



# TOYO TANSO

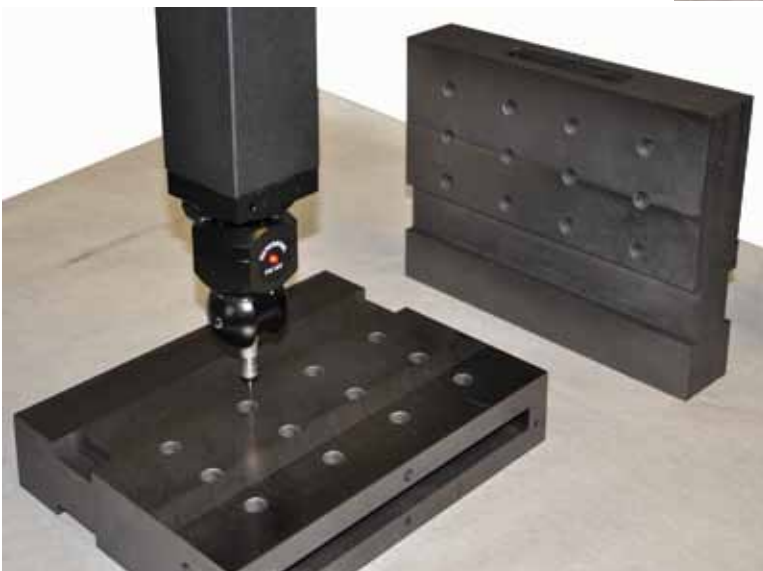
Inspiration for Innovation

## Special Graphite and Compound Material Products



- > Over 50 years of continuous casting experience in precious metals and non ferrous casting, graphite machining and material selection for your specific alloys copper cooler designing and building, designing stain less steel cooler assemblies, .

- > A Toyo Tanso Senior Metallurgical Engineer is available to help customers with material casting processing and graphite selection for specific strip, tube, rod or billet metal requirements.
- > Material stocking and finish product inventory programs are available to make your dies in 24 to 48 hours. We are currently suppling complete inspection reporting, material certification, surface roughness and die profiles.

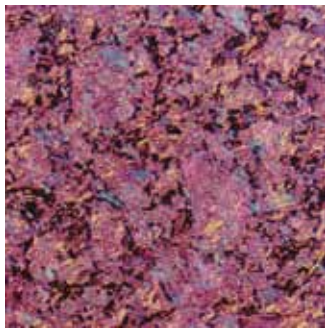


- > Toyo Tanso grades IG-11, IG-15, and IG-43 have proven over time their consist performance reputability. These products are all manufactured and stocked by Toyo Tanso USA East & West.
- > Toyo Tanso offers the continuous casting industry crucible, one piece strip dies, two pieces tube assemblies, rod dies as small as .125 dia, billet casting liners, gasket materials, oxidation cubes, tundish liners and stopper rods, stirring rods, graining boxes and much more.

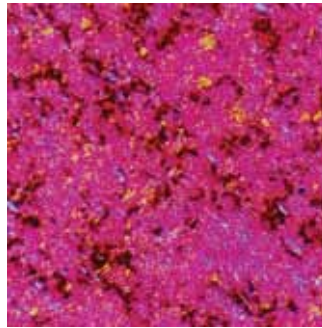
## TOYO TANSO Isotropic Graphite Physical Properties

<b>GRADE</b>	<b>IG - 11</b>	<b>IG - 15</b>	<b>IG - 43</b>
<b>Bulk Density - gr/cc</b>	1.77 g/cm <sup>3</sup>	190 g/cm <sup>3</sup>	182 g/cm <sup>3</sup>
<b>Shore Hardness</b>	51	60	55
<b>Electrical Resistivity μΩ - in</b>	433	375 μΩ - in	360 μΩ - in
<b>Flexural Strength MPa - psi</b>	5655	7830	7800
<b>Comprehensive Strength MPa - psi</b>	11310	15000	13050
<b>Tensile Strength - psi</b>	3625	4200	5365
<b>Elastic Modulus</b>	10 GPa	11.8 GPa	10.7 GPa
<b>CTE (350 °C – 450 °C)</b>	4.5 x 10 <sup>-6</sup> /°C	4.8 x 10 <sup>-6</sup> /°C	4.8 x 10 <sup>-6</sup> /°C
<b>Thermal Conductivity W/m - °k</b>	120 W/m - °k	140 W/m - °K	140 W/m - °K

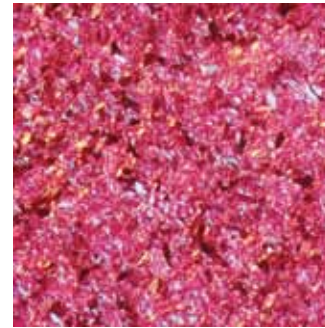
### Particle Distribution Structure



**Toyo Tanso IG-11**



**Toyo Tanso IG-15**



**Toyo Tanso IG-43**

