

Mould Steel And Material Reference

Every cavity steel and moulding material used across the XSX Mould catalogue, with what each one is chosen for. Figures are drawn from the company product records.

CAVITY STEELS IN THIS CATALOGUE

Cavity steel	Used on
718	1 tools: ABS Injection Mould With 718 Cavity Steel
DAIDO NAK80	3 tools: PP Cover Plate Mould With NAK80 Cavity Steel
DAIDO S-Star quenching	1 tools: ABS Sanitary Part Mould With Three Slides
LKM	1 tools: ASA Family Mould On LKM Base
NAK80	1 tools: ABS Electronic Part Mould With Two Cavities And Six Slides
S136	1 tools: PC Electronic Part Mould With S136 Cavity Steel
S136 quenching	4 tools: ABS Sanitary Part Mould With S136 Cavity Steel
SKD61	3 tools: PC ABS Automotive Part Mould With SKD61 Cavity Steel

MOULDING MATERIALS IN THIS CATALOGUE

Material	Used on
ABS	8 tools: ABS Sanitary Part Mould With S136 Cavity Steel
ASA	1 tools: ASA Family Mould On LKM Base
PC	3 tools: PC Home Appliance Mould With Two Cavities
PC/ABS	2 tools: PC ABS Automotive Part Mould With SKD61 Cavity Steel
PP	2 tools: PP Cover Plate Mould With NAK80 Cavity Steel

CHOOSING BETWEEN THEM

CAVITY STEEL IS A DECISION ABOUT THE PART, NOT ABOUT THE BUDGET

Every mould in this catalogue names its cavity steel, and the choices are not random. A plated ABS bathroom part gets a quenched stainless grade. An unplated general part gets 718. A polycarbonate part that runs hot gets SKD61. Those decisions were made once, at design review, and then lived with for the whole life of the tool. Getting one wrong does not show up at the first trial. It shows up at two hundred thousand shots, when the polish has gone and the only fix is new steel.

STAINLESS GRADES: S136 AND S-STAR

S136 and DAIDO S-Star are stainless mould steels. The chromium in them is there for one job: stopping the cavity pitting in a moulding environment that attacks plain steel. ABS off-gasses, bathroom plants are damp, and a tool that sits for three weeks between runs is exactly where corrosion starts. Both are normally quenched and tempered rather than used pre-hardened, because the hardness is what keeps a polished face from going dull under half a million ejections. The cost is a heat treatment step and the risk that a large block moves during it and has to be machined back.

PRE-HARDENED GRADES: NAK80 AND 718

NAK80 and 718 arrive already hardened, so the cavity goes from machining straight to polishing. No heat treatment means no distortion risk and a shorter tool lead time. NAK80 polishes to a genuinely high finish and turns up on cosmetic parts that are not plated, such as the PP cover plates in this catalogue. 718 is the general purpose option: cheaper, faster to cut, and perfectly adequate for an unplated part in a dry plant. What neither will do is hold a plating grade polish for the shot counts a quenched stainless cavity reaches.

HOT WORK STEEL: SKD61

SKD61 is a hot work tool steel, and it appears in this catalogue wherever polycarbonate or PC ABS is

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being moulded. Those materials run at melt temperatures that soften a pre-hardened cavity. Filled or flame retardant versions of them are abrasive enough to wear a gate visibly with a programme. SKD61 handles both. It is harder to machine and costs more, which is exacted on the ABS tools.

WHAT TO TELL YOUR MOULD MAKER

Three things decide the steel: the exact moulding grade including any filler or flame retardant package, the shot count the programme needs over its life, and whether the part is plated or painted afterwards. Give a mould maker those three and the steel choice is nearly automatic. Give them only the part model and you will get whatever grade suits the quotation, which is not the same thing.

THE MATERIAL CHOICE REACHES BACK INTO THE STEEL

Material is usually decided by the product engineer and the mould is quoted afterwards, which hides how much the two interact. Shrinkage sets the cavity size. Melt temperature sets the cavity steel. Abrasiveness sets the gate wear. Change the material after the tool is cut and you are not changing a process setting, you are changing the size of the part.

ABS

The default for bathroom and consumer parts, and the most common material in this catalogue. It moulds easily, plates well and is forgiving at the press. Its one awkward habit is off-gassing in the tool, which corrodes plain cavity steel over time. That is why the ABS tools here so often run stainless grades such as S136.

PP

Polypropylene is cheap, chemically resistant and shrinks considerably more than the styrenics. That shrinkage is the whole story for the mould maker: the cavity is cut oversize by a calculated amount, and if the allowance is wrong the parts come out the wrong size and no setting fixes it. It also needs cooling laid out for the part rather than carried over from an ABS tool.

PC AND PC ABS

Polycarbonate is strong, clear and runs hot. It wants a hotter, more stable mould than ABS and will not hold cycle in a tool cooled for a styrenic. PC ABS sits between the two: easier to fill than straight PC, stiffer and hotter than ABS. Both push the cavity steel towards a hot work grade such as SKD61, especially in filled or flame retardant versions.

ASA

ASA is chosen for one reason: it keeps its colour and surface outdoors where ABS chalks and fades within a season. It costs more per kilogram, and substituting ABS to save that cost is a decision that shows up as a warranty claim a year later rather than as a moulding problem.