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ENGINEERING

New Aircraft Panels Stand Speeds of Mach 9

► A NEW "SANDWICH" type of metal paneling for use in jet airplanes and space ships is capable of withstanding 2,000 degrees Fahrenheit under severe pressure. It could enable aircraft to travel up to nine times the speed of sound without the fear of melting.

The "sandwich" is basically a layer of corrugated metal "filler" with a flat "bread" sheet on either side made of high-temperature-resistant metals like stainless steel and inconel X.

It was developed by Republic Aviation Corporation, Farmingdale, N. Y., after several months of research. Panels are already being fabricated under subcontract for a supersonic Air Force fighter and a supersonic bomber.

The panel's corrugation affords vital heat resistance at light enough weight for aircraft use. In previous use of corrugated structures it was difficult to get strong welds and close tolerances.

Republic's manufacturing method uses electrical resistance welding instead of adhesives, which melt at comparatively low temperatures. Results are accurate to three-thousandths of an inch on the thickness of the "sandwich" sheets. Sheets as large as 16 square feet have been fabricated.

Not only are the panels light, they are also as much as 75% cheaper than earlier types of "sandwich" construction using a honeycomb, instead of a corrugated, filler. The bonding of honeycomb filler is not capable of withstanding the high temperature.

Science News Letter, January 10, 1959

THE CHEMICAL ELEMENTS

Compiled by **PHILIP S. CHEN, Ph. D.**
PROFESSOR OF CHEMISTRY, ATLANTIC UNION COLLEGE

WALL CHART
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CONTAINS THE FOLLOWING UNBELIEVABLY VAST AMOUNT OF INFORMATION CONCERNING EACH ELEMENT

- Periodic table (based on atomic weights)
- Periodic table (based on atomic numbers)
- Group and family
- Names in English, German, French, and Russian
- Derivation
- Discovery: Date, discoverer, nationality
- Symbol and atomic number
- Arrangement of electrons in orbits
- Atomic weight
- Isotopes (993 in all)
- Valence
- Crystalline form and color
- Specific gravity or density
- Melting and boiling points
- Specific heat
- Heats of vaporization and fusion
- Heat conductivity

- Electrical resistivity
- Coefficient of thermal expansion
- Occurrence, preparation, and uses
- The radioactive elements
- The Uranium-Radium Series (4, +2)
- The Actinium Series (4, +3)
- The Thorium Series (4, +3)
- The Neptunium Series (4, +3)
- Map showing production in U.S.A.
- Distribution in earth crust, in ocean, in atmosphere, and in human body
- The Electrochemical Series
- Flame and borax bead tests
- Mechanical properties of principal metals
- Critical constants for gaseous elements
- Alchemical symbols
- Index to the elements

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This completely revised 1959 edition contains up-to-date information about all 102 elements. French and German names are given in English alphabets. Russian names are given in both Russian alphabet and English equivalent.

