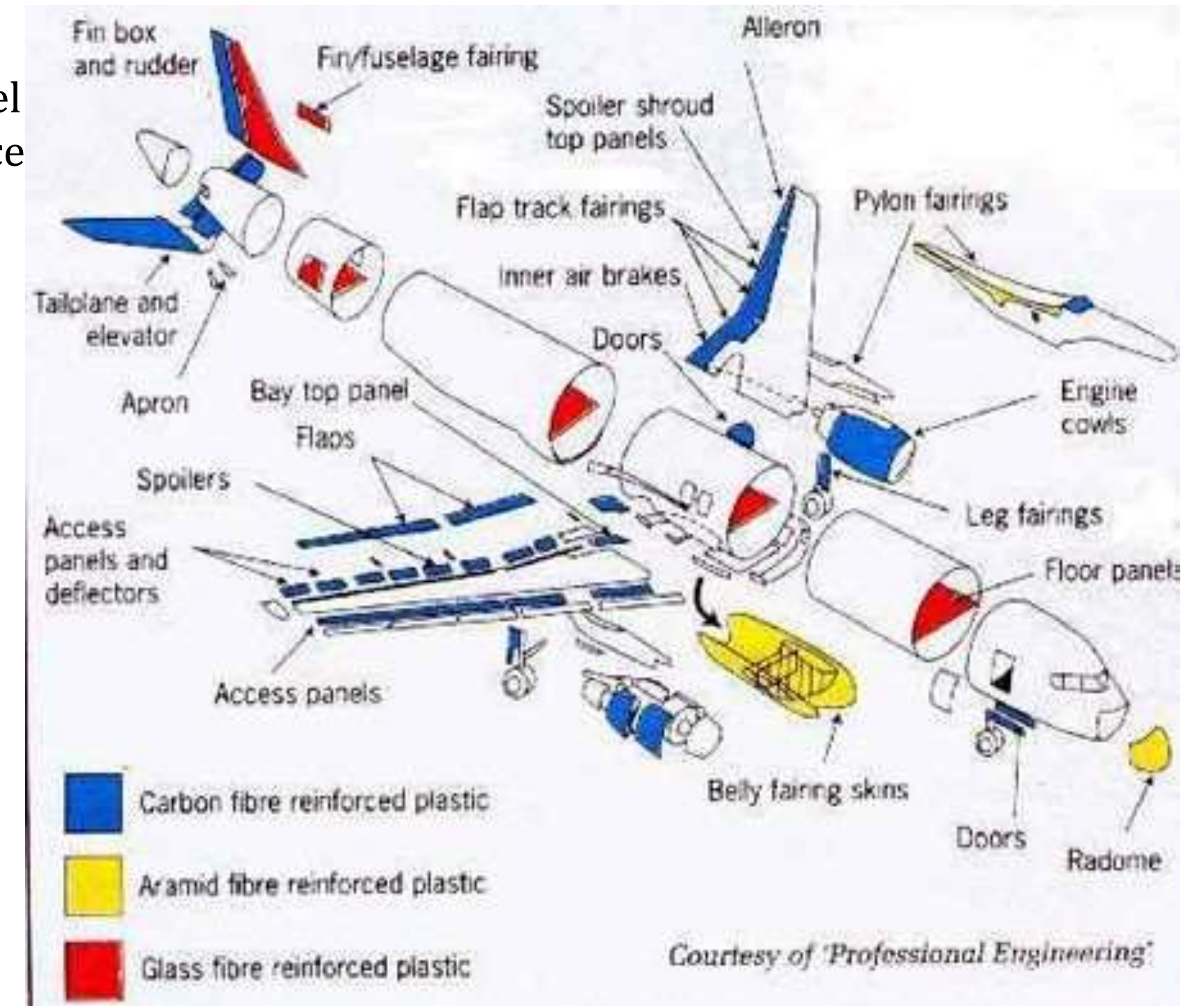
Example: AZ91, ZE41


6. Ceramic Materials

Common Use: Heat shields, thermal protection systems in spacecraft

Properties: High-temperature resistance, low thermal expansion

Example: Silicon carbide, zirconia





THANK YOU!