

H.O.T. PRODUCT MEMO # 007 - W

# LX11 Ceramic Hard Turning



**Product category:** H.O.T product

**Application Area:** Semi-finish to finish turning and boring of hardened steels and tool steels that are 45-65 Rc hardness.

**Target market or end user:** Automotive and general market from high production shops to job shops that perform hard turning.

### Features and Benefits:

- The micro-structure is fine grain  $Al_2O_3 + TiC$ , providing exceptional hardness and chemical stability for high wear and heat resistance.
- LX11 incorporates a thin PVD applied TiN layer for additional friction resistance and easy wear identification.
- LX11 is a solid material; all corners and sides can be utilized which offering further cost savings.
- Being fully ground, LX11 can provide excellent accuracy, surface finish, and index repeatability.

**TURNING**



**TUNGALOY AMERICA**

**Product Strengths:**

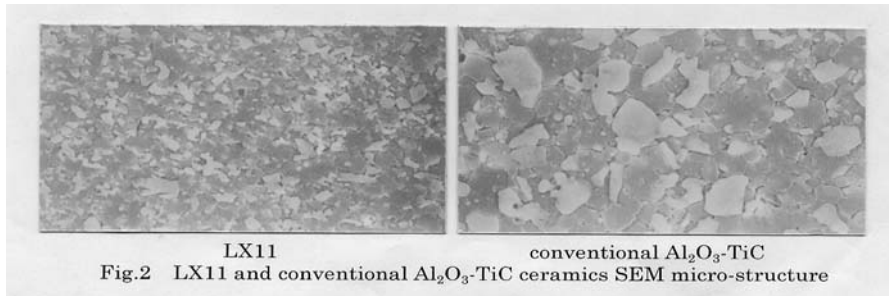
- **Cost Performance vs. CBN:** in many applications LX11 per part cost is less than CBN.
- **Cycle Time vs. CBN:** LX11 is quite capable of running as fast as CBN and in many cases can take a larger depth of cut.
- **Application Range, vs. CBN:** LX11 can be run in steels from 42~65 Rc. CBN does not perform well in steels under 50 Rc. It is also possible to use LX11 in cast iron finishing and in a case by case basis in high temp alloys such as Stellite.
- **Overall Performance vs. Other Ceramic Grades for Hard Turning:** quite simply LX11 is the best ceramic grade on the market in terms of cutting performance and cost performance

**Technical Note:**

- Typically, LX11 is not very capable of interrupted turning. Use CBN for most of these applications. However LX11 may be successful by using a very small depth of cut (less than .0025”).

**Technical Information:**

- LX11 is considered a mixed type ceramic grade. Its base material is  $\text{Al}_2\text{O}_3$  with a content of TiC. The grain size of LX11 is fine which is unique to this grade makes it extremely hard and chemically stable at high temperatures.



- **Cutting conditions:** On hardened steels LX11 is typically run a 300~350 SFM and .002~.004 IPR. However because of its high hardness it exhibits excellent performance at speeds as high as 650 SFM. In fact in some cases LX11 has outlasted CBN grades at these high speeds.
- For most applications LX11 should be run dry.
- Like CBN grade, sometimes it is necessary to alter edge honings to achieve the best performance. With LX11 this is no problem. We can apply radius hones along with a variety of chamfer lands easily. If you feel you have such a need please contact our Engineering Department .
- **Wiper Type LX11:** Although this is not a stock standard item we can produce LX11 with our wiper corner design.
- **Special Shapes and Sizes:** Even though we stock a wide variety of shapes and sizes in LX11 we also have the ability to make many more. When you have a application for a size or shape that you do not see as a stock item please contact your Sales Engineer or our Engineering Department.

**Application Example:**

- Our customer machines 62 Rc D2 tool steel. This is a partial interrupted cut and needs at least a 32 finish. Our parameters are 400-700 SFM, .004 IPR, and no more than a .0025" depth of cut. Before using LX11 this customer had to do the milling portion of the job after heat treat and cost 2 ½ extra hours on the mill. After LX11 the customer completed the roughing-out portion before heat treating and could finish his part after heat treat, saving 2 ½ hours of the part run time.