**CHASSIS MATERİALS**

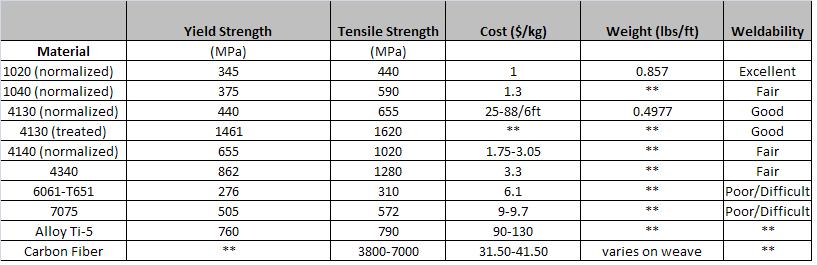
Materials used in chassis is shown in the following Table . These materials are used in the forms of channel, tabular, tube and box section profiles, rods, plates and sheets.

a. Channel Section - Good resistance to bending

b. Tabular Section - Good resistance to torsion

c. Box Section - Good resistance to both bending and torsion

The most widely used chassis materials are shown in the following table



Chemical compositions of chassis matarials are as follows;

**1020 steel** low carbon and low strength steel

C = % 0.17-0.23, Mn= %0.30-0.60, S=<0.050, P = <0.040

**1040 steel**  medium strength steel

C= % 0.35-0.45 Si = % 0.05-0.35, Mn = =.60-1.0 S = 0.06, P = % 0.06

**4130 steel** High strength steel

|  |  |  |
| --- | --- | --- |
| Carbon |  | 0.28 - 0.33 |
| Chromium |  | 0.8 - 1.1 |
| Manganese |  | 0.7 - 0.9 |
| Molybdenum |  | 0.15 - 0.25 |
| Phosphorus |  | 0.035 max |
| Silicon |  | 0.15 - 0.35 |
| Sulphur |  | 0.04 max |

**4140 steel** High strength steel

|  |  |
| --- | --- |
| Carbon | 0.42% |
| Silicon | 0.30% |
| Molybdenum | 0.20% |
| Manganese | 1.00% |
| Chromium | 1.00% |
| **4340 steel**  High strength steel   |  |  | | --- | --- | | Carbon | 0.40 % | | Silicon | 0.25 % | | Molybdenum | 0.25 % | | Manganese | 0.70 % | | Chromium | 0.80 % | |  |

Nickel 1.85 %

**6061 Aluminium Alloy**  Medium strength heat treatable wrought Al-Mg-Si alloy

|  |
| --- |
|  |

|  |  |
| --- | --- |
| Manganese (Mn) | 0.0 - 0.15 |
| Iron (Fe) | 0.0 - 0.70 |
| Magnesium (Mg) | 0.80 - 1.20 |
| Silicon (Si) | 0.40 - 0.80 |
| Copper (Cu) | 0.15 - 0.40 |
| Zinc (Zn) | 0.0 - 0.25 |
| Titanium (Ti) | 0.0 - 0.15 |
| Chromium (Cr) | 0.04 - 0.35 |
| Aluminium (Al) | Balance |

**7075 Aluminium Alloy** High strength heat treatable aluminum wrought alloy

7075 aluminum alloy's composition roughly includes 5.1–6.1% [zinc](http://en.wikipedia.org/wiki/Zinc), 2.1–2.9% [magnesium](http://en.wikipedia.org/wiki/Magnesium), 1.2–2.0% [copper](http://en.wikipedia.org/wiki/Copper), and less than half a percent of silicon, iron, manganese, titanium, chromium, and other metals.

**Ti-5 Alloy**

|  |  |  |
| --- | --- | --- |
| **Component** | **Wt. %** | http://asm.matweb.com/images/spacer.gif |
| |  | | --- | | http://asm.matweb.com/images/spacer.gif | | |
| Al | 5 |  |
| Fe | Max 0.5 |  |
| O | Max 0.2 |  |
| Sn | 2.5 |  |
| Ti | 92.5 |  |

**Carbon fiber**

Carbon fiber having various diameters ( 3 to 10 microns)